



**CENTRAL
TEXAS
FOOD
BANK**

Fruit & Nut Trees

for the

Home Landscape

Greg Mast, Gardener

Central Texas Food Bank



The mission of the Central Texas Food Bank is to nourish hungry people and lead the community in ending hunger.

What we'll cover

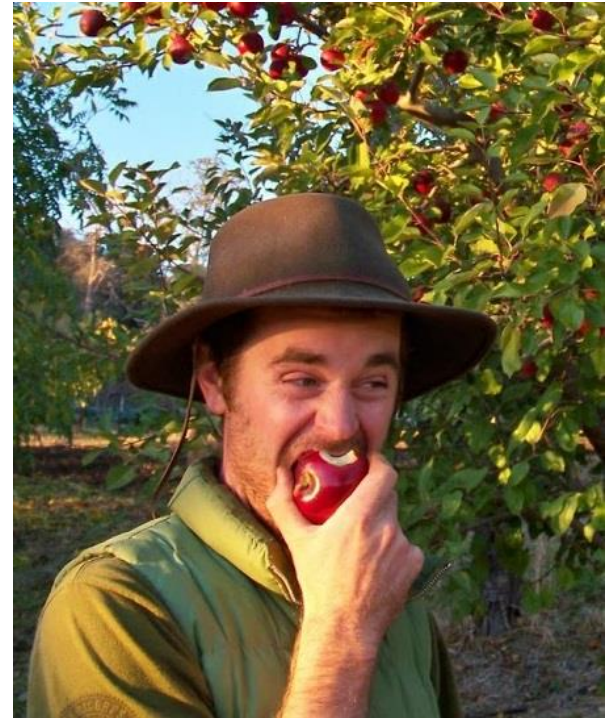
- Introductions
- Site and selection
- Planting
- Pruning
- Pests
- Diseases
- Notes on specific trees



The mission of the Central Texas Food Bank is to nourish hungry people and lead the community in ending hunger.

Who is Greg?

- Gardener - Central Texas Food Bank
- ISA Certified Arborist
- TDA Licensed Pesticide Applicator for Fruit, Nut and Vegetable crops
- MS Geography – Motivations of Community Gardeners



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Central Texas Food Bank

- **21 counties**
- **46,000 clients / week**
- **38 million lbs of food /yr**
- **\$1 = 4 meals**
- **1.25 acre teaching and production garden**

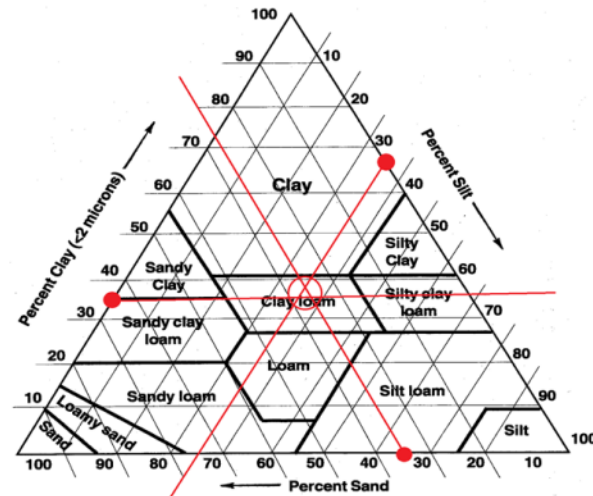
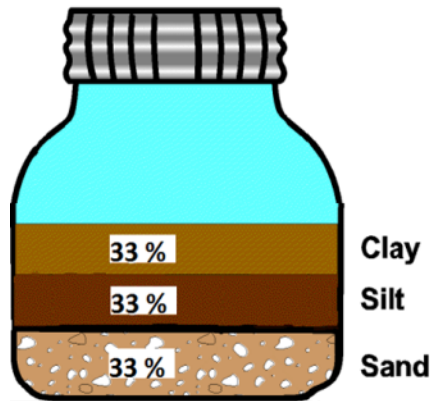


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Choosing a site – Soil quality

The Ideal Soil:

- Loose, loamy texture
- Neutral to slightly acidic (pH 6.5 – 7.0)
- >24” deep



RAIN Global Garden, Quart Jar with Loam Soil. No date. Last accessed 1/11/2016. <http://www.rain.org/global-garden/soil-types-and-testing.htm>

Garden City Tree and Landscape, No image title. No date. Last accessed 1/11/2016.

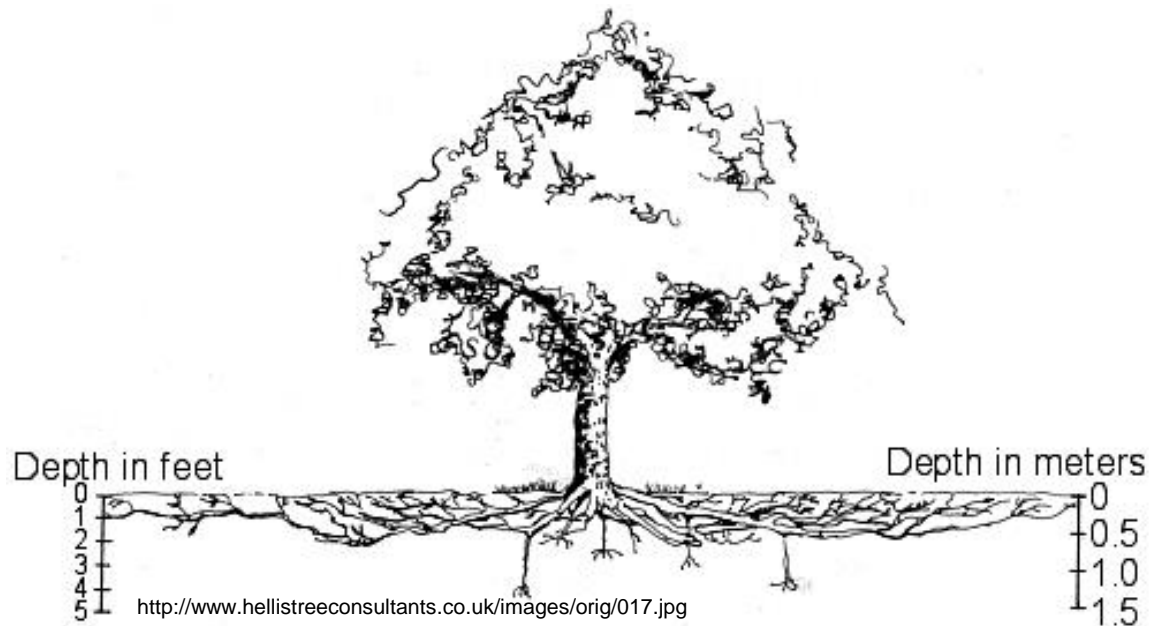
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Choosing a site – Soil depth

- Trees get big
- Roots are shallow and wide
- Trees compete with other plants



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Choosing a site– Water Needs

Species	Daily water use @ maturity	Inches of Water
Pecan	150 gal	2" per week during growing season
Peach	40 gal	1" per week during growing season
Fig	30 gal	
Citrus	50 gal	1.5-2" per week

Texas A&M University Extension. Table compiled from information given in live presentation by Monte Nesbitt on 09/24/2014

High Water Use	Pecan, Peach, Apple, Paw Paw, Citrus
Medium Water Use	Fig, Persimmon, Plum, Mulberry, Loquat, Pear
Low Water Use	Pomegranate, Jujube

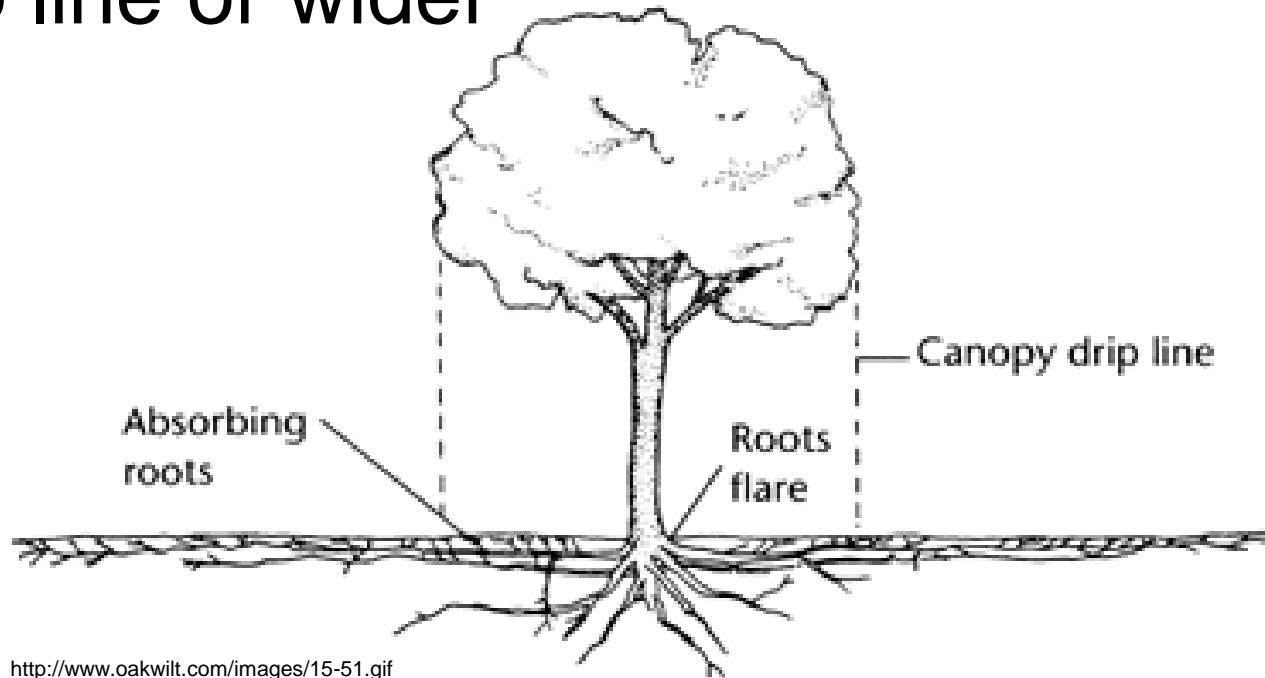
TreeFolks, Inc. Water use classifications. 2016. Compiled from multiple resources and personal observations.



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Choosing a site— How to water

- Slow and Deep
- Infrequent
- Drip line or wider



<http://www.oakwilt.com/images/15-51.gif>

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Choosing a site– When to water

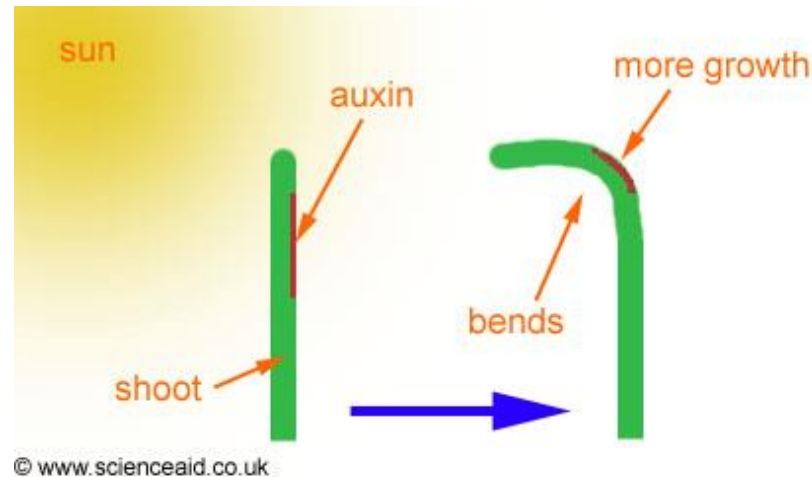
- Year 1: 1x / week
- Years 2-3: Every other week
- Years 3+: As needed
- All Years: Delay watering by 1 week for rainfall over 1”



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Choosing a site – Light

- Light = Photosynthesis = Sugar = Growth = Fruit
- 8 hours of full, direct sun
- Morning sun is best if you have to choose
- Balanced growth



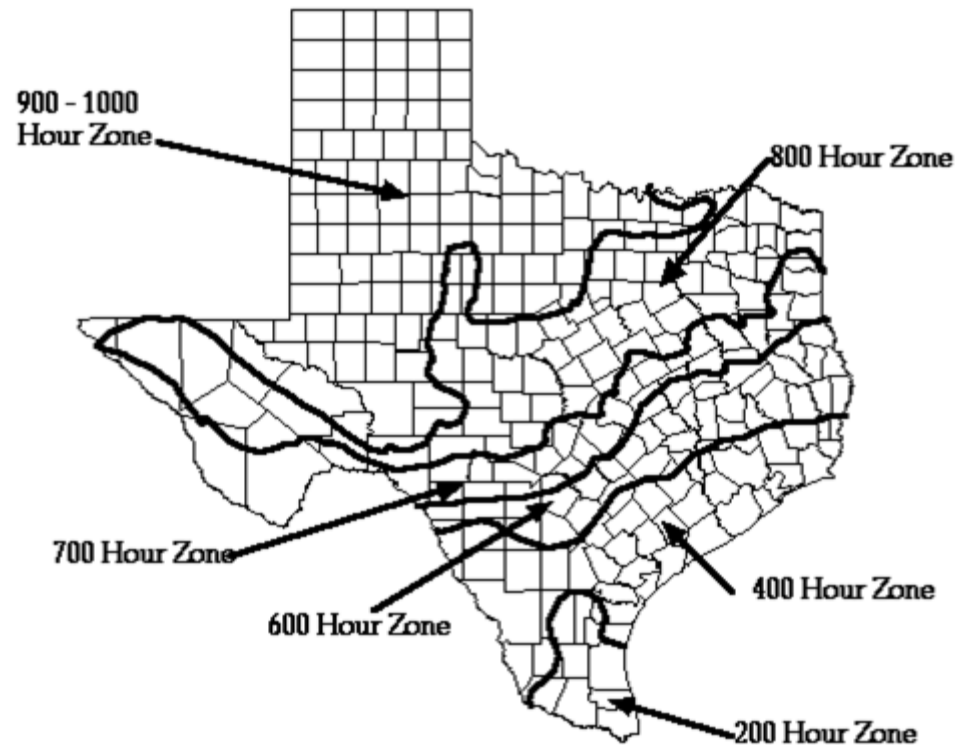
http://leavingbio.net/Plant%20Responses_files/image015.jpg

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Choosing a site – Climate - Chilling Hours

- Chilling Hours
 - Required time between 32 – 45 F while dormant
 - Bud development
 - 500 – 800 for Austin



https://ask.extension.org/uploads/response/images/attachments/000/025/947/Chilling_hours_for_Texas_original.gif?1389649431



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Choosing a site – Climate - Hardiness

- Cold Hardiness
 - Avg. min temp
 - Mature plant
 - Survive ≠



Peaches							
Peaches	Swollen Bud	Calyx Green	Calyx Red	First Pink	First Bloom	Full Bloom	Post Bloom
Old temp	23	--	--	25	--	27	30
10% kill	18	21	23	25	26	27	28
90% kill	1	5	9	15	21	24	25

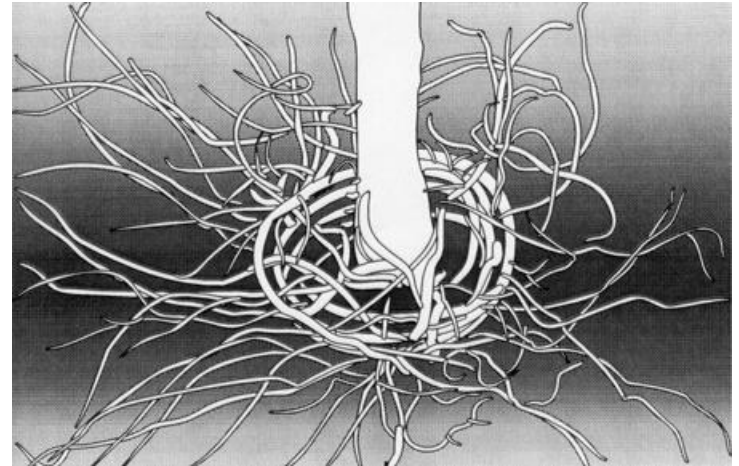
<http://msue.anr.msu.edu/uploads/files/PictureTableofFruitFreezeDamageThresholds.pdf>

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Planting trees – Girdling roots

- Girdling roots kill trees
- Roots get thicker over time
- Trees cannot ‘choose’ which roots grow
- Only one chance to fix it



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<http://branchtree.com/wp-content/uploads/2015/06/girdlingRoots1.jpg>
<http://www.klru.org/ctgf/wp-content/uploads/2011/11/girdled-roots-cutting-web-title-300x227.jpg>

Keeping trees healthy

- Pruning
- Pests & Diseases
- Fertility



<http://www.apsnet.org/edcenter/intropp/lessons/fungi/ascomycetes/PublishingImages/BrownRotStoneFruits03sm.jpg>



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Keeping trees healthy - Pruning

- Why prune?
 - Air circulation
 - Sunlight
 - Branch strength
 - Fruit production
 - Disease
 - Access
 - Space

***Prunus = Prune
Us***



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Keeping trees healthy - Pruning

- Open Center
 - Light penetration
 - Fruit within reach
 - Low profile to wind
 - Min. dripping
 - Weak branches
 - Shorter lived
- Central Leader
 - Strong structure
 - Longer lived
 - Ladders, poles
 - Dripping
 - Shade on branches



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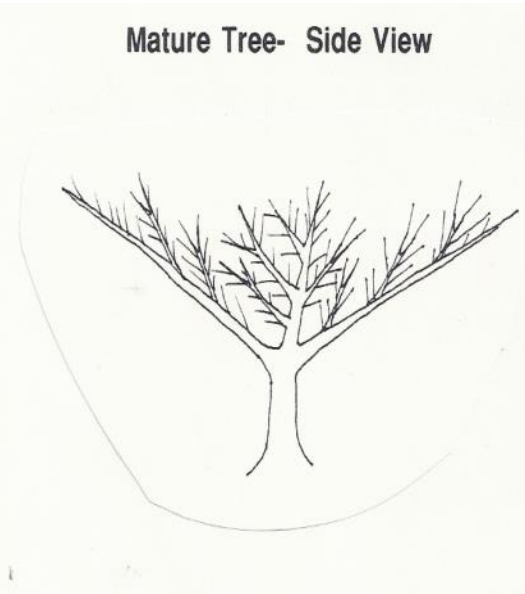
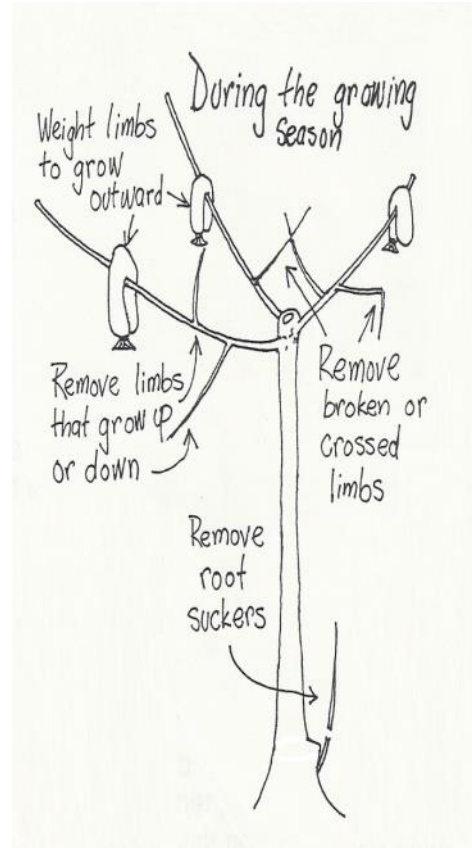
Keeping trees healthy - Pruning

- Open Center
 - Peach
 - Plum
 - Apple (dwarfed)
- Unpruned
 - Fig
 - Citrus
 - Pomegranate
- Central Leader
 - Pear
 - Persimmon
 - Apple (standard)
 - Nut
 - Mulberry
 - Jujube



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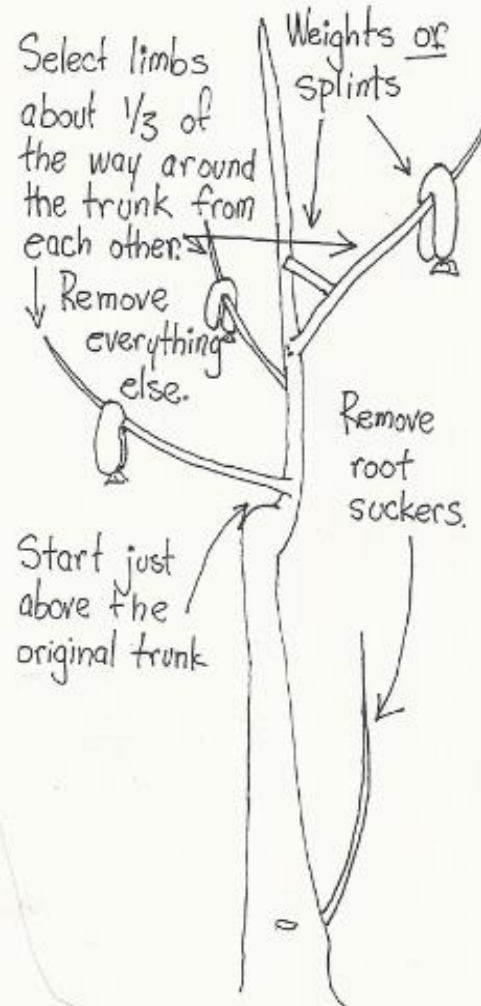
Keeping trees healthy – Open Center Pruning



TreeFolks, Inc. Open Vase Tree

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Keeping trees healthy – Central Leader Pruning

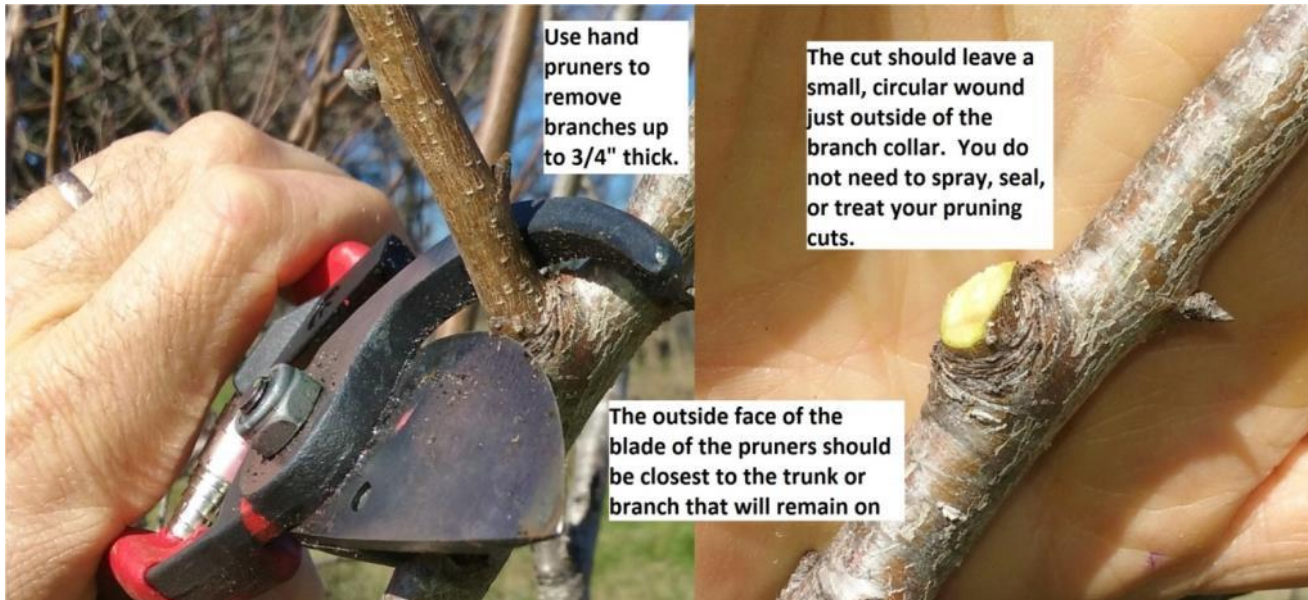
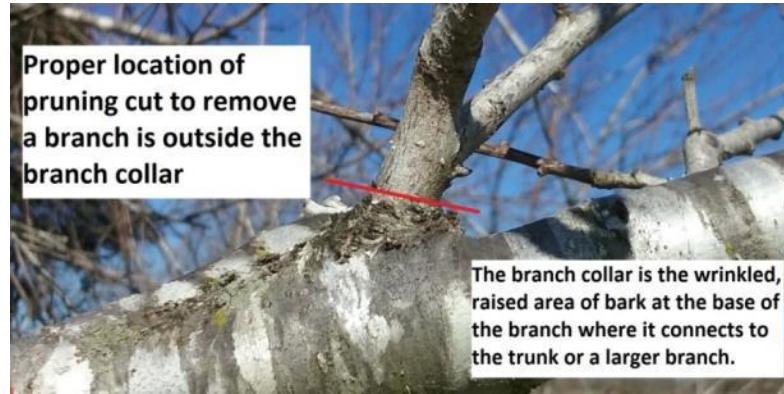


TreeFolks, Inc. Central Leader Tree

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Keeping trees healthy - Pruning



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Keeping trees healthy - Pruning

Vegetative Bud



Flower Bud (Spur)

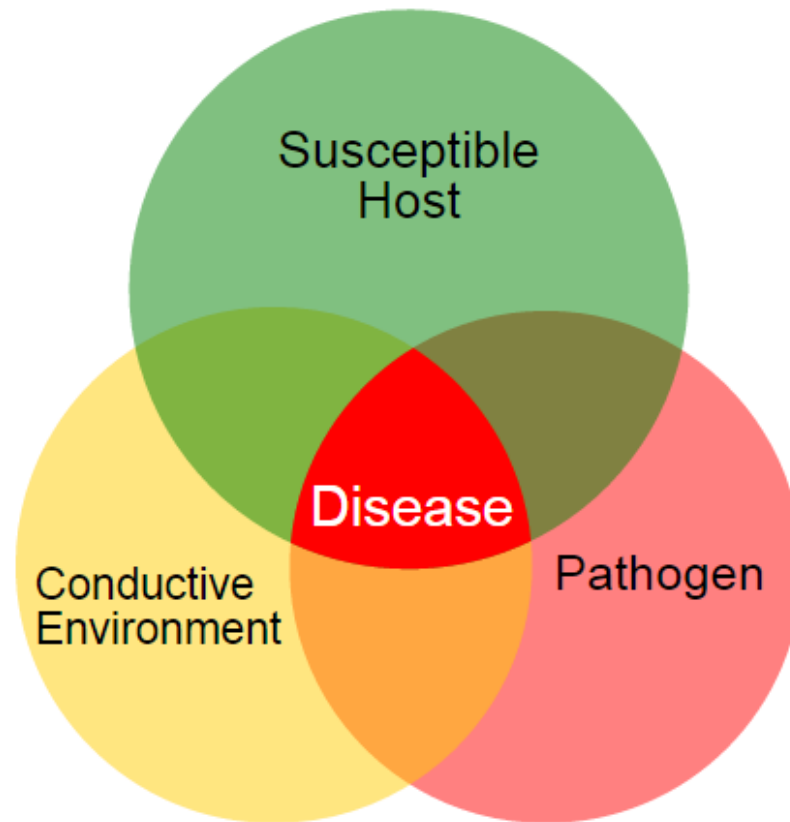
The Walden Effect, No image title. 2012. Last accessed 1/11/2016. <http://www.waldeneffect.org/20120306applebuds.jpg>

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Keeping trees healthy – Pest and Disease

Avoidance, Acceptance, Exclusion, Extermination



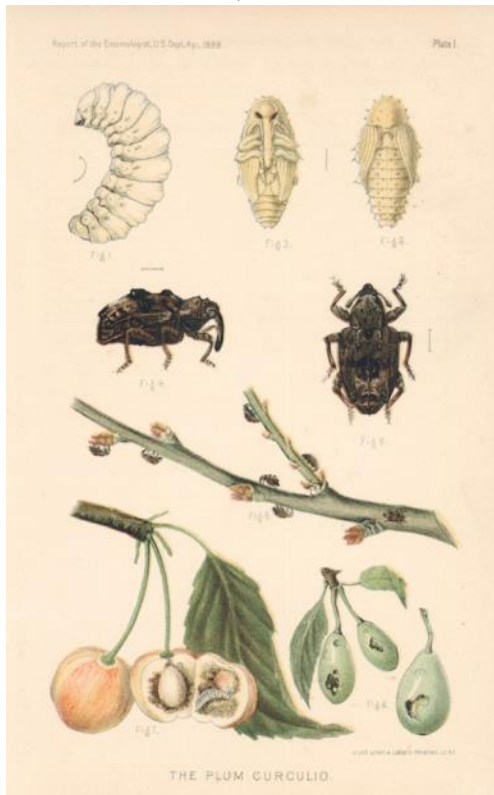
https://commons.wikimedia.org/wiki/File:Plant_Disease_Triangle.svg

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Keeping trees healthy – Pest and Disease Avoidance

“Don’t grow plants that are susceptible to the pests in your area, and change the environment to be less conducive.”



https://upload.wikimedia.org/wikipedia/commons/thumb/8/8a/Plum_Curculio.jpg/220px-Plum_Curculio.jpg
<http://my.waldenlabs.com/wp-content/uploads/2015/08/persimmon-trees.jpg>
<http://snaplant.com/wp-content/uploads/2015/10/Ziziphus-Jujube-Chinese-Date.jpg>
http://www.growingmagazine.com/content/GRW/2012/04/A3010_4.jpg



The mission of the Central Texas Food Bank is to provide nutritious food to the community in ending hunger.

Keeping trees healthy – Pest and Disease

Acceptance

“Accept a certain level of damage and loss.”



http://www.dpi.nsw.gov.au/__data/assets/image/0006/196971/pg13-1.jpg
<http://s3.amazonaws.com/libapps/customers/1416/images/finches.jpg>



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Keeping trees healthy – Pest and Disease Exclusion

“Physically block pests from being able to reach your plants with nets, coatings, fabric, or scare devices.”



<http://www.goodfruit.com/wp-content/uploads/fad8ccb0176c7eda9ff934db0b1c1846.jpg>
<https://www.phillyorchards.org/wp-content/uploads/2015/07/apple-socks.jpg>
https://upload.wikimedia.org/wikipedia/commons/a/a6/Bird_netting_on_grapes.jpg

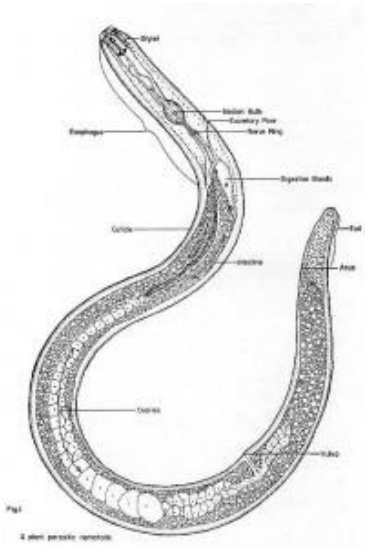


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Keeping trees healthy – Pest and Disease

Extermination

“Use biological controls to kill or discourage pests”



http://sdroponics.com/wp-content/uploads/2012/05/soil_nematode01-218x300.jpg

https://intermountainfruit.org/images/ch01-ipm_methods/delta2.jpg

https://upload.wikimedia.org/wikipedia/en/e/e0/Crisopid_July_2013-9a.jpg

<https://www.planetnatural.com/wp-content/uploads/2013/03/monterey-bt-spray.jpg>

<https://static1.squarespace.com/static/56c8cf2c62cd943a15308207/56f1d1dcc2ea51e1bae6861e/56f1d1dcc2ea51e1bae68620/1458412209926/Sonata-Bacillus+pumilis+strain+QST+2808.jpg>

<http://commonsensehome.com/wp-content/uploads/2015/04/garlic-pest-control.jpg>

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Plum Curculio



<http://www.extension.umn.edu/garden/yard-garden/fruit/apple-pest-management/img/M1235-23.jpg>
http://s202.photobucket.com/user/mark_bucket/media/peaches/weepingPeach3.jpg.html
<https://www.greenharvest.com.au/Images/Pest%20Controls/FruitSaverNetTied.png>
<http://www.goodfruit.com/wp-content/uploads/fad8ccb0176c7eda9ff934db0b1c1846.jpeg>

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Stink Bugs



DoMyOwnPestControl.com



<http://www.maine.gov/dacf/php/gotpests/bugs/images/brown-marm-stink/br-marm-stink-peach-big.jpg>

<https://www.bayeradvanced.com/~media/BayerAdvanced/Article-Images/How%20To%20Get%20Rid%20of%20Stink%20Bugs--Article--Primary%20Image.ashx?la=en>

http://entnemdept.ufl.edu/creatures/veg/bean/green_stink_bug13.jpg

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Leaf Footed Bugs



https://www.whatsthatbug.com/wp-content/uploads/2009/02/mating_leptoglossus_pomegranate.jpg

https://farm8.staticflickr.com/7725/17474735046_b2ef03afa2_z.jpg

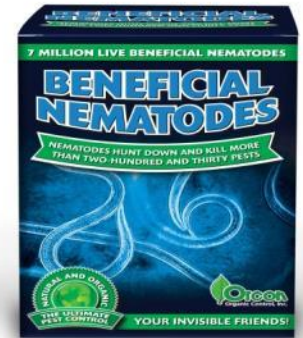
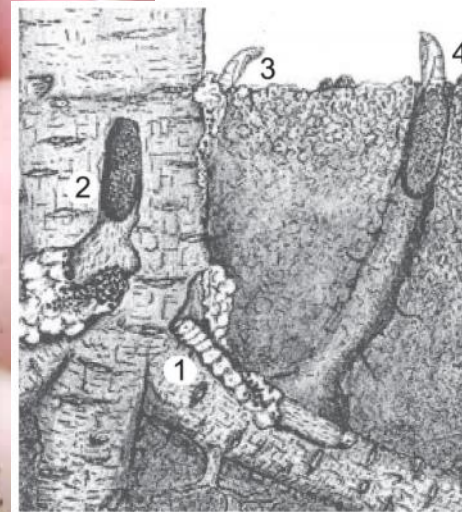
<https://torquehitting.files.wordpress.com/2015/08/squash-the-bug.jpg>

<http://4.bp.blogspot.com/-a2wz3BJExqY/T9Ehj4We-FI/AAAAAAAAABA/KXGag0EkbYg/s1600/spinosad-products-arbico.jpg>



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Borers



MyOwnPestControl.com



DoMyOwnPestControl.com

<http://oregonstate.edu/dept/nurspest/Images/insects/peach%20tree%20borer%20larva%20in%20ottoluyken%20corner.JPG>

<http://m1.i.pbase.com/o6/50/883250/1/116019441.9EAa933Y.peachtreeborerSynanthedonexitiosa.jpg>

<http://extension.usu.edu/files/publications/factsheet/greater-peachtree-borers07.pdf>

https://cdn.domyownpestcontrol.com/images/thumbnails4/Monterey_Bt/Monterey_Bt.jpg.thumb_1024x1024.jpg



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Brown Rot



<http://www.apsnet.org/edcenter/intropp/lessons/fungi/ascomycetes/Article%20Images/BrownRotStoneFruits03.jpg>

https://www.staff.ncl.ac.uk/ethan_hack/disease-pictures-public/backus-060-plum-brown-rot.jpg

<http://www.clairehiggins.com/images/110.jpg>

<https://mobileimages.lowes.com/product/converted/037321/037321008118.jpg>



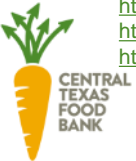
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Fire Blight



https://www.groworganic.com/organic-gardening/images/posts/articles/fire_blight_lead.jpg
<https://www.groworganic.com/serenade-garden-disease-control-biofungicide-32-oz-concentrate.html>
http://static.wixstatic.com/media/52cd90_60cf1114a23acfc56a943f7dac051528.jpg
http://www.bartlettman.com/assets/images/ProductImages/PNG/HP-6250_BP6250_CORONA_HAND_PRUNER.png
http://www.bartlettman.com/assets/images/ProductImages/PNG/HP-6250_BP6250_CORONA_HAND_PRUNER.png

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Keeping trees healthy - Fertility

- Peak N demand is during fruit ripening and spring growth flush
- Apply organic fertilizers 1-4 months *ahead* of nutrient demand
- Apply organic fertilizers/compost during full dormancy and after petal drop
- If soil pH binds a nutrient, it must be applied as spray



Keeping trees healthy – Fertility

	Alfalfa Meal or Pellets	Corn Gluten Meal	Cottonseed Meal	Soybean Meal	Bat guano (high N)	Blood meal	Bone meal
N – P – K	2 – 1 – 2	9 – 0 – 0	6 - 0.4 - 1.5	7 – 2 – 1	10 – 3 – 1	12 – 0 – 0	3 – 15 – 0
Release Time	1-4 months	1-4 months	1-4 months	1-4 months	4+ months	1-4 months	1-4 months
Pros	Available at feed stores, Contains natural plant growth hormones	Very high N	High N	High N, available at feed stores	Stimulates soil microbes	Available at feed stores	Plant available P
Cons	May contain seeds	Germination inhibitor, some are GMOs	Pesticide residues, GMO	~50% is GMO	Cost	Can burn; cost	Cost

	Feather Meal	Fish Emulsion	Enzymatic Fish Liquid	Fish Meal	Fish Powder
N – P – K	Varies	5 – 2 – 2	4 – 2 – 2	10 – 6 – 2	12 – 0.25 – 1
Release Time	4+ months	1-4 months	1-4 months	1-4 months	Immediate
Pros	Long term fertility	Micronutrients, mixable in water	More nutrients than 'plain' fish	N and P source	Micronutrients
Cons	Slow to release	Smells like dead fish	Cost	Heat processed	Heat processed

Colorado State University Extension. Facts compiled from information on webpage. Webpage published 2013. Last accessed 1/11/2016.
<http://www.ext.colostate.edu/mg/gardennotes/234.html>



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Notes on Specific Trees

- Apple and Pear
 - Central Leader
 - Soil pH and drainage
 - Usually not self fertile
 - Lots of pests and diseases
 - Pears are a little easier
 - Fruiting spurs on 2+ year old wood



<http://chloesblog.bigmill.com/uploads/Image/Pear-Tree-blog.jpg>

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Notes on Specific Trees

- Citrus
 - Cold sensitive
 - Highly productive
 - Lots of N
 - Lots of H₂O
 - Self pollinating
 - Fruits on new and old wood
 - Prune for size and structure



Notes on Specific Trees

- Fig
 - Fruits on new growth
 - Hardy to mid teens
 - No pollination required
 - Rust in wet years
 - Prune to shape and size



Notes on Specific Trees

- Mulberry
 - Native and exotic varieties
 - Fruits on new growth
 - Fall webworm, ‘popcorn’ fungus
 - Birds



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Notes on Specific Trees

- Stone Fruit
 - Peach, Plum, Nectarine
 - Should be aggressively pruned every year
 - Open center
 - 12-15 years
 - Lots of pests and diseases
 - Fruits on 2 year old wood
 - Plums also make spurs, prune less aggressively



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Notes on Specific Trees

- Pecan
 - Central leader
 - 7-10 years until harvest
 - Squirrels, scab
 - Weak wood
 - Messy
 - Wind pollinated, not self pollinating
 - Deep, rich soil and lots of water



State Symbols USA, No image title. No date. Last accessed 1/11/2016. <http://www.statesymbolsusa.org/symbol-official-item/texas/state-tree/pecan-tree>



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Notes on Specific Trees

- Asian persimmon
 - Astringent and Non-astringent varieties
 - Self pollinating
 - Central leader
 - Fruits on new growth
 - No major problems



Notes on Specific Trees

- Pomegranates
 - Hardy to mid teens, some varieties lower
 - Commercial production prunes to 4-12 trunks
 - Home production can be left unpruned
 - Fruits on new growth coming off of old growth
 - Black heart in humid areas
 - Self pollinating



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Notes on Specific Trees

- Jujube
 - Fruit is sweet but kind of dry
 - Better fruit set with multiple varieties
 - No pests or diseases
 - Super drought hard
 - Has thorns
 - Central leader



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Additional Resources

California Rare Fruit Growers – <http://www.crfg.org/>

Grow Organic Apples - <http://www.groworganicapples.com/>

The Natural Gardener – <http://www.naturalgardeneraustin.com/>

Orchard Equipment and Supply - www.oescoinc.com

Peaceful Valley Farm Supply - <http://www.groworganic.com/>

Sustainable Food Center - <http://sustainablefoodcenter.org/>

Texas Organic Farmers and Gardeners Association -

<http://www.tofga.org/>

Texas A&M University Extension - <http://agriflifeextension.tamu.edu/>

TreeFolks, Inc. – <http://www.treefolks.org>



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