

Pre-Plant Considerations for New Pecan Orchards

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Orchard failures often result from trying to fit a new crop to a site previously purchased or inherited without proper investigation, amendment, and/or preparation



Photo: George Ray

- Successful (**ie. profitable**) orchards have found the site that fits the crop they want to grow

Or

- Have found the right crop for their site.



Pecans are a long-term investment

Take 5 to 7 years to enter commercial productivity

Soil or site problems can take that long to be realized

Poor preparation can increase time to productivity


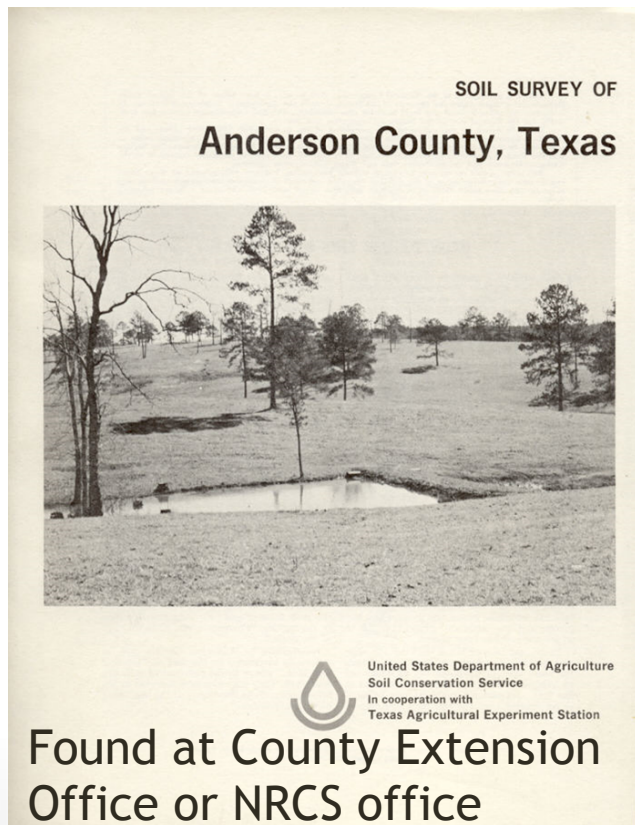
...leading to lost capital, missed opportunities, additional years to reach profitability, soured business and personal relations, or worse (failure/bankruptcy)

The ideal pecan orchard site:

- Location:
 - Close to home. Close to markets. Easy to access. Availability of labor.
 - Avoids questionable land use history. Not threatened by urban sprawl.
 - Isolated from pesticide drift from neighboring farms.
 - Plentiful irrigation capacity and excellent water quality.
 - Flat or gently rolling topography
- Climate
 - Sunny. Avoids low-lying frost pockets. Avoids heavy disease pressure and extreme weather (hurricanes, tornados).
- Soil
 - Deep (3+ ft), loamy, fertile, and well-drained.
 - pH 5.8 - 7.8 (4.2 - 9.0)
 - Lacks salinity
 - Avoids Cotton Root Rot

Site Evaluation

- We can learn much before ever stepping foot on the land.
 - Soil, Climate, Topography, production potential.



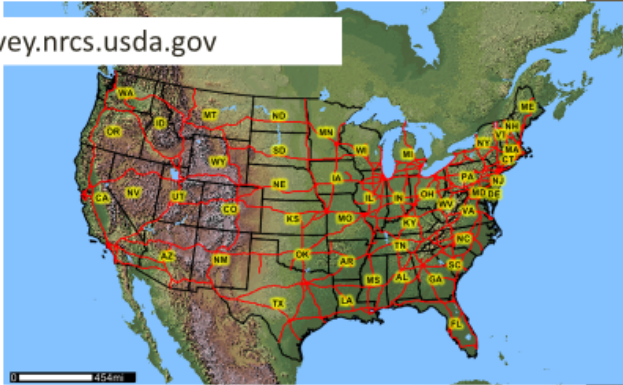
USDA
United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey

The simple yet powerful way
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START
WSS

<http://websoilsurvey.nrcs.usda.gov>



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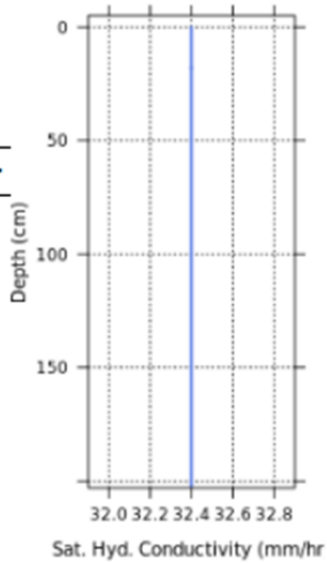
SoilWeb

Weswood

Soil Data Explorer | Series Extent Explorer | Description

Soil Profiles

- Soil Sketch
- Org. Matter
- Clay
- Sand
- AWC
- Ksat ?
- pH
- Kf Factor
- EC
- SAR
- CaCO₃
- Gypsum
- CEC @ pH7
- Linear Ext.



[View Source Data](#)

Soil Taxonomy

- Order: *Inceptisols*
- Suborder: *Ochrepts* [Map of Suborders](#)
- Greatgroup: *Ustochrepts*
- Subgroup: *Udifluventic Ustochrepts*
- Family: *Fine-silty, mixed, superactive, thermic Udifluventic Ustochrepts*



▲ Soil Profiles

 Typical Profile

 Org. Matter

 Clay

 Sand

 AWC

 Ksat ? >

 pH

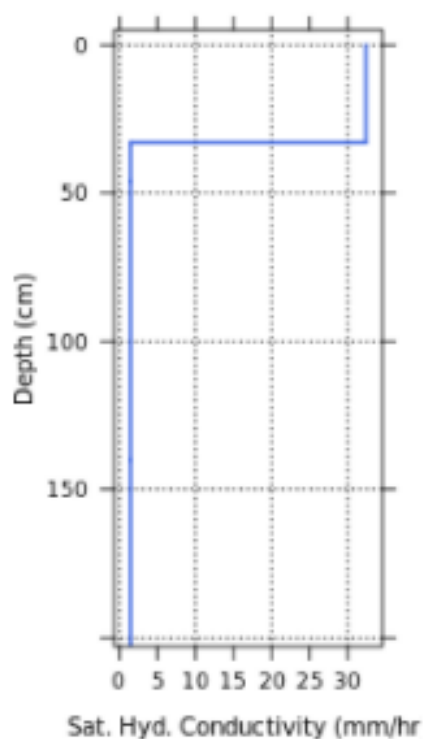
 Kf Factor

 EC

 SAR

 CaCO₃
 Gypsum

 CEC @ pH7

 Linear Ext.

[View Source Data](#)
 Soil Taxonomy

 Land Classification

 Hydraulic and Erosion Ratings

 Forest Productivity

 Soil Suitability Ratings

 Details


TAMU Pecan Orchard

▲ Land Classification

CA Storie Index: *n/a*

Land Capability Class (non-irrigated): 1- ?

Land Capability Class (irrigated): 1- ?

Ecological Site Description:

[Loamy Bottomland](#) ?

Forage Suitability Group: *n/a* ?

Organic Carbon Stock: 41 [17-66] kg / m² ?

Organic Carbon Stock 0-30cm: 6 [2-9] kg / m² ?

Organic Carbon Stock 0-100cm: 20 [8-32] kg / m² ?

▲ Hydraulic and Erosion Ratings

Wind Erodibility Group: 4L ?

Wind Erodibility Index: 86 ?

T Erosion Factor: 5 ?

Runoff: *Negligible*

Drainage: *Well drained*

Hydric Rating: No ?

Hydrologic Group: *Group B* ?

Parent Material: *silty alluvium of Holocene age derived from mixed sources*

Total Plant Available Water (cm): 32.48

▼ Forest Productivity



Pre-Plant Preparations

● Start early

- 18-24 Months Before Planting- remove brush & rip; soil & water testing, dig soil pits. Source trees.
- 12 Months - apply lime (if needed) and P&K and/or organic amendments; initial site plowing/leveling. Attend Texas Pecan Short Course.
- 10 Months - establish planting/irrigation berms if needed
- 9 Months - first herbicide appl. or tillage to kill perennial vegetation
- 8 Months - install fencing; control gophers

- 7 Months - additional herbicide or tillage
- 5 Months - establish cover crop
- 2 Months - install irrigation system, burn down cover crop in tree row
- 1 Week - pre-dig holes, pre-plant irrigation?



Photo: George Ray McEachern

Compaction/Hardpan/Plowpan

- “How do I know if I have hardpan/plowpan?”
 - Soil type description: “Frag”, “Dura,” “Calc”
 - Consult soil maps
 - Dig test holes
 - Probe with soil probe



Alleviating
compacted
layers

Complete any Dirt Work or Levelling

- A smooth floor impacts every other orchard operation
 - Poor drainage leads to underperforming trees
 - Weed control
 - Fertilizer application
 - Scouting
 - Pruning
 - Orchard cleanup
 - **HARVEST**



Photo: George Ray McEachern

Soil Analysis and Amendments

- Collect and test soil samples
 - pH
 - Available nutrients/fertility
- It is important to incorporate (disk/plow) these amendments into the root zone:
 - Lime, takes 6-12 months to take full effect (if pH is too low)
 - Phosphorus or potassium fertilizers (immobile in most soils)
 - Organic matter/compost (if needed/desired)
 - Practical?



Manage Perennial Brush and Weeds

- Grubbing or stem treatment for brush/cactus
- Systemic, broad-spectrum herbicide for weeds
 - Glyphosate, 2,4-D, etc.
 - Multiple applications needed for tough perennials
 - Avoid persistent herbicides
- Repeated tillage during dry weather is the only feasible method for organic control.



Control/Manage Pre-Existing Pests

- Feral hogs
- Deer
 - Fencing: Leave enough room between fence and orchard rows for equipment to drive/turn easily
 - Ensure gates will be wide enough for all future equipment
- Pocket gophers
- Leaf-cutting ants
- Neighbor's cows?



Irrigation

- Ensure that you are finished with all deep tillage and cross-orchard projects before installing irrigation.
- Irrigation (or lack of) during establishment period can be the difference between productivity in 5 years or 10 years, 1% tree loss, 20% tree loss, or total failure.



Irrigation systems should be tested and run to ensure operation before new trees arrive on the farm.

Photo: George Ray McEachern

Prepare to Receive Trees

- Dormant, bare-root trees are less sensitive to drying out...
- How many can you plant in one day?
- “Heeling-in” keeps roots from drying out.



Be Prepared to Provide Water At Planting

- Trees must be watered in by hand at planting.



Photo: George Ray McEachern

Added hose and valve mounted to tractor could be used by one person to water trees without getting off the tractor



Photo: ABI Attachments

Cover Crops

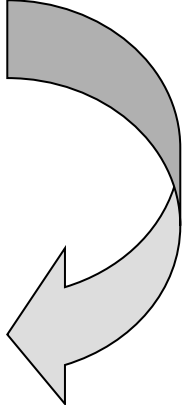
- Could be started 1-2 years before orchard establishment
- **Build organic matter, suppress weeds**
- Reduction in soil nematodes?
 - Brassicas, mustards, cereal rye, sorghum-sudan grass
- Build fertility with legumes?
- Boost soil microbiology?



Coffee County Soil Conservation

Effect of winter legumes on pecan leaf nitrogen levels (1979)

Winter legume	N fertilizer/Acre	% N in leaves
none	0	2.33
none	100 lbs	2.49
none	200	2.71
none	200 split Feb/May	2.70
Arrowleaf clover	0	2.49
Arrowleaf clover	100	2.65



(White, Beaty, and Tedders, 1981)



Rhizobium nodulation on hairy vetch roots

Additional Pre-Plant Considerations

- What varieties to plant?
- What spacing is best for my situation?
- How to avoid common mistakes for new growers?



Photo: George Ray McEachern

Additional Pre-Plant Considerations

● ANSWER:

- Attend the Texas Pecan Short Course (January)
- Join TPGA – interact and network with experienced growers
- Attend meetings and field days
- Consult with local County Extension Agent
 - Contacts for other local growers
 - History of the site
 - Local performance of varieties, spacing, etc.
 - Ask to be added to newsletter/contact list in your county and neighboring counties

Additional Pre-Plant Considerations

- Where will you source trees?
 - Visit with nurseries
 - Wouldn't it be convenient if they were all in one room together?
 - Ensure they are propagating the varieties you wish to purchase.
- How can you find affordable (new or used) equipment?
 - TPGA trade show
 - Pecan South Magazine

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