Trees & Shrubs

EXTENSION MASTER GARDENERS
2020

Dr. Marisa Thompson

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Extension Horticulture Specialist

Department of Extension Plant Sciences

NM STATE UNIVERSITY

BE BOLD. Shape the Future.

Honey locust trees in Tomé, August 2017

Ash tree in Placitas, May 2019
(Photo credit Mike N.)

https://nmsudesertblooms.blogspot.com/

It’s not just us, urban trees suffer worldwide.
São Paulo, August 2019

Benefits of Urban Trees

Research has linked the presence of urban trees to...

The Nature Conservancy

PROTECTING BIODIVERSITY
including habitat for migrating birds and pollinators

REDUCING OBESITY LEVELS
by increasing physical activity including walking and cycling

REDUCING RATES
of cardiac disease, strokes, and asthma due to improved air q

MANAGING STORMWATER,
keeping pollutants out of waterways, ing urban flooding

https://canopy.org/

COOLING city streets by 2-4° F, reducing deaths from heat and cutting energy use

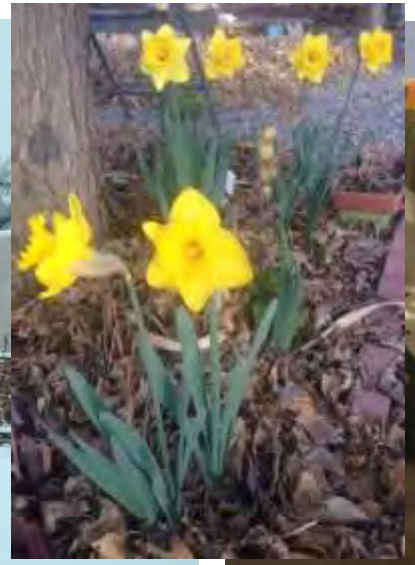
INCREASING
neighborhood property values

FILTERING up to a third of fine particle pollutants within 300 yards of a tree

REDUCING STRESS by helping interrupt thought patterns that lead to anxiety and depression

My ‘Yarden’








WEED ‘EM AND REAP

Tumbleweed and me at Bosque del Apache National Wildlife Refuge in 2009. Photo by Mayyadah Bohn.

NMSU Cooperative Extension Programs

- Land Grant Universities
- County Extension Programs in NM
- 12 Ag Science Centers
- Extension Agents and Specialists
- Extension Horticulture Program

SOCIAL MEDIA

@NMDesertBlooms

https://nmsudesertblooms.blogspot.com/


FIRE
PLACE

Tomato Harvest Volunteers at the NMSU Agricultural Science Center at Los Lunas, September 2019

Tomato starts at the NMSU Agricultural Science Center at Los Lunas, March 19, 2020

Rocky mountain Penstemon (*Penstemon strictus*)

Yellow Blanketflower (*Gaillardia aristata*)

Goals

My goals:

- Inspire listeners to pay closer attention to the trees and shrubs in our surroundings
- Share resources that are available to all of us

My goals for you as Master Gardener Trainees:

- Plant smarter, not harder
- Help others adopt sustainable gardening practices
  - Water Conservation, Wildlife Habitats, Species Diversity
- Learn from each other and reach out for help when needed

Outline

- Trees (and shrubs!) in Our Changing Climate
- Species Selection & Specimen Selection
- Tree (and shrubs!) Anatomy & Root Zones
- Tree (and shrubs!) Planting
- Irrigation & Transpiration
- Care & Maintenance
- Diagnosing Tree (and shrubs!) Problems
- Leaf Color Changes, Senescence, and Dormancy

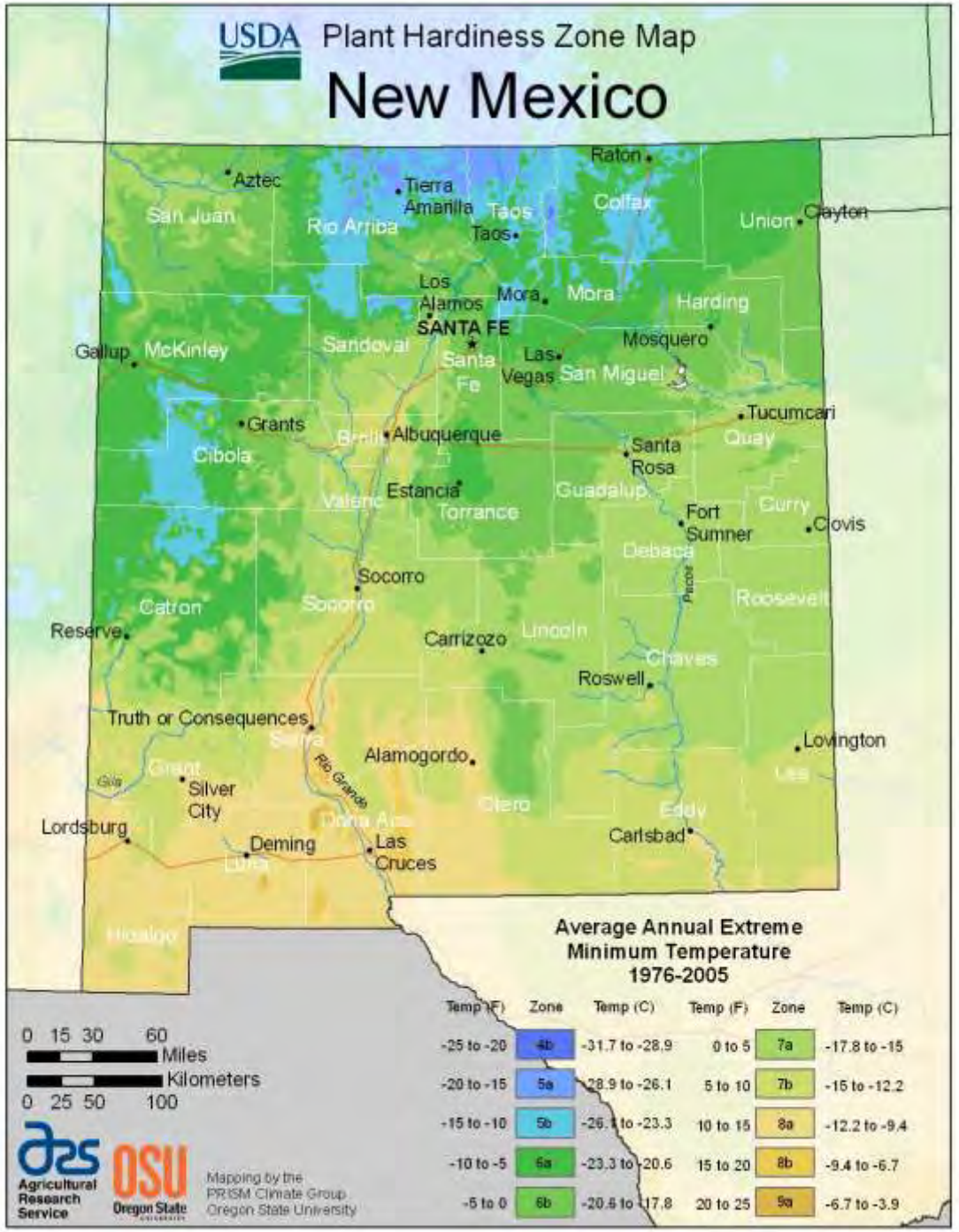
#shrublove

USDA Plant Hardiness Zones
2012 Map

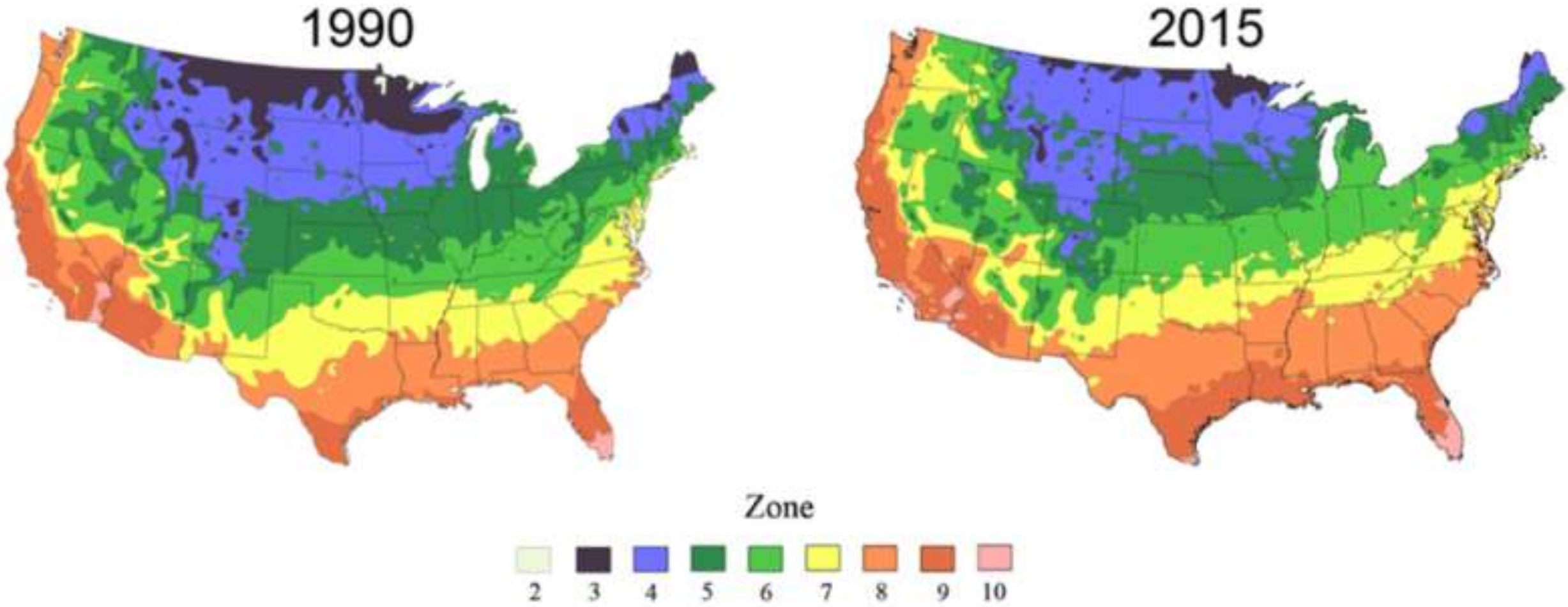
Based on Average Annual
Extreme Low Temperatures

Zone 4	-30°	to	-20°	F
Zone 5	-20°	to	-10°	F
Zone 6	-10°	to	0°	F
Zone 7	0°	to	10°	F
Zone 8	10°	to	20°	F
Zone 9	20°	to	30°	F

http://www.plantmaps.com



USDA Plant Hardiness Zone Maps



Rule of Thumb

- A 1ºF increase in temperature, increases evapotranspiration by 1%
- That means:
  - If City of Albuquerque has 1,843 irrigated acres in parks & golf courses
  - Use 42”/acre/year
  - 1ºF increase will increase water use by 1% (0.42”)
  - Increase evapotranspiration of 11,405 gallons/acre/year
  - Increase of 21 million gallons/year
  - And that’s **only** city-maintained parks and golf courses!

Water Use Will Increase

- What happens if I don’t want to or can’t increase my water budget by 1%?

  - Decreased plant quality
  - Decrease green area
  - Accept more plant disease
  - Accept more plant mortality

https://www.nytimes.com/interactive/2020/world/year-in-weather.html#nyc

https://www.nytimes.com/interactive/2018/08/30/climate/how-much-hotter-is-your-hometown.html

NM Envirothon Teams

from across the state

#climatecourage

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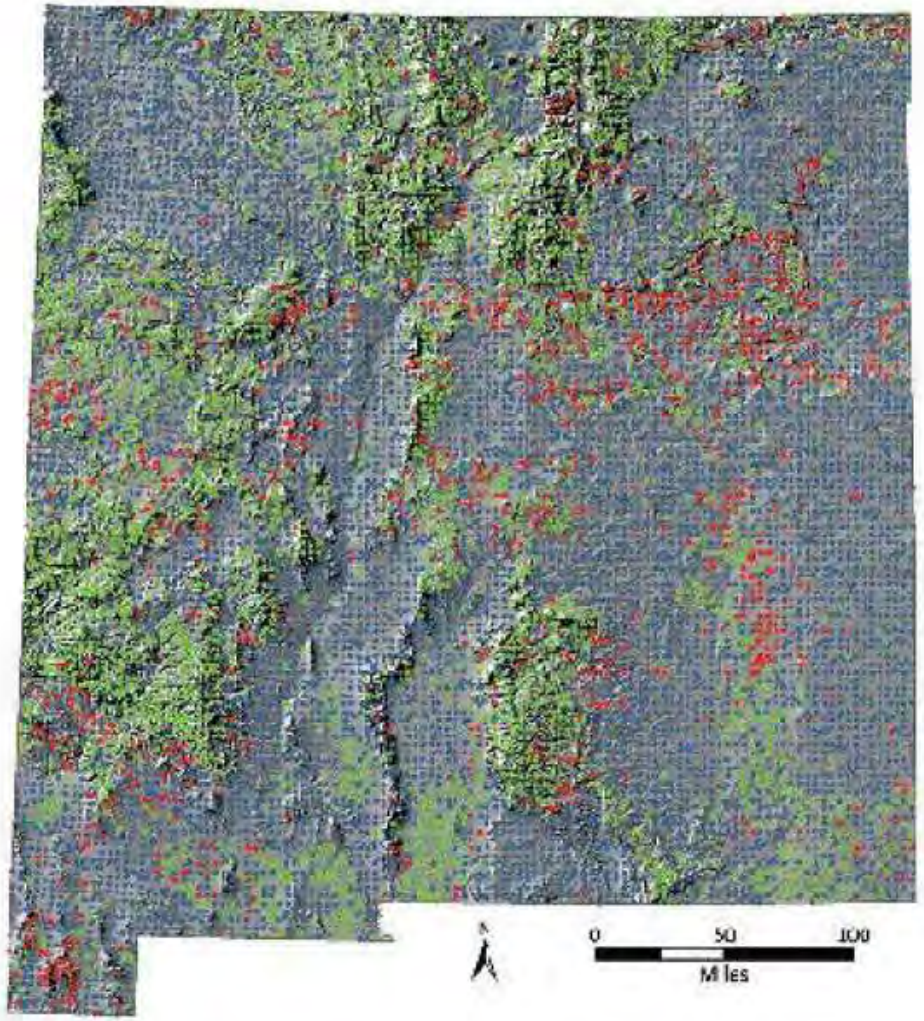
Only one third of NM is naturally forested

Forest

Non Forest

Not sampled



NM Forest Inventory Analysis

New Mexico State Forestry – Urban and Community Forestry Program

http://www.emnrd.state.nm.us/SFD/CommunityFor/Community.html

https://www.arcgis.com/apps/Cascade/index.html?appid=daf49b348d324513bd96d5252b5ccd2f

Slide courtesy of NM State Forestry & ABC Tree Stewards

2020 ALBUQUERQUE

ISA

Conference and Trade Show: 9–12 August, 2020

NM STATE

BE BOLD. Shape the Future.

Sarah Hurteau, The Nature Conservancy

Photo: Roberto Rosales

Climate Ready Trees for Albuquerque's Community Forest

Who was Invited?

- Jennifer Dann, NM State Forestry
- Joran Viers, Albuquerque City Forester
- Andrew Lisignoli, Trees of Corrales
- Carol Bada, NM State Forestry, Tree Nursery
- Dr. Will Pockman, UNM
- Dr. Marisa Thompson, NMSU Extension
- Judith Phillips, Native Plant Society
- Amos Arbor, ABCWUA
- Hunter Ten Broeck, Waterwise Landscapes
- Dr. George Koch, Northern Arizona University

Albuquerque's Context

- 200 sq miles
- 1.5M trees estimated
- <10% Canopy cover
- Siberian Elm most common
- 60% below 6"
- Severe heat island

Our Process

Photo: Roberto Rosales

Evaluate Climate Trends & Exposures

1. Climate projections were selected from the Downscaled CMIP5 Climate and Hydrology Projections.
2. Temperature and precipitation data produced were analyzed. Wind data were not analyzed.

Identify Promising Species

1. Tree species to be evaluated were selected from Albuquerque, Las Cruces, El Paso, and Tuscan recommended tree lists or recommended by experts.
2. Experts were consulted in four seperate meetings throughout the process.
3. Common or overplanted species were noted.

Score Species & Select Finalists

1. Soil type tolerance
2. Drought tolerance
3. Extreme Temperature Tolerance
4. Bonus Columns

Share Results

1. Expert review of list
2. Release of information to public
3. Review of list as new information arises

The Nature Conservancy

Criteria Scoring

Soil type tolerance

Drought Tolerance

Heat Tolerance – Next 30 Years –> El Paso 2060-2099 –> Tucson

Cold Tolerance – Next 30 Years –> ABQ now 2060-2099 –> El Paso now

Criteria Scoring

Bonus Columns:

- Flooding tolerance
- Urban compaction tolerance
- Alkaline Soil Tolerance
- Well-drained soil requirement
- Pests/disease susceptibility
- Allergens/ Toxic parts
- Management requirements (pruning, tree litter, etc.)
- Branch attachment strength/ prone to breakage
- Edible parts
- Attractiveness (fragrance, blooms, color)
- Supports wildlife

Photo: Roberto Rosales

File Home Insert Page Layout Formulas Data Review View Help Acrobat Tell me what you want to do Share Comments

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C31 Honey mesquite

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1								3.) Extreme Temp Tolerance (next 30 years)		4.) Extreme Temp Tolerance (2050-2099+)				9/10/2019 Meeting Notes
2	Rank	Tree Species	Common Name	Native Range	USDA Hardiness Zone	1.) Soil type tolerance	2.) Drought Tolerant (once established)	a.) Heat	b.) Cold	a.) Heat	b.) Cold	TOTAL HEAT SCORE	TOTAL SCORE	
3	1	*Albizia julibrissin*	Persian Silk Tree/ Mimosa	not native to north america (USFS Fact Sheet)	6b-9b (USFS Fact Sheet)	1	1	1	1	1	1	4	6	Does well in parks and courtyards (very messy tree). No known data that it is non-invasive (self seeds in Las Cruces?)
4	2	*Cedrus atlantica*	Atlas Cedar	Atlas Mountains of Algeria and Morocco (Urban Forest Ecosystems Institute)	6-9 (Urban Forest Ecosystems Institute)	1	1	1	1	1	1	4	6	Never seen invasive nature
5	3	*Cedrus deodar*	Deodar Cedar	E Afghanistan, N Pakistan, North Central India (Urban Forest Ecosystems Institute)	7-9 (Urban Forest Ecosystems Institute)	1	1	1	1	1	1	4	6	Joran loves this tree. Not invasive.
6	4	*Cercis canadensis*	Eastern Redbud	north america (USFS Fact Sheet)	4b-9a (USFS Fact Sheet)	1	1	1	1	1	1	4	6	Not good for windy places. Would not plant in place of TX or OK redbud. Protected understory trees. Desert factor not good.

Final Scores | Data Sources | 1,2,3 | 1,2,3,4

80%

9:31 PM 12/1/2019

Location Type 3 - Xeriscaped Public Recreation, Residential, or Commercial Places

Location Characteristics

Follows "Right Tree in the Right Place"

Consider Existing Utilities

Building Setback Varies

Consider Users

Xeriscaped or Low-Medium Irrigation

Examples: Plants of the Southwest, Explora, High Desert Neighborhood

Tree Characteristics

Mature Tree Height: Site Specific

Water Needs: Low to Very Low

Ornamental and Large Trees

Wildlife or Pollinator Benefit Desired

Photo Credit: ABCWUA

Recommended Trees

Arbutus xalapensis	Texas Madrone
Celtis reticulata	Netleaf Hackberry
Cercis canadensis var. mexicana	Mexican Redbud
Cercis reniformis	Oklahoma Redbud
Cercis canadensis var. texensis	Texas Redbud
Cercis occidentalis	Western Redbud
Cedrus atlantica	Atlas Cedar
Chilopsis linearis	Desert Willow
Cotinus obovatus	American Smoketree
Forestiera neomexicana	New Mexico Privet
Gymnocladus dioica	Kentucky Coffeetree
*Fraxinus cuspidata**	Fragrant Ash
*Juniperus deppeana**	Alligator Juniper*
*Juniperus monosperma**	One Seed Juniper*
*Juniperus virginiana**	Eastern Red Cedar*
Lagerstroemia indica	Crape Myrtle
*Leucaena retusa**	Golden Ball Lead Tree*
Maclura pomifera	Osage Orange
*Parkinsonia x Cercidium**	Palo Verde Hybrids*
Pinus eldarica	Italian Stone Pine
*Pinus pinea**	Afghan Pine*
*Pistacia chinensis**	Chinese Pistache*
*Prosopis glandulosa**	Honey Mesquite*
*Prosopis velutina**	Velvet Mesquite*
Quercus arizonica	Arizona White Oak
Quercus fusiformis	Escarpment Live Oak
Quercus gravesii	Chisos Red Oak
Quercus ilex	Holly Oak
Quercus muehlenbergii	Chinquapin Oak
Quercus oblongifolia	Blue Oak
*Quercus suber**	Cork Oak*
*Sapindus saponaria var. drummondii**	Western Soapberry*
*Sophora secundiflora**	Texas Mountain Laurel*
Rhus lanceolata	Prairie Flameleaf Sumac
*Ulmus x 'Morton' Accolade***	Accolade Elm
Ulmus x 'Frontier'	Frontier Elm
*Ulmus parvifolia**	Lacebark Elm*
Vitex agnus castus	Chaste Tree

* These species have further site specific needs found in Master List

Location Type 5 - Streetscapes with Average Growing Area

Location Characteristics

Follows "Right Tree in the Right Place"

Soil Volume: Sufficient

No Utility Conflicts

Building Setback: >10'

Consider Sidewalks, On-Street Parking, Bike Paths

Median or Parkway Width: ≥ 6'

Examples: Montaño Blvd, Big I Medians, 12th and 4th St., Ridgecrest Neighborhood

Tree Characteristics

Mature Tree Height: Any

Low Litter Potential

Compacted Soil and Pollution Tolerant

Will Require Structural Pruning

Photo Credit: ABCWUA

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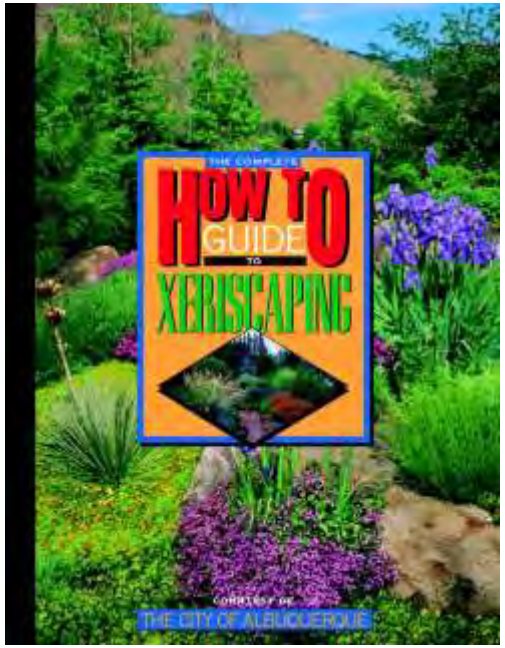
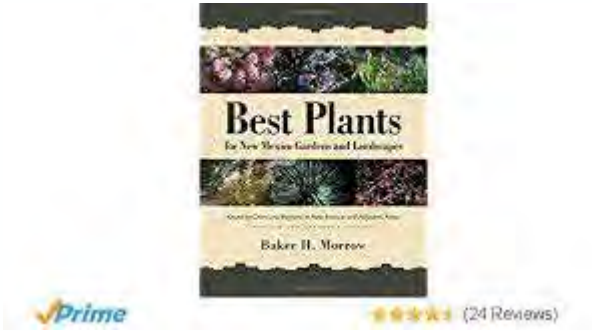
Ulmus x 'Frontier'	Frontier Elm
*Ulmus parvifolia**	Lacebark Elm*
Vitex agnus castus	Chaste Tree
Zelkova serrata	Japanese Zelkova

* These species have further site specific needs found in Master List

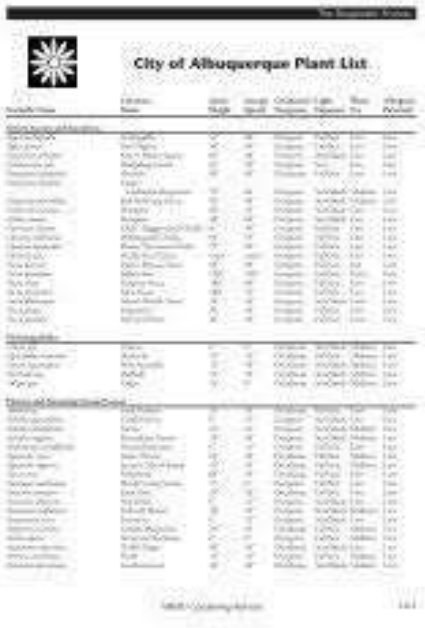
How to approach lists?

Andrew Lisignoli, Trees of Corrales





Denver Street Tree Approved List – another standard reference



Ground Work Leading to Production

Andrew Lisignoli, Trees of Corrales

Steps needed before investment into full scale nursery production:

- Research
- Questions
- Selections
- Trials
- Mother Block Development
- Marketing
- Produce Liners
- Grow Trees for Market

Our Hopes for This List of Climate Ready Trees

- Motivate research leading to selections and production techniques
- Motivate growers and propagators to start the production cycle
- To be better stewards of what we have
- To start these important conversations – the big picture, opportunities, teachable moments

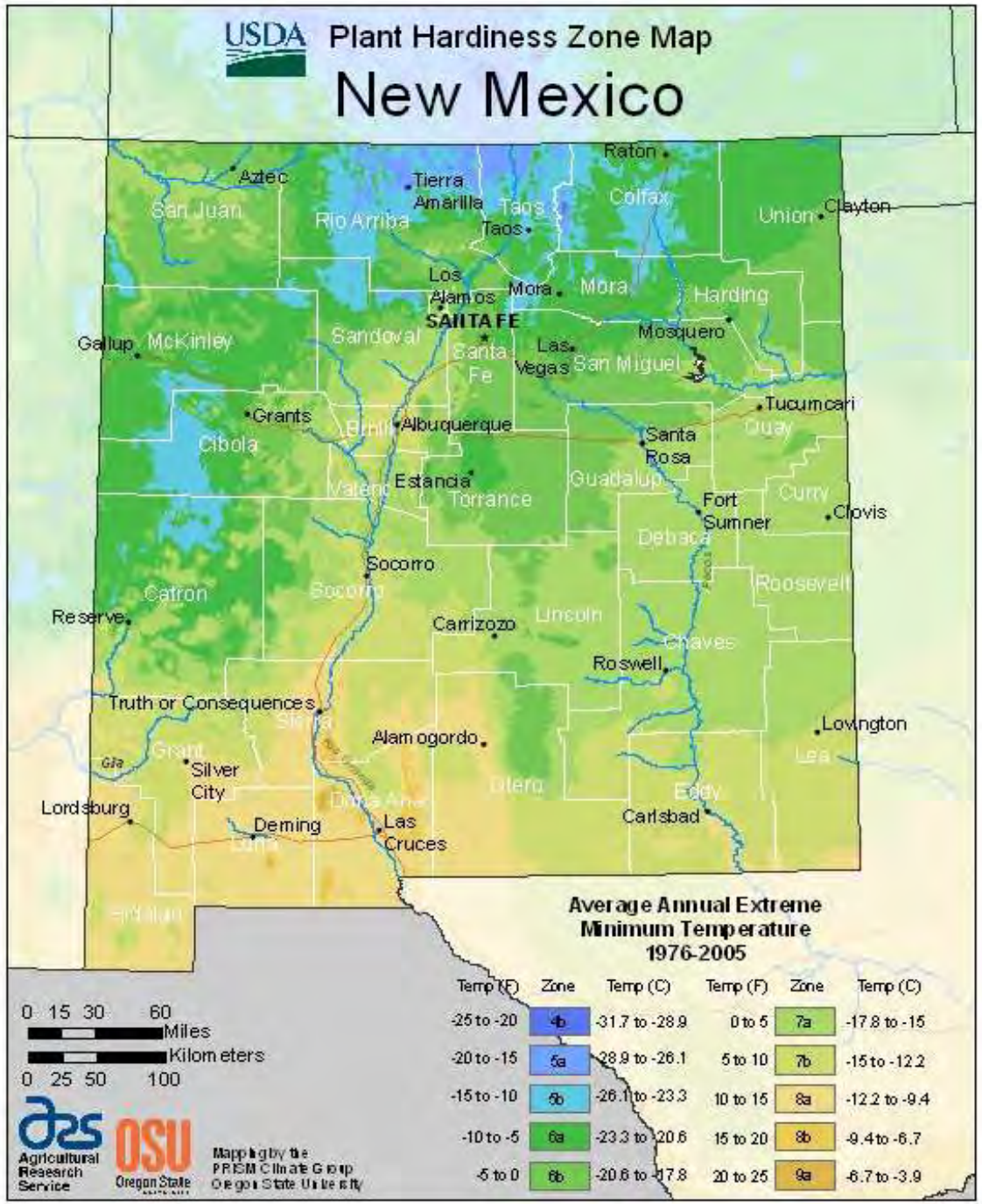
https://www.nature.org/albuquerque/

How to Adapt this Climate Ready Trees Model to Other Areas:

1. Is there a city today with the climate that is predicted for my city in 50 (or 100) years?

2. Do my favorite urban trees thrive in that other city?

If not, be sure to ask why!?



Climate Ready Trees RECAP

One of the most important urban forest climate adaption strategies is the planting and stewardship of trees that are:

- Well-adapted to future conditions, as well as the present conditions!
- Well-suited to Site Growing Conditions
- Species Diverse
- Planted & Mulched Properly!

Words of Caution…

- Plant the youngest specimen you have the patience for
- Know most nursery stock has been poorly pruned and will need your correcting touch
- Saving the runt of the litter leads directly to unhealthy trees in the landscape
- Just because someone sells it, doesn’t mean you have to buy it.

Container-grown and containerized nursery stock

NM STATE

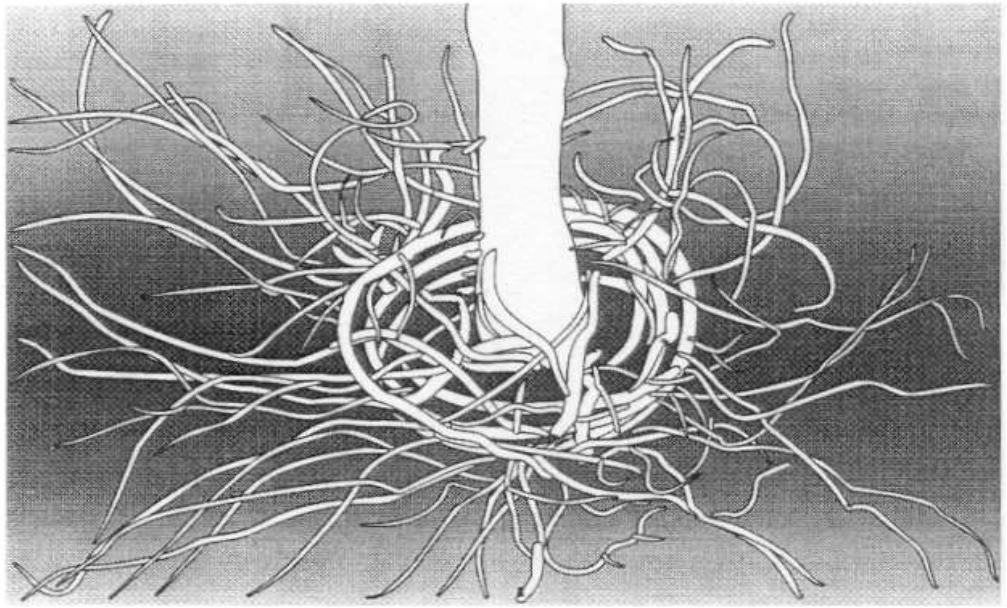
ISA International Society of Arboriculture

https://www.treesaregood.org/

TREES ARE GOOD

Select good plants

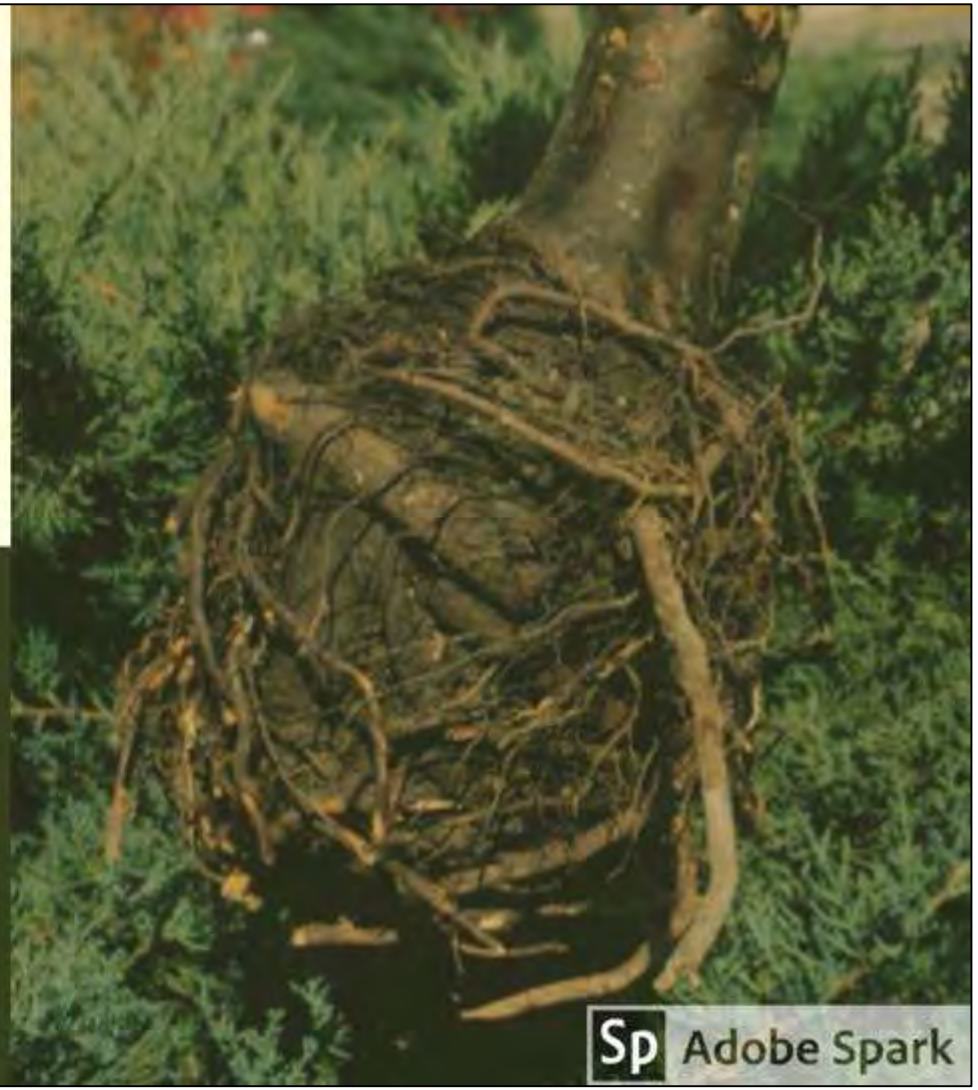
Containerized Plants



5.2. Circling roots that can develop inside containers may become girdling roots later.

Don't let this happen to you!

Inspect root ball when planting and cut any circling roots before they strangle your tree. Plant smarter, not harder.




IT'S
INTERMISSION
TIME, Folks!

Trees & Shrubs

PART 2

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Outline

- Trees and shrubs! in Our Changing Climate
- Species Selection & Specimen Selection
- Tree and shrubs! Anatomy & Root Zones
- Irrigation & Transpiration
- Tree and shrubs! Planting
- Care & Maintenance
- Diagnosing Tree and shrubs! Problems
- Leaf Color Changes, Senescence, and Dormancy

Angel Oak, near Charleston, South Carolina

Are these trees too?

Cork Oak

Quercus suber

Cork Oak

Quercus suber

Tree /tre/ *noun*

a large, woody, perennial plant with a single main trunk

- large: has the potential to grow at least 20 feet tall at maturity**
- woody: contains lignin; has the strength to stand on its own
- perennial: grows for more than two years
- single main trunk: at an early stage may divide into two or more trunk-like branches

** in a temperate climate with reasonable rainfall or irrigation

ABC Tree Stewards

Definition - Is it a Shrub?

Horticultural not a botanic definition

- Woody crown at base
- Multiple stems
- Height ~ Width
- How tall it grows to in the region (15’ for a shrub)
- Author’s preference

Thanks to Margo Murdock

Functions of Shrubs

- Design perspective
  - Understory for trees: fills space
  - Foreground: specimen planting
  - Background: foil for more colorful plants
  - Provide seasonal interest
- Shelter and food for wildlife
- Windbreak
- Privacy
- Barrier
- Erosion control
- Groundcover

Thanks to Margo Murdock

Plant Smarter, Not Harder

Question

True or false:

Plant roots are able to seek out water sources.

Roots

- Roots do not “grow to water,” they grow in moist soil
- Small root hairs do the absorption of water and nutrients
- Roots need 2 things:
    1) Oxygen
    2) Water

    Compacted soils lack air and resist water infiltration

Dealing with Compacted Soils

Low Oxygen, Low Water

- Minimize traffic under trees
- Allow soils to dry between irrigations
- Mulch, mulch, mulch
- Critical Root Radius/Zone

Hardpan layer within the soil profile.

NM STATE UNIVERSITY

Understanding and Managing Soil Compaction in Agricultural Fields

Circular 672

John Idowu and Sangu Angadi[1]

Cooperative Extension Service • College of Agricultural, Consumer and Environmental Sciences

INTRODUCTION

Soil compaction occurs when soil particles are compressed together—especially when the soil is wet—destroying soil structure, reducing porosity, and leading to a more dense soil that is hard for crop roots and water to penetrate. Changes in agricultural practices, such as increased number of field operations and larger equipment, have made soil compaction more common on many fields. Field operations, such as silage crop harvest (Figure 1) when the soil is wet, can lead to severe soil compaction. Grazing cattle on range and farmlands is very common in the Southwest, but compaction due to grazing is short-lived due to freeze/thaw cycles, and the total weight of grazing animals is often not sufficient to initiate deeper compaction (Baumhardt et al., 2011). However, soil puddling (trampling of soil by animals under very wet conditions) can occur due to overgrazing, resulting in structural breakdown at the soil surface and subsequent crust formation when the soil dries out. Soil compaction affects many agricultural fields and can lead to yield reductions if not properly managed. Understanding soil's physical components will help you understand how compaction affects the soil.

Figure 1. **Sorghum harvest in the field.**

SOIL PHYSICAL COMPONENTS

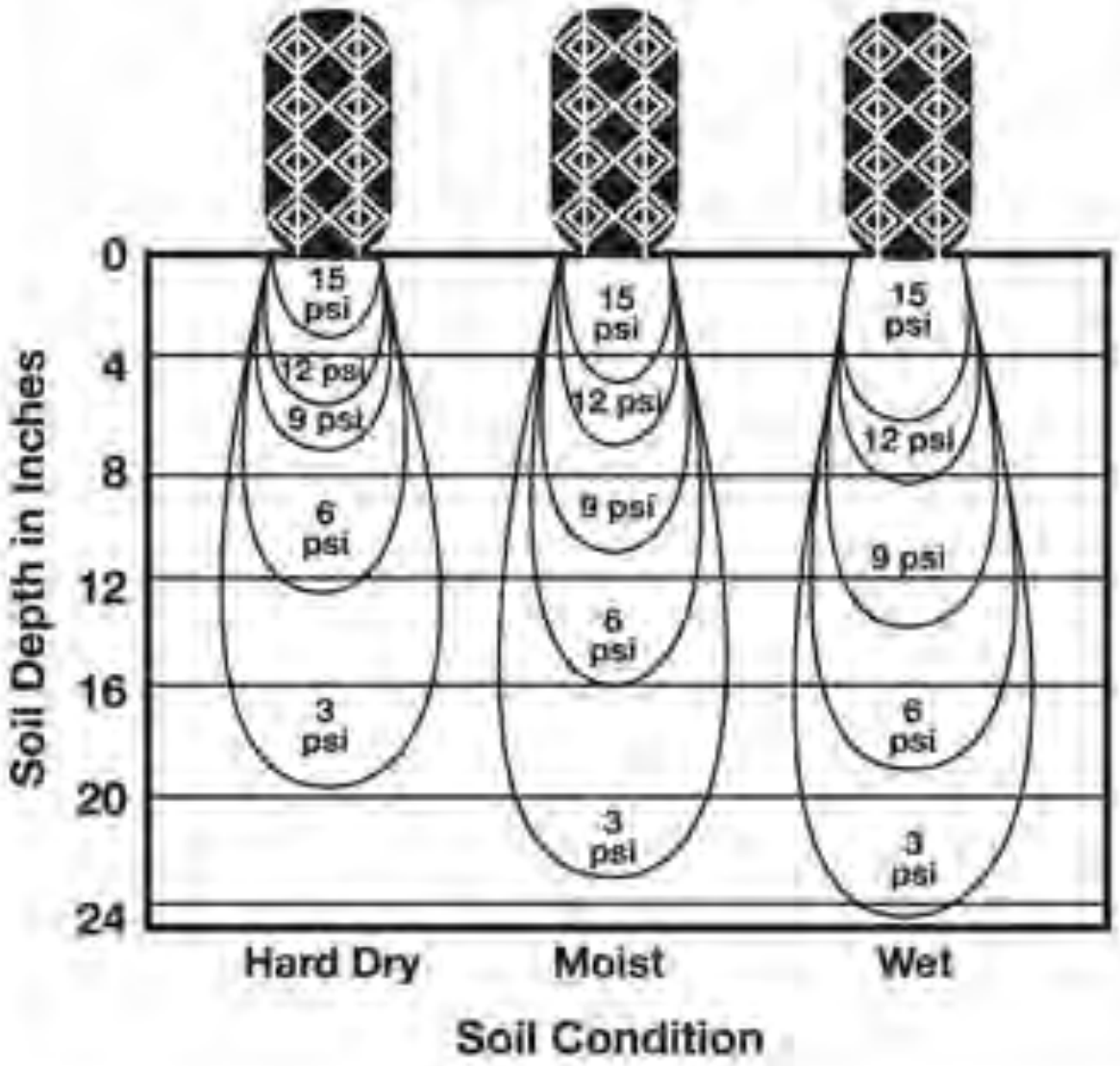
Soil is made up of primary particles called sand, silt, and clay. These particles are classified by size according to the USDA textural classification (from largest to smallest): sand particles are 0.05–2 mm, silt particles are 0.002–0.05 mm, and clay particles are less than 0.002 mm. When arranged in soil, these particles have voids or pores between them, and the pores can be filled with either air or water. In well-balanced soil, the primary particles (sand, silt, and clay) occupy about 45% of the soil volume, while water and air together constitute about 50% of the soil volume. The remaining 5% is the organic component of the soil (Figure 2). The amount of the organic component is highly variable in the soil, depending on factors such as soil management, cropping systems, and climate.

SOIL PORES AND COMPACTION

The pores or voids within the soil give it porosity. The pores in the soil have different sizes: large pores (macropores) have sizes >1 mm, intermediate pores (mesopores) are 0.01–1 mm, and small pores (micropores) are <0.01 mm (Luxmoore, 1981).

[1]Respectively, Extension Agronomist, Department of Extension Plant Sciences, and Crop Physiologist, Agricultural Science Center at Clovis, New Mexico State University.

https://aces.nmsu.edu/pubs/_circulars/CR672/welcome.html



Soil compaction under different soil moisture conditions (Adapted from Soehne, 1958).

Root System

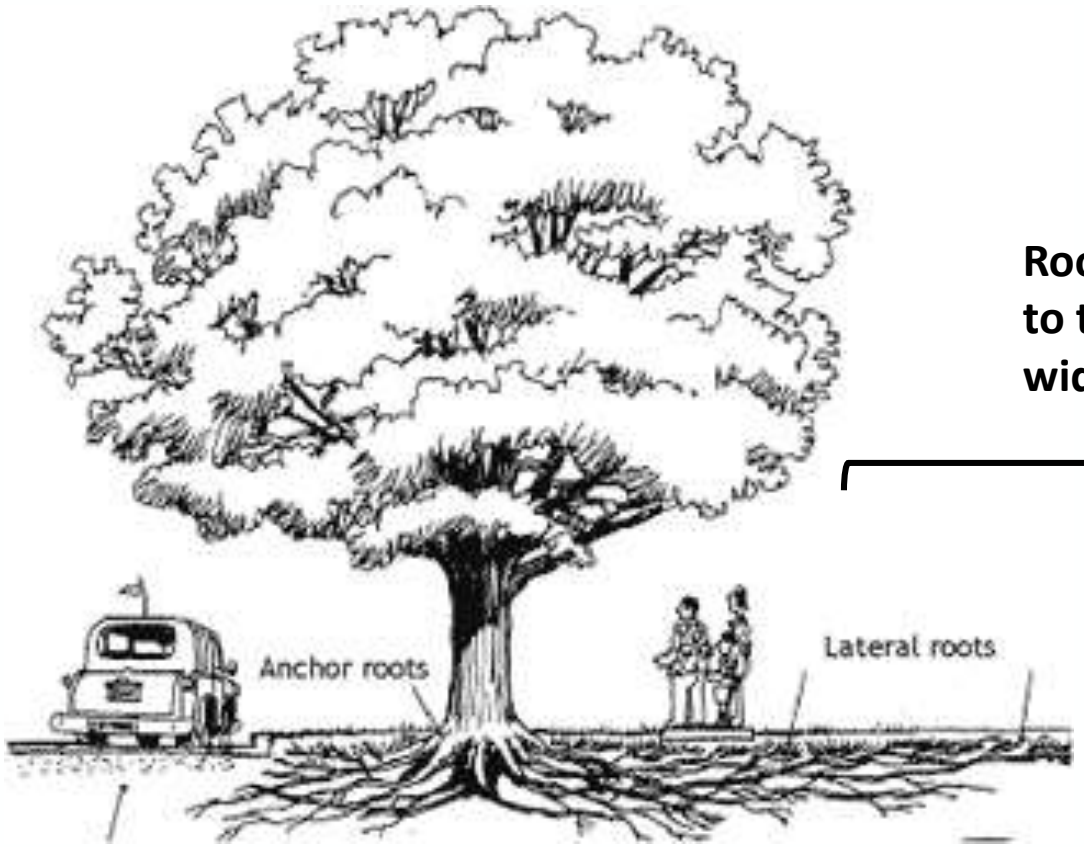
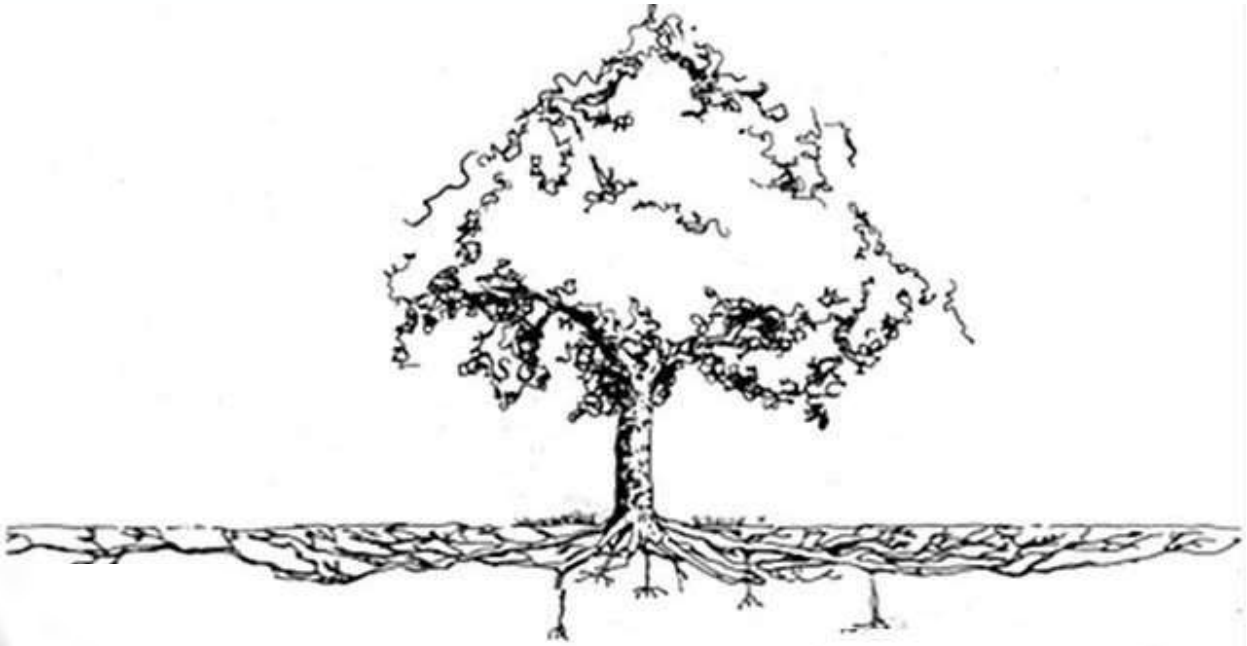
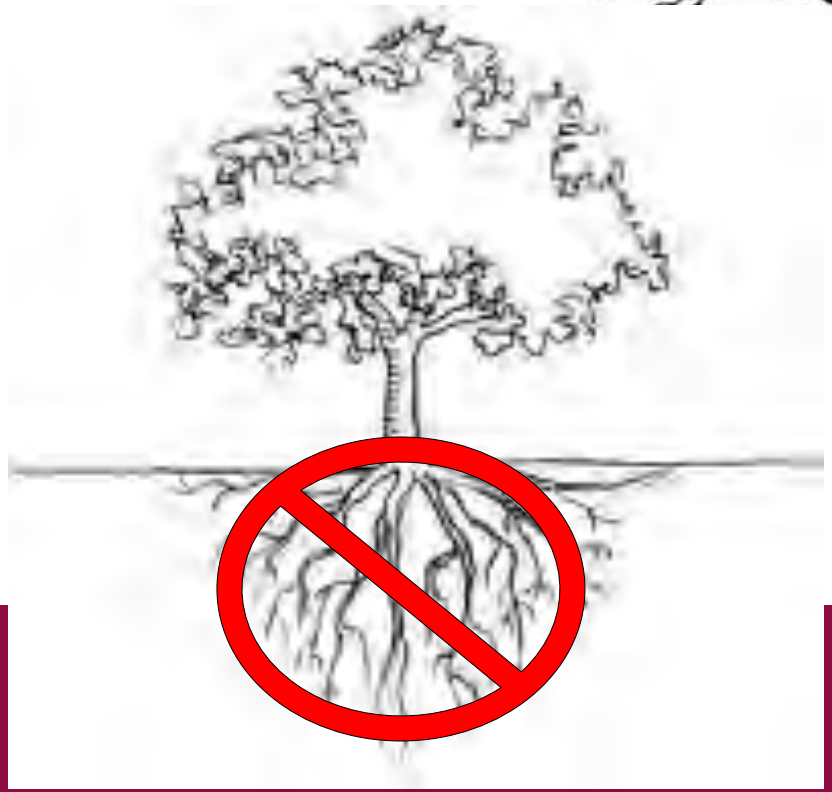


Diagram: ISA

Roots can grow out two to three times the width of the canopy

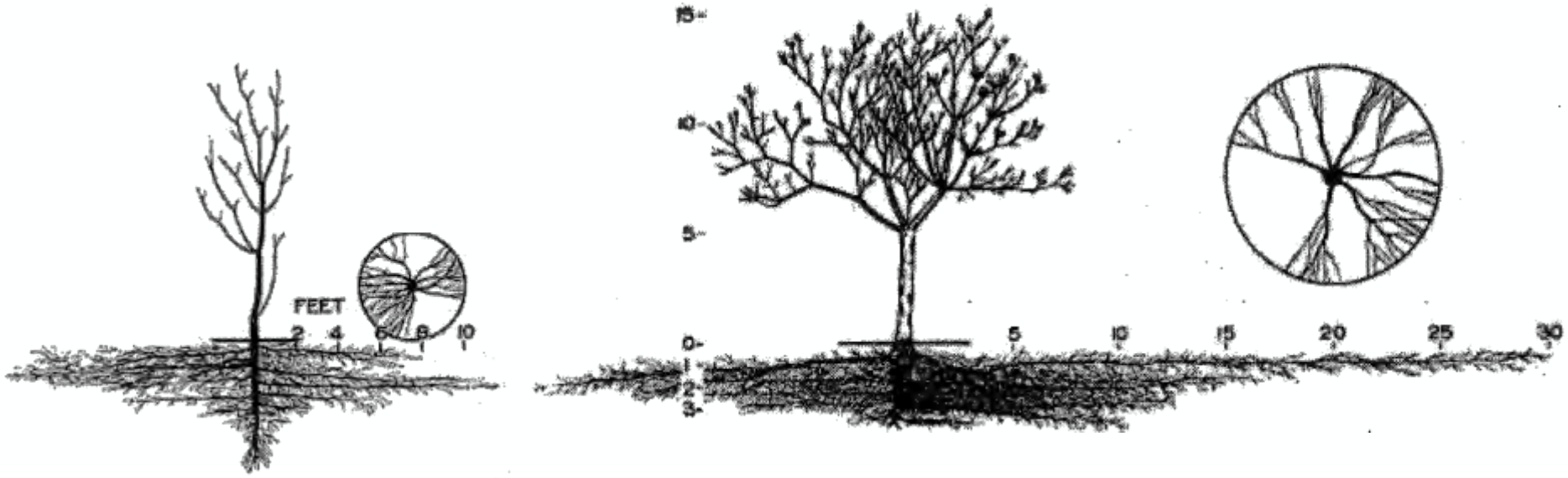
Roots typically stay in the top 1 to 2 feet of soil, to access oxygen, water, and nutrients



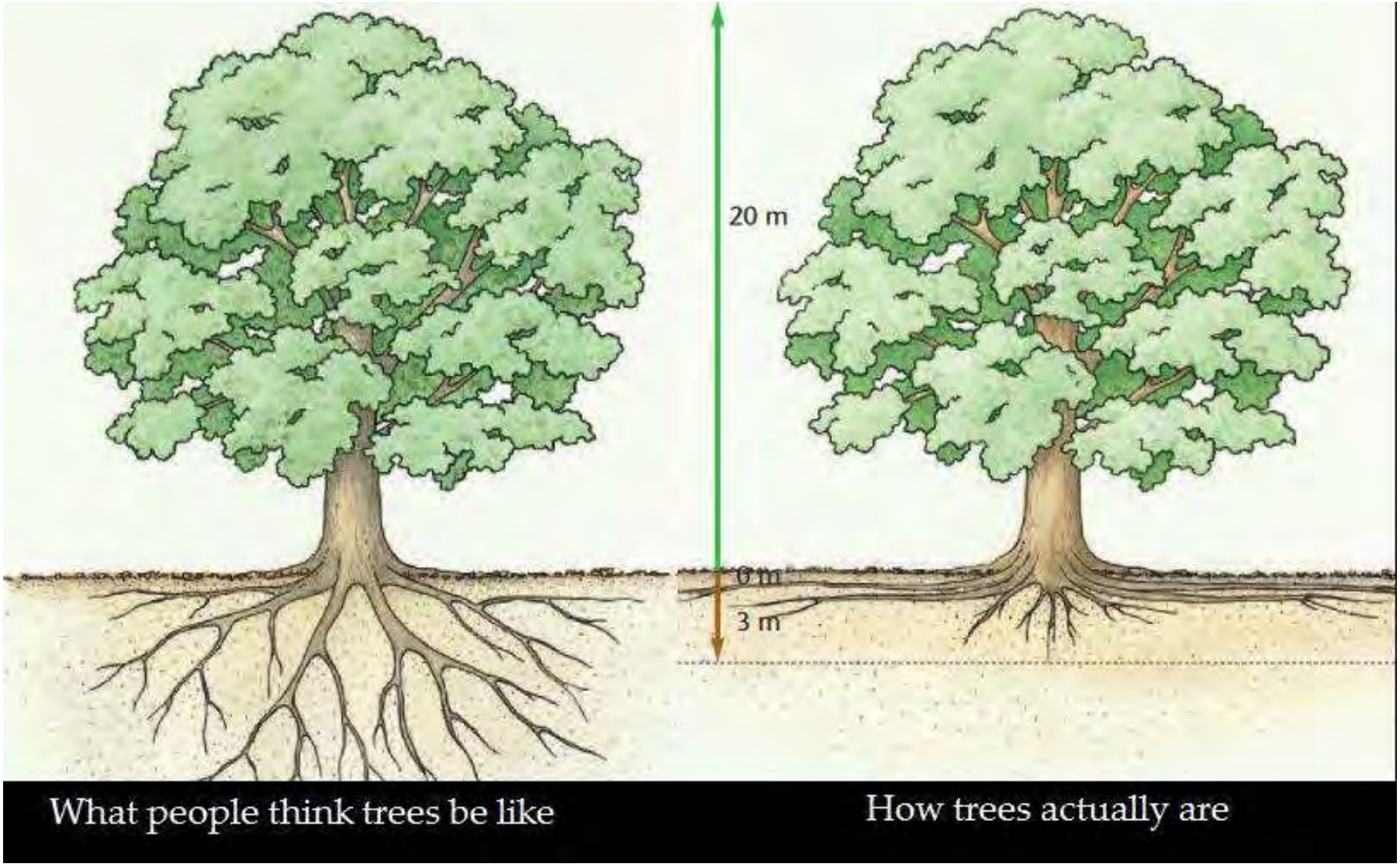


6-year old pecan tree

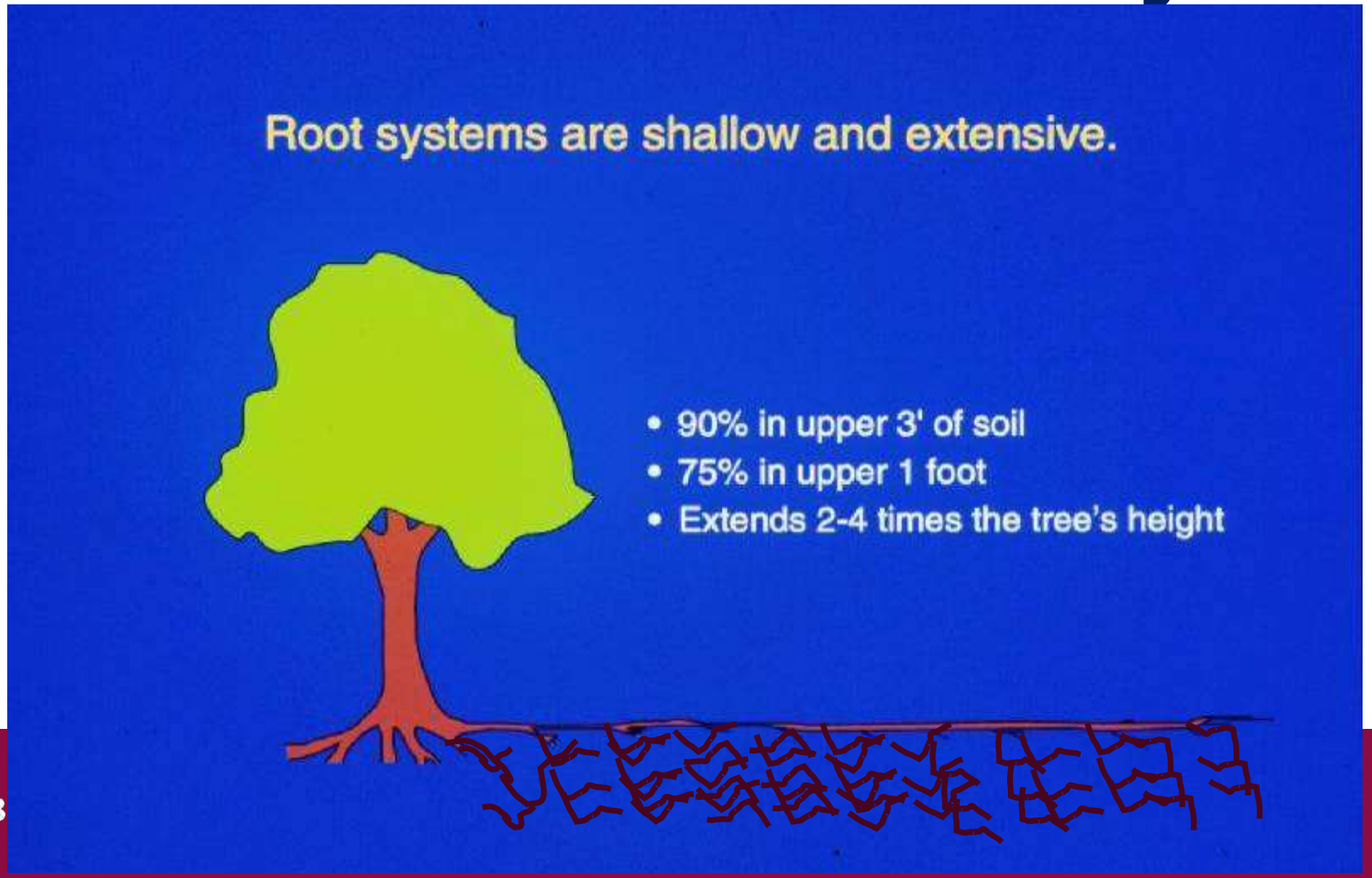
12-year old ‘Success’ pecan tree



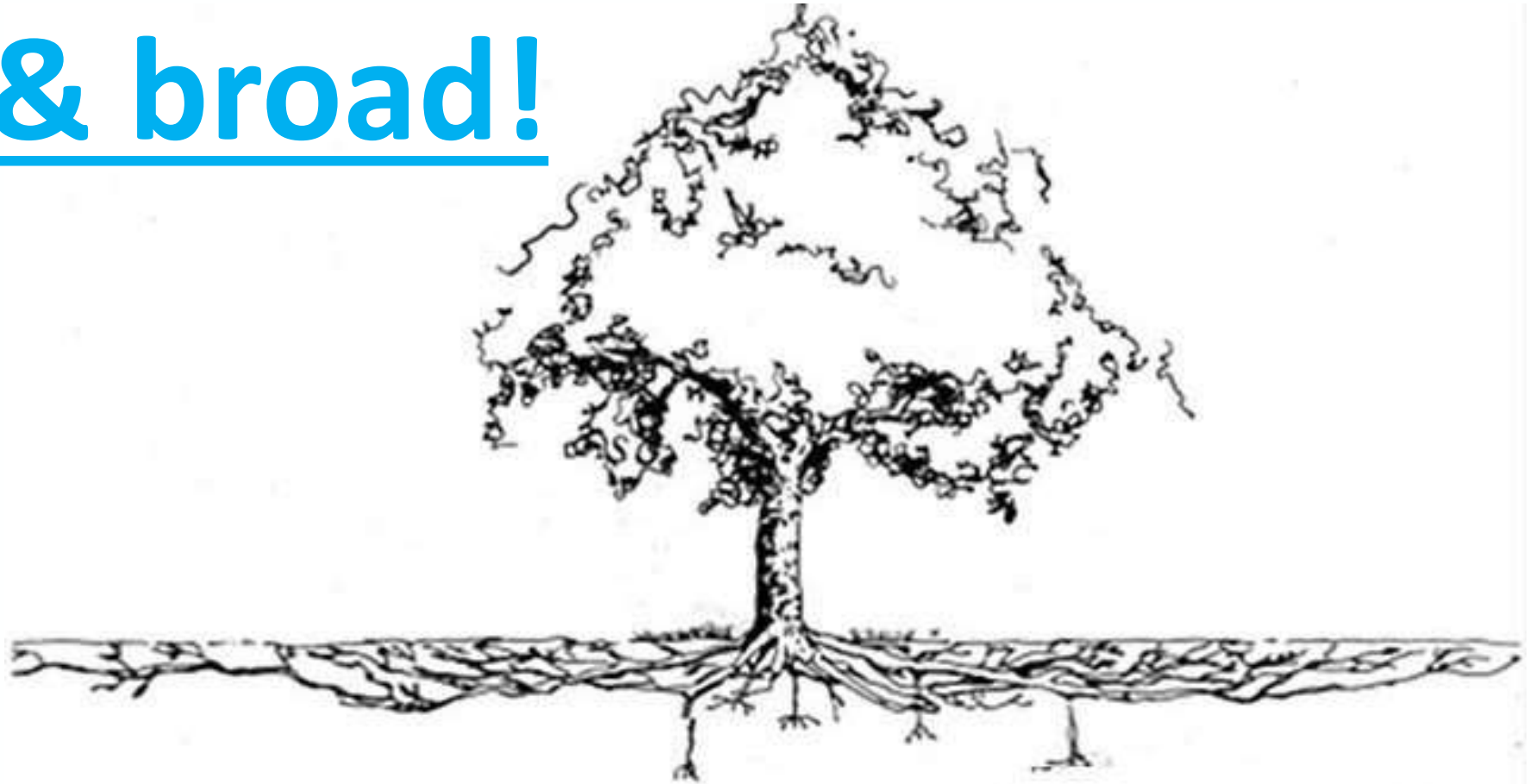
Woodroof, J.G. and N.C. Woodroof. 1934. Pecan Root Growth and Development. Journal of Agricultural Research, 49(6): 511-530.


20 m
0 m
3 m
What people think trees be like
How trees actually are

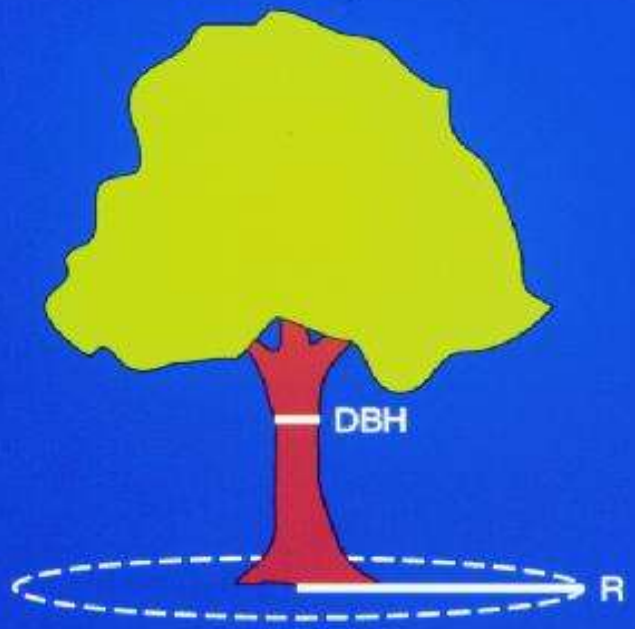
Roots: Where are they?



Active tree roots are shallow & broad!



Critical Root Radius

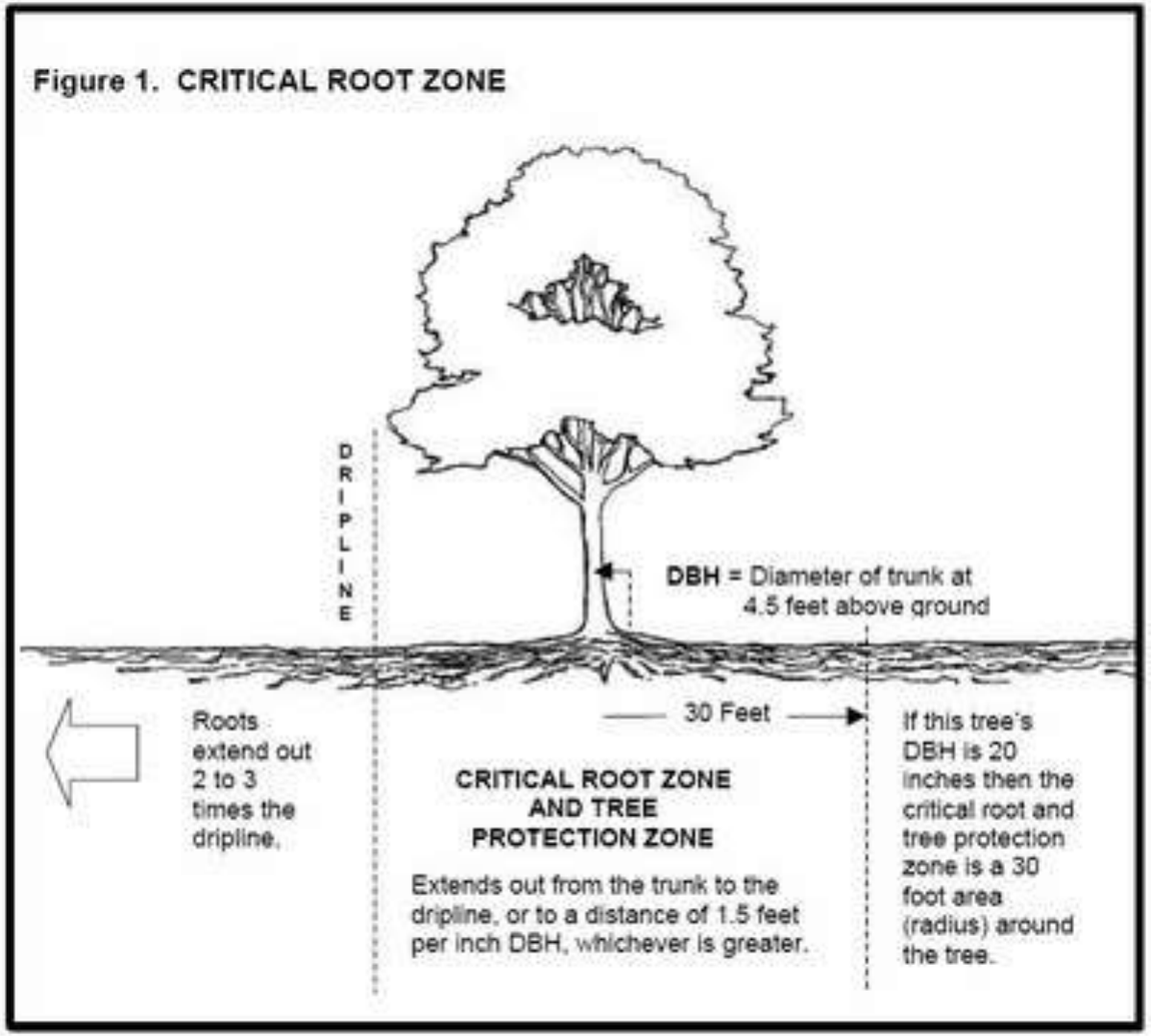


CRR= DBH X 1.5

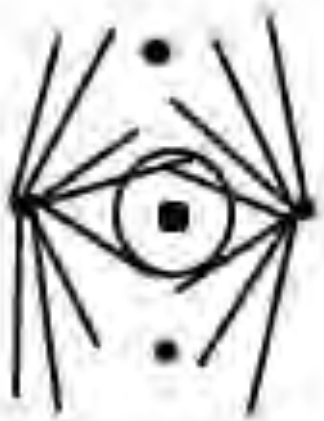
DBH	CRR
5"	7.5'
10	15.0
15	22.5
20	30.0

Critical Root Radius (in feet) = Diameter at Breast Height (in inches) x 1.5

- Cutting large roots near trunk will increase likelihood of tree falling over;
- Try to have no damage with the Critical Root Zone (CRZ).

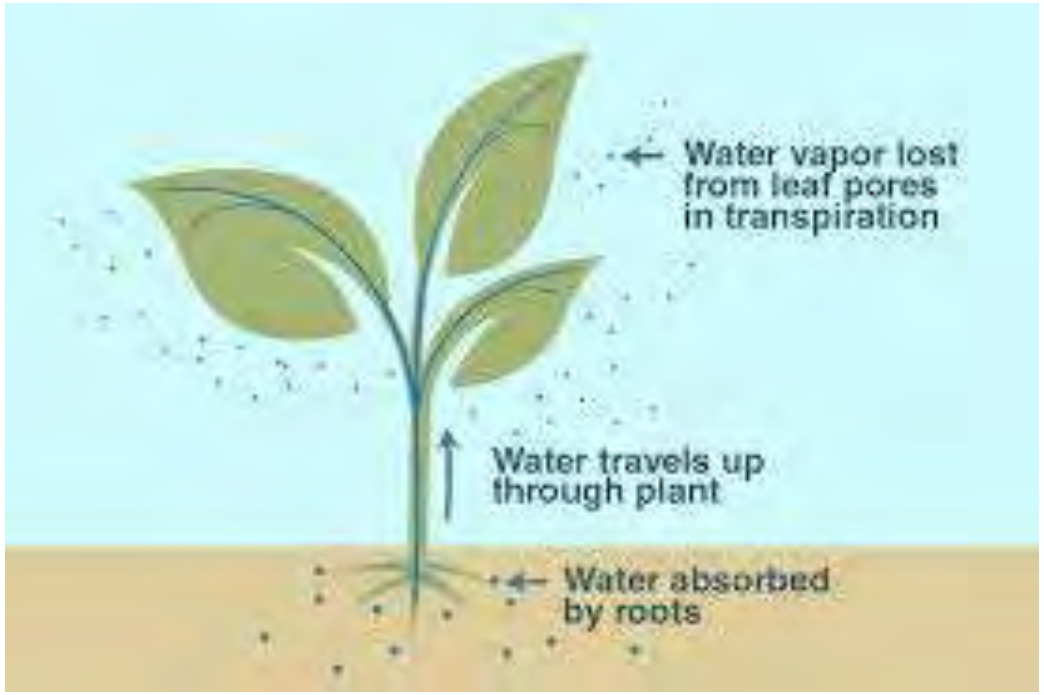


Spray Heads for Trees



Transpiration

- Process of water loss
  - Occurs through the stomata
- Uses 90% of water taken up
- Necessary for cooling and for mineral transport
- Depends on:
  - Temperature
  - Wind
  - Humidity



https://www.youtube.com/watch?v=rMCpFLr_q58

AGGIE EXPERTS

Winter Watering for Established NM-adapted plants (Dec – March)

Type	Days Between Irrigations in Winter	Always Water to a Depth of:
Trees	45-60 days	24-36 inches
Shrubs	45-60 days	18-24 inches
Groundcovers & Vines	30-60 days	8-12 inches
Cacti & Succulents	none	8-12 inches
Warm-Season Grass	45-60 days	6-10 inches
Cool-Season Grass	30 days	6-10 inches

Newer plants and plants not NM-adapted may require more frequent irrigations.

Information from "Arizona & New Mexico Getting Started Garden Guide" by Mary Irish and Judith Phillips.

For more information, contact Marisa Thompson, Urban Horticulture Specialist, desertblooms@nmsu.edu, or visit desertblooms.nmsu.edu.

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New Mexico State University

Irrigation Scheduling Table

from "Arizona & New Mexico Getting Started Garden Guide" by Mary Irish and Judith Phillips, page 225.

How Much and How Often Water to the outer edge of the plant's canopy and to the depth indicated. Watering frequency will vary depending on season, plant type, weather, and soil.		Seasonal Frequency–Days Between Waterings				Water This Deeply (Typical Root Depth)
		Spring Mar.–May	Summer May–Oct.	Fall Oct.–Dec.	Winter Dec.–Mar.	
Trees	Cool desert adapted	14–30 days	7–21 days	14–30 days	45–60 days	24–36 inches
	High water use	7–12 days	7–10 days	7–12 days	14–30 days	24–36 inches
Shrubs	Cool desert adapted	14–30 days	7–21 days	14–30 days	45–60 days	18–24 inches
	High water use	7–10 days	5–7 days	7–10 days	10–14 days	18–24 inches
Groundcovers and Vines	Cool desert adapted	14–30 days	7–21 days	14–30 days	30–60 days	8–12 inches
	High water use	7–10 days	2–5 days	7–10 days	10–14 days	8–12 inches
Cacti and Succulents	Cool desert adapted	30–45 days	30–45 days	45–60 days	none	8–12 inches
Annuals	Cool desert adapted	5–10 days	2–5 days	3–7 days	10–14 days	8–12 inches
Warm-Season Grass	Cool desert adapted	14 days	7 days	14–21 days	45–60 days	6–10 inches
Cool-Season Grass	Cool desert adapted	7–10 days	2–3 days	7–14 days	30 days	6–10 inches

These guidelines are for established plants (1 year, 3 years for trees). Additional water is needed for new plants or unusually hot or dry weather. Less water is needed during cooler rainy weather. Drip run times are typically 2 hours or more for each watering.

Landscape Watering Guidelines for New Mexico

Irrigation

- Know where the root system is actively absorbing water.
  - Depth
  - Root extent
- Always water to the same depth.
- Don’t irrigate the trunk!

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Planting a Tree – Part 1

https://www.treesaregood.org/treeowner/plantingatree

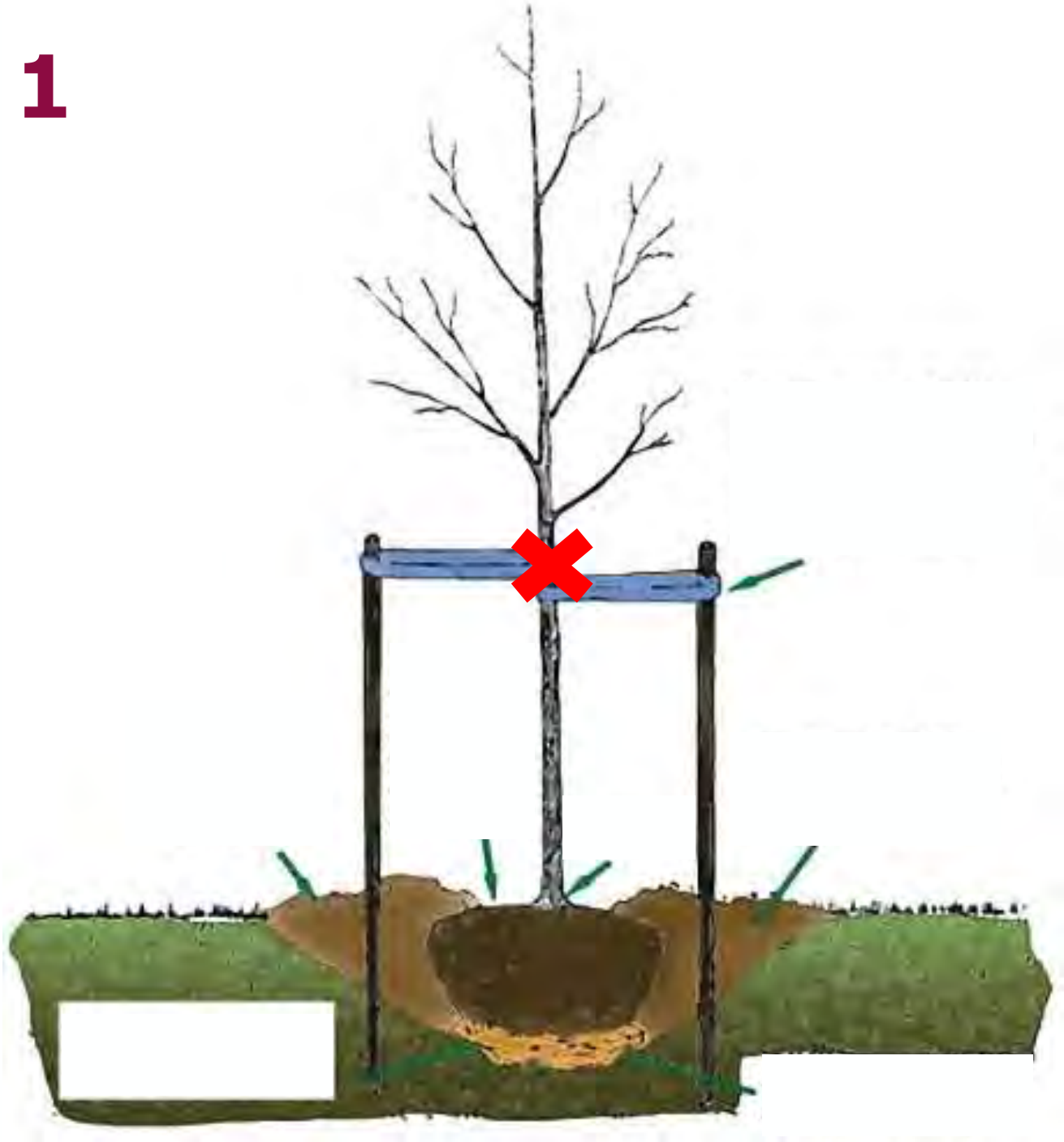
- **Locate all underground utilities prior to digging.**

- **Identify the trunk flare.** The trunk flare is where the trunk expands at the base of the tree. This point should be partially visible after the tree has been planted.

- **Dig a shallow, broad planting hole.** Holes should be 2-3 times wider than the root ball, but only as deep as the root ball.

- **Remove the containers or cut away the wire basket.** Inspect container tree root balls for circling roots. Straighten, cut, or remove them.

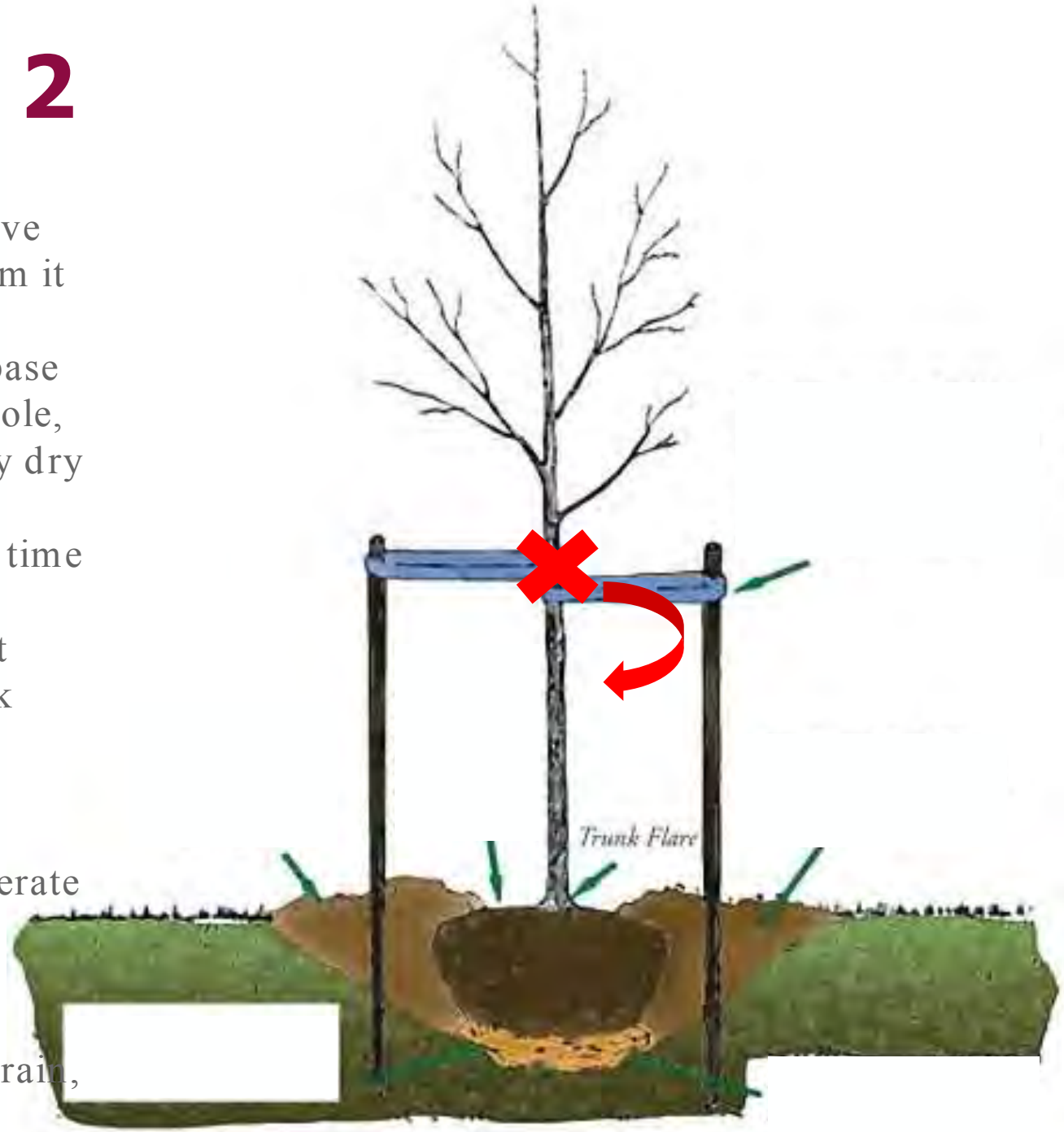
- **Place the tree at the proper height.** Take care to dig the hole to the proper depth – and no more. If the tree is planted too deep, new roots will have difficulty developing because of a lack of oxygen.



Planting a Tree – Part 2

https://www.treesaregood.org/treeowner/plantingatree

- **Straighten the tree in the hole.** Before backfilling, have someone view the tree from several directions to confirm it is straight.
- **Fill the hole gently, but firmly.** Pack soil around the base of the root ball to stabilize it. Fill the remainder of the hole, firmly packing the soil to eliminate air pockets that may dry out roots. Further reduce air pockets by watering periodically while backfilling. Avoid fertilization at the time of planting.
- **Stake the tree, if necessary.** Studies have shown that trees establish more quickly and develop stronger trunk and root systems if they are not staked at the time of planting.
- **Mulch the base of the tree.** Mulch is organic matter spread around the base of a tree to hold moisture, moderate soil temperature extremes, and reduce grass and weed competition. Learn more about proper mulching
- **Provide follow-up care.** Keep the soil moist, but not water-logged. Water trees at least once a week, barring rain, and more frequently during hot, windy weather.



Trunk Flares

"*You should be able to SEE the topmost root just barely at the soil surface after planting*." – Denise Britton

Photo credit Wikimedia Commons

Deep Planting

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ISA International Society of Arboriculture

TREES ARE GOOD

It’s not too late to correct if you have planted deep. You can always carefully excavate the soil and expose the root collar.

Applied correctly, mulches offer the following benefits:

1. Inhibit weed germination and growth
2. Hold in soil moisture
3. Prevent water and wind erosion
4. Prevent surface soil crusting
5. Moderate soil temperature fluctuations
6. Protect plant roots from winter cold and helps prevent frost-heaving
7. Organic mulches can provide much-needed nutrients.
8. Organic mulches can feed the beneficial soil biota.
9. Organic mulches applied over a period of years can increase organic matter and improve the soil texture.
10. Organic mulches applied over a period of years can enhance the soil's ability to store plant nutrients.

Keep mulch away from trunk

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Volcano Mulching

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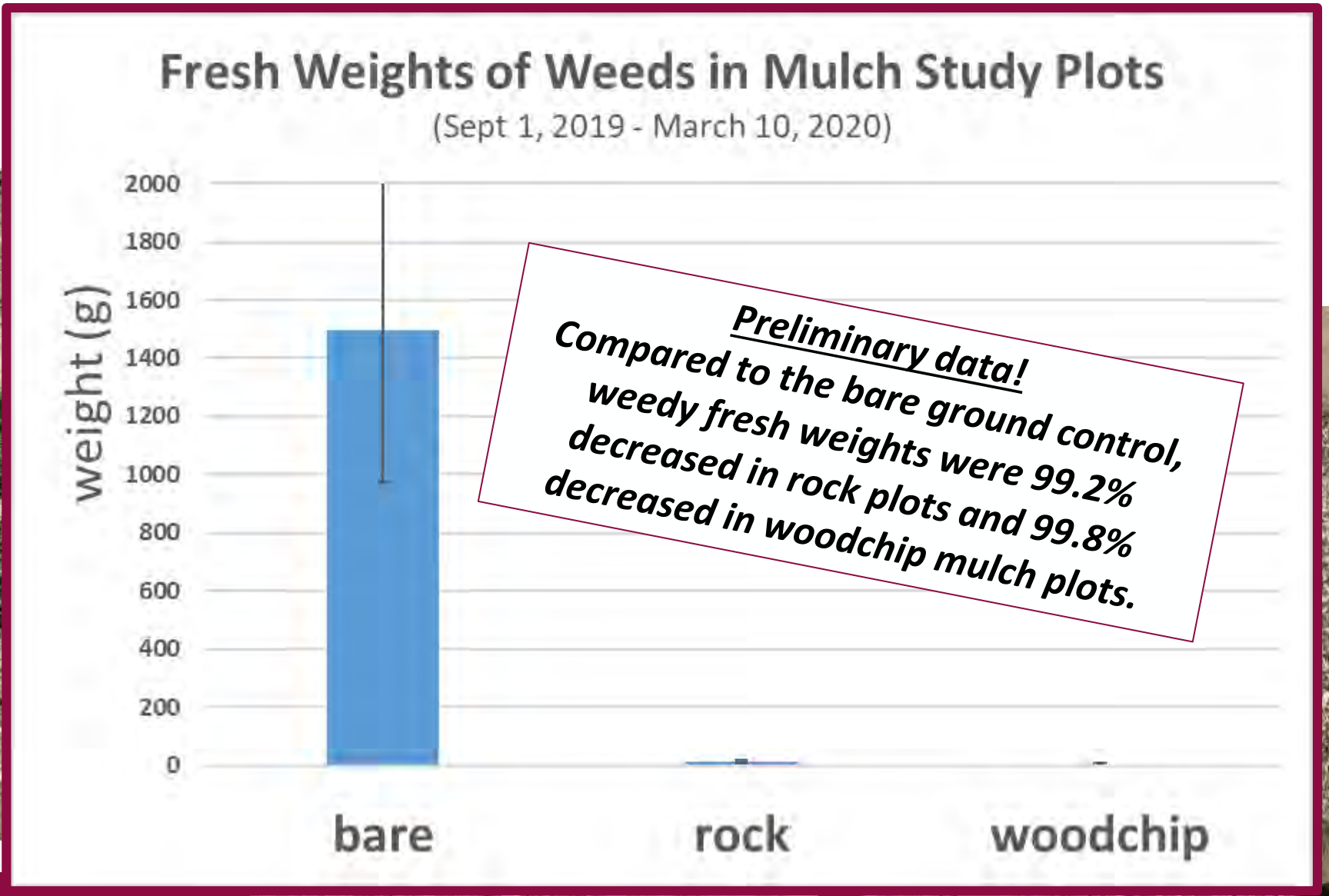
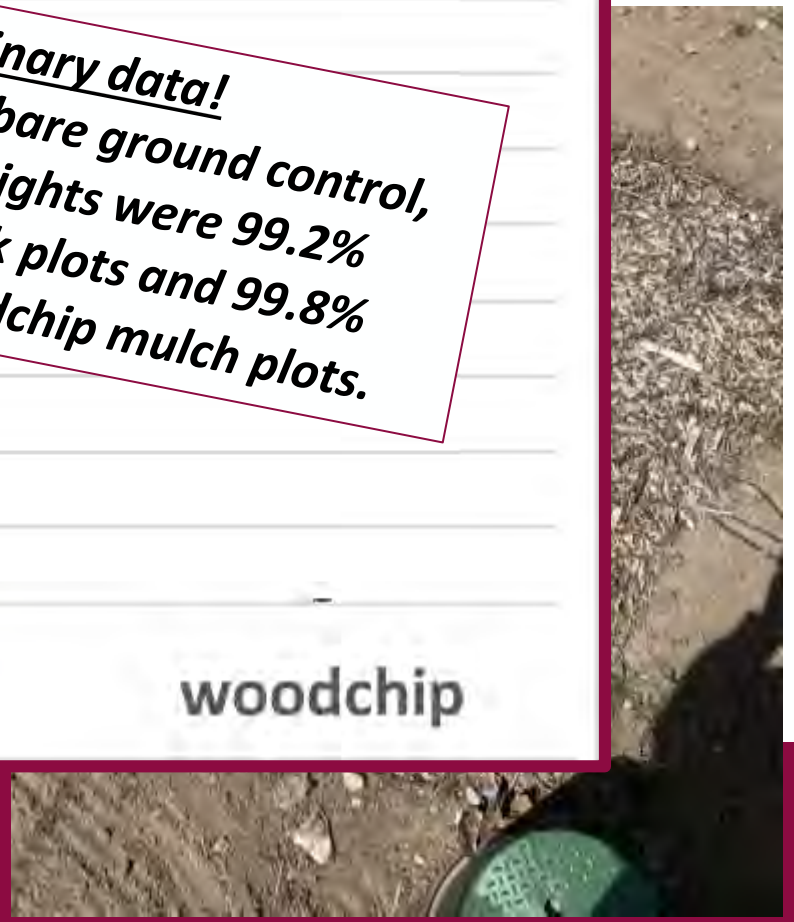
“Bare Ground” Plot





Improper stabilization

NM STATE

ISA International Society of Arboriculture

TREES ARE GOOD™ www.treesaregood.org


THE BUCKETS
© 1998 United Feature Syndicate, Inc. 9/24
STANTIS
!
BE FREE!
I WONDERED WHY THAT KEPT HAPPENING...

Improper Staking Kills!

Southwest Injury (aka Sunscald)

Ash tree in Belen

Northeast side of trunk

Southwest side of trunk

‘Spring Snow’ Crabapple

Northeast side of trunk

Southwest side of trunk

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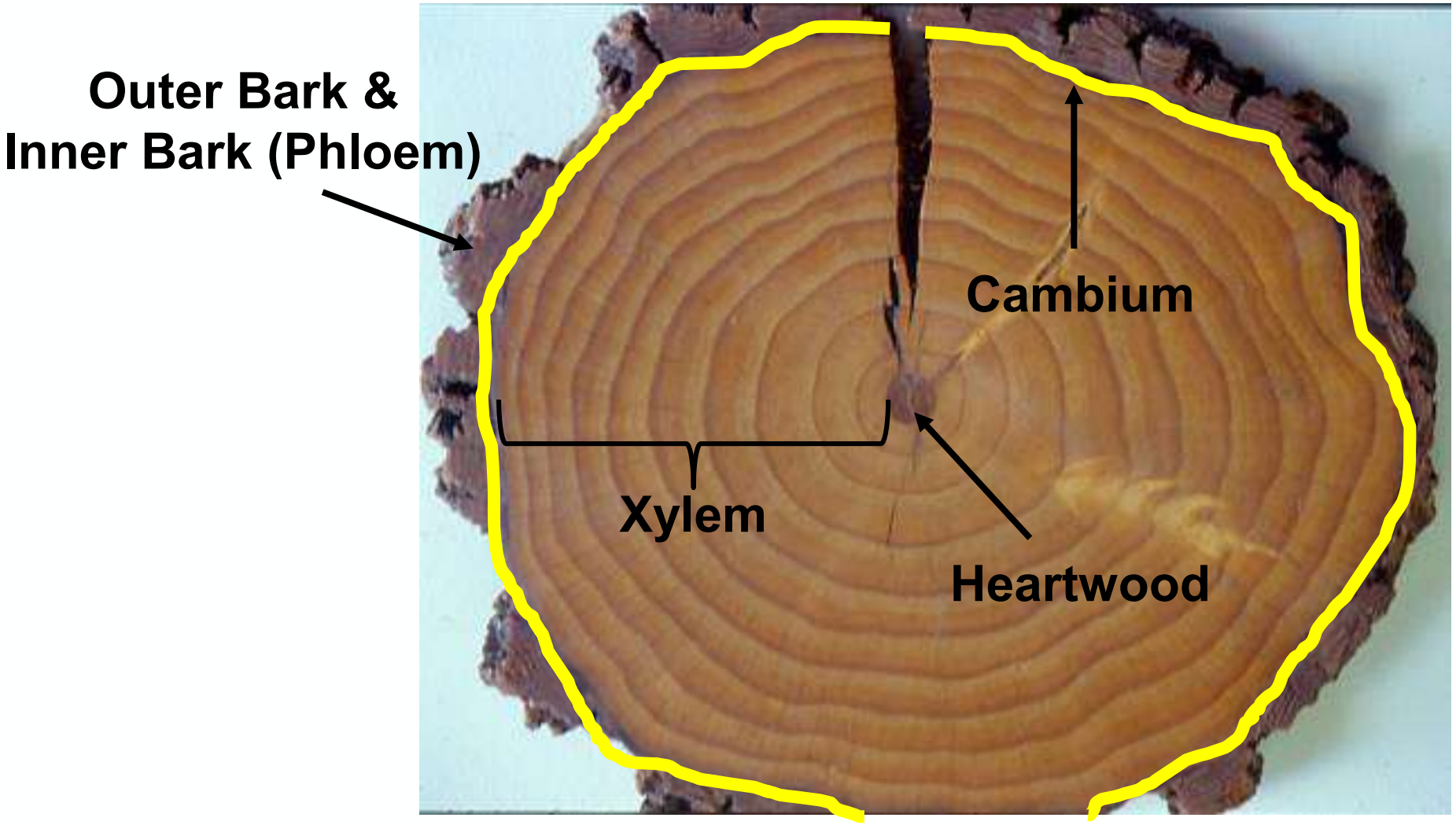
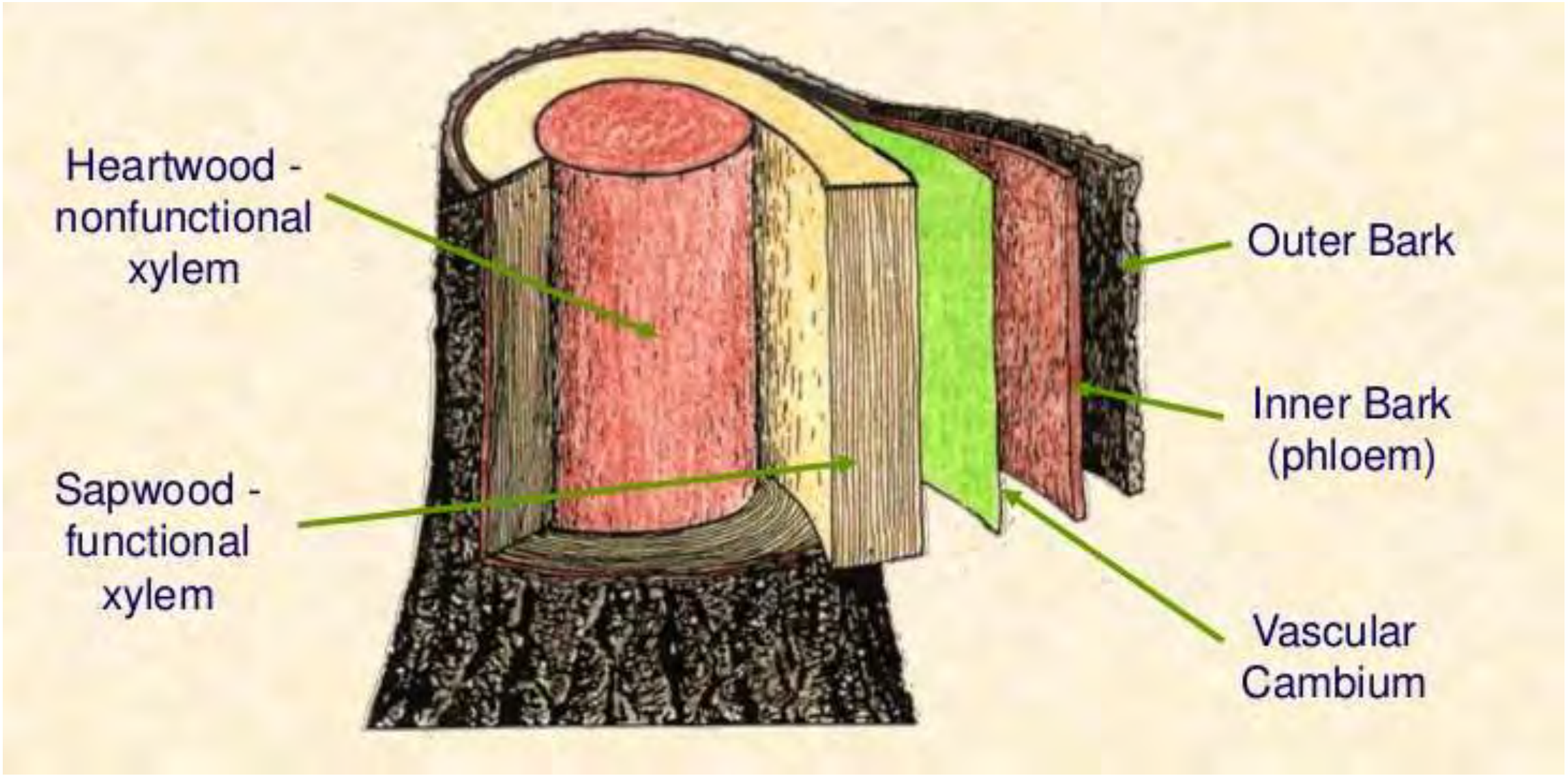
- Leaf Color Changes, Senescence, and Dormancy
- TIP FOR FINDING ANSWERS ON THE INTERNET!


Outer Bark &
Inner Bark (Phloem)
Cambium
Xylem
Heartwood


Heartwood - nonfunctional xylem
Sapwood - functional xylem
Outer Bark
Inner Bark (phloem)
Vascular Cambium

“#1 cause of preventable tree damage and death in Albuquerque parks is **string trimmers**”

(aka weed whackers)

Joran Viers

ABQ Urban Forester

Mower & String Trimmer Damage

Trees to Avoid

- Aspens
- Bradford pear
- Willows
- Sweet gum
- Leyland false cypress
- Green ash
- Catalpa
- Chitalpa
- Most maples…

Aspens can’t take the heat in the City.

Develop leaf and trunk diseases after the heat and drought stress weaken them.

OK in higher mountains, wetter and cooler microclimates.

Short-lived at best.


Death-throes
of a globe
willow.

Typical Albuquerque Sweet gum.

Leyland false cypress needs lots of water; poorly defended against disease and insects.


Drought stress
on a green ash.

Magnificent catalpa dying of thirst.

Chitalpa summer foliage due to *Xylella fastidiosa.*


It's a maple,
say no more…

The right trees in the right place!

Know your Plant

- When does it flower?
- When does it set bud?
- Does it flower on old or new wood? Is it planted for evergreen or foliage?
- These determine what time of year to prune.
- How old is it?
- Where is it sited?
- What type of pruning is appropriate for your plant?

Thanks John Garlisch

“People who prune the old-fashioned way should be made to go to an old-fashioned dentist.”

-From Dr. Al Shigo’s book, *Tree Pithy Points: Brief messages of tree biology, tree care, and philosophy*

Trees & Shrubs

PART 3

EXTENSION MASTER GARDENERS
2020

Dr. Marisa Thompson

College of Agricultural, Consumer, and Environmental Sciences

Extension Horticulture Specialist

Department of Extension Plant Sciences

NM STATE UNIVERSITY

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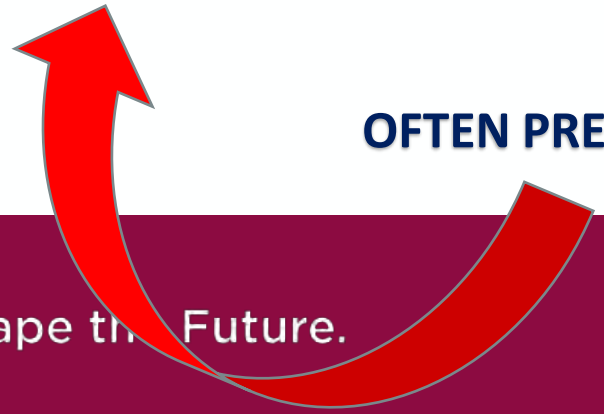
Abiotic disorders often predispose the tree to biotic disorders!

Biotic

- Fungi
- Bacteria
- Viruses
- Nematodes
- Insects & Mites

Abiotic

- Soil moisture extremes
- Temperature extremes
- Salts
- Air pollution
- Wind, light effects
- Mechanical damage
- Pesticide damage
- Old age



OFTEN PREDISPOSED TO BIOTIC!

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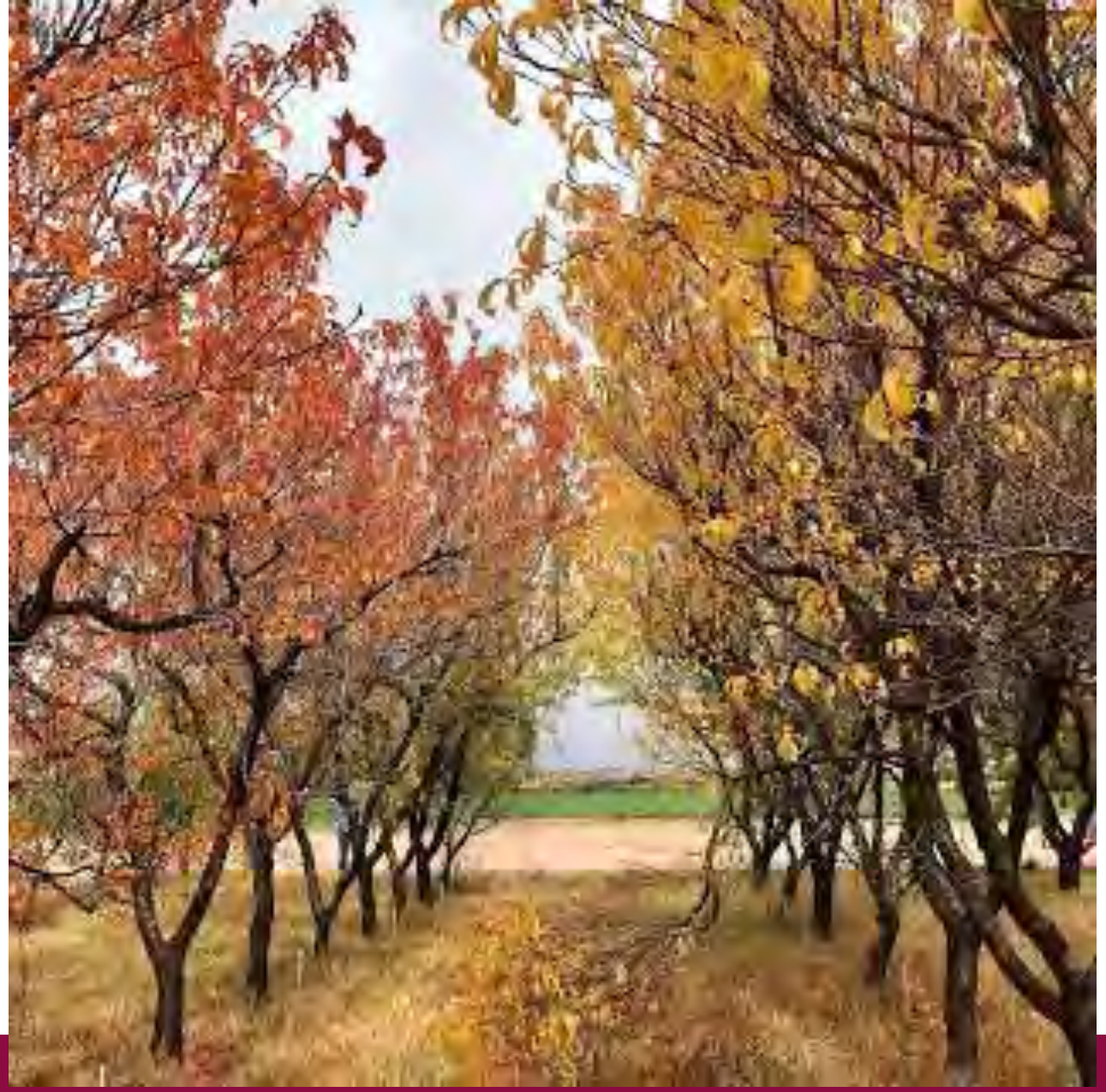
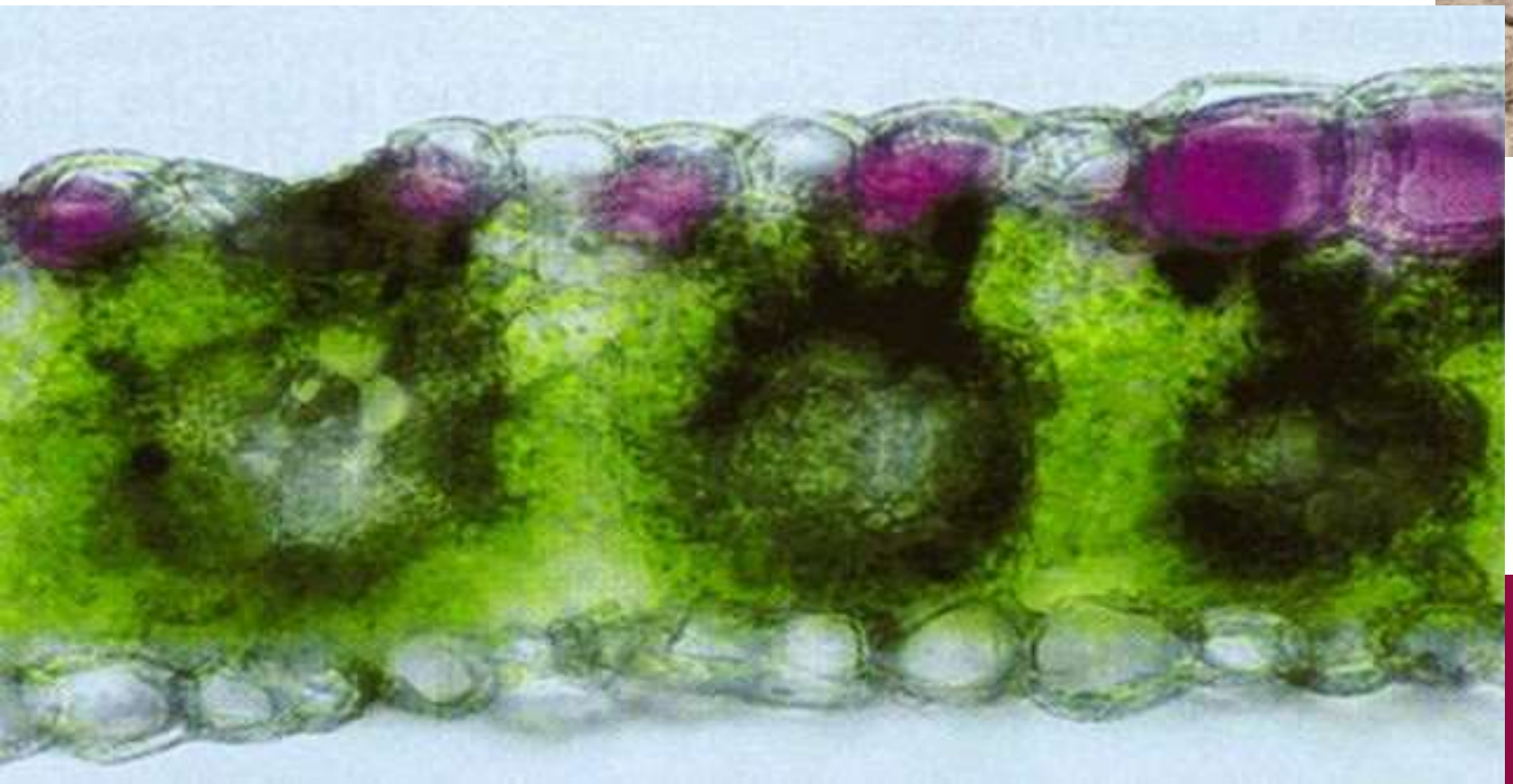
BE BOLD.





Spiderwort Plants

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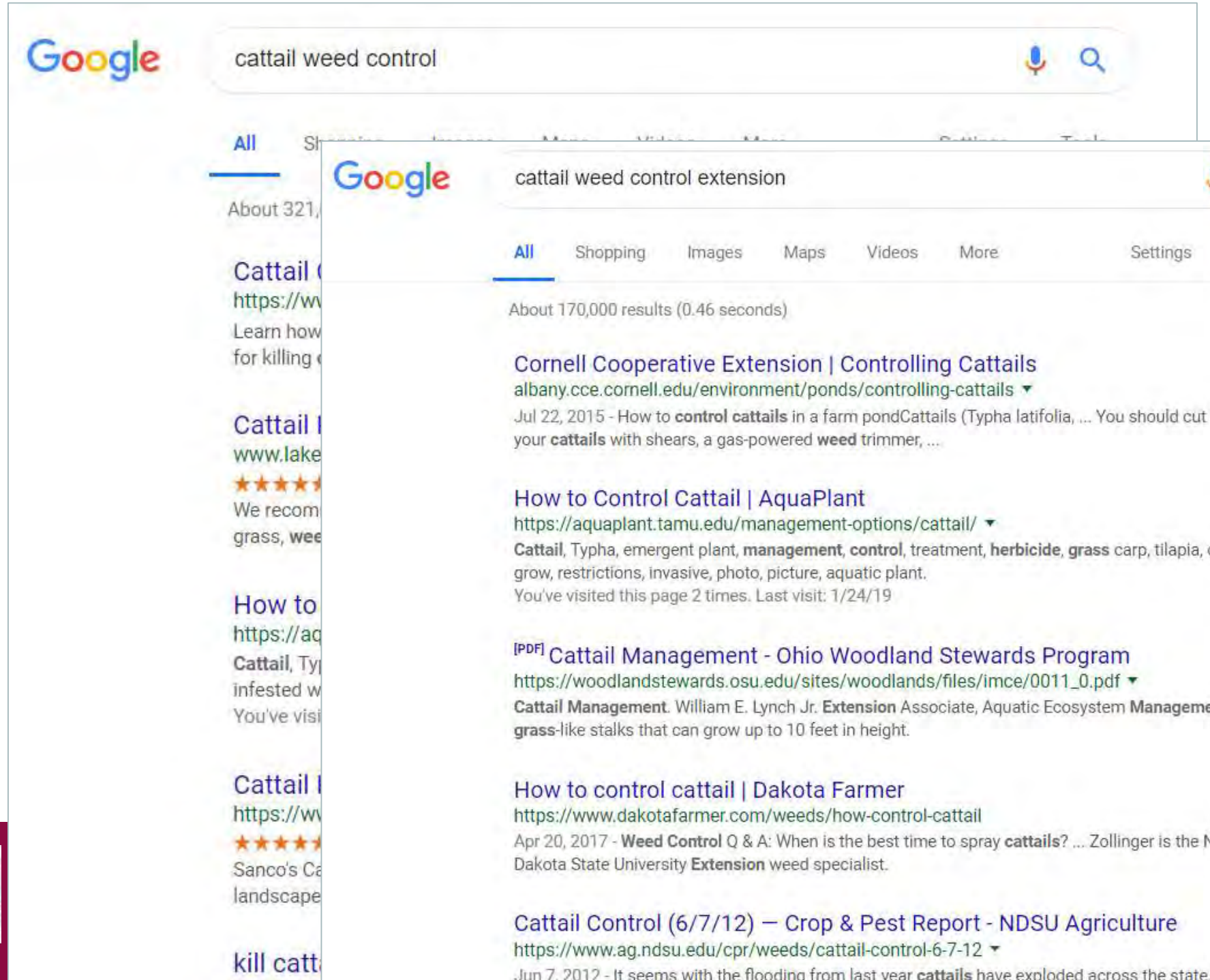
Google
cattail weed control
All
About 321,
Cattail
https://w
Learn how
for killing
Cattail
www.lake
We recom
grass, wee
How to
https://aq
Cattail, Ty
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https://w
Sanco's Ca
landscape
kill catt
Google
cattail weed control extension
All
Shopping
Images
Maps
Videos
More
Settings
Tools
About 170,000 results (0.46 seconds)
Cornell Cooperative Extension | Controlling Cattails
albany.cce.cornell.edu/environment/ponds/controlling-cattails
Jul 22, 2015 - How to control cattails in a farm pondCattails (Typha latifolia, ... You should cut or mow your cattails with shears, a gas-powered weed trimmer, ...
How to Control Cattail | AquaPlant
https://aquaplant.tamu.edu/management-options/cattail/
Cattail, Typha, emergent plant, management, control, treatment, herbicide, grass carp, tilapia, cultivate, grow, restrictions, invasive, photo, picture, aquatic plant.
You've visited this page 2 times. Last visit: 1/24/19
[PDF] Cattail Management - Ohio Woodland Stewards Program
https://woodlandstewards.osu.edu/sites/woodlands/files/imce/0011_0.pdf
Cattail Management. William E. Lynch Jr. Extension Associate, Aquatic Ecosystem Management ... grass-like stalks that can grow up to 10 feet in height.
How to control cattail | Dakota Farmer
https://www.dakotafarmer.com/weeds/how-control-cattail
Apr 20, 2017 - Weed Control Q & A: When is the best time to spray cattails? ... Zollinger is the North Dakota State University Extension weed specialist.
Cattail Control (6/7/12) — Crop & Pest Report - NDSU Agriculture
https://www.ag.ndsu.edu/cpr/weeds/cattail-control-6-7-12
Jun 7, 2012 - It seems with the flooding from last year cattails have exploded across the state. Many

Do you know someone who would love a career in the plant sciences?!

NMSU Department of Plant & Environmental Sciences

https://youtu.be/xl8eqGPZjDU

Majors in our Department

- Agronomy
- Environmental Science
- Genetics
- Horticulture
- Soil Science
- Turfgrass Science and Management
- An interdisciplinary graduate degree program in Water Science and Management.

First Day of School

First Day of New Job as NMSU's Extension Urban Horticulture Specialist

Thanks!

Marisa Thompson

NMSU Extension Horticulture Specialist

https://nmsudesertblooms.blogspot.com/

Social Media

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@NMSUViticulture