

Keys to Pecan Production

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Top 10 Priorities For Pecan Production

- Water



WHEN GROWING PECANS:
IF YOU HAVE TO CHOOSE BETWEEN WATER
AND FERTILIZER.....

CHOOSE WATER!



- Irrigation provides a 70% increase in yield of mature trees (Daniel, 1982), and a 300% increase in growth of young trees (Wells, 2017).

“If there is magic on this planet, it is contained
in water.”

---Loren Eiseley



Pecan Irrigation Schedule

Recommendations for Bearing Orchards

<u>Month</u>	<u>% Full Capacity</u>	<u>Gallons/acre/day</u>
April	18%	648-720
May	27%	936-1080
June	36%	1296-1440
July	45%	1620-1800
August	100%	3600-4000
September	100%	3600-4000

*If you receive 1" or more of rain from bud-break to the onset of kernel-filling, turn the system off for 3 days.

*Throughout the kernel filling period, apply irrigation daily regardless of rain events up to 2". With a 2" rain during kernel filling, turn the irrigation off for 3 days.

Sandy Soils=Use higher end of rate
Clay Soils=Use lower end of rate

Irrigation Recommendations for Young Trees

- 1st year – 3rd Year:
 - Loamy sands = 100 gpw with microsprinkler
 - Deep sands or excessive dry periods = 170 gpw
 - Microsprinklers preferred for deep sands
 - Drip on loamy sand = 48 gpw
 - ***Water regularly***
 - ***every other day to keep consistently moist and minimize soil temp beginning in late May***



Top 10 Priorities For Pecan Production

- Water
- Soil

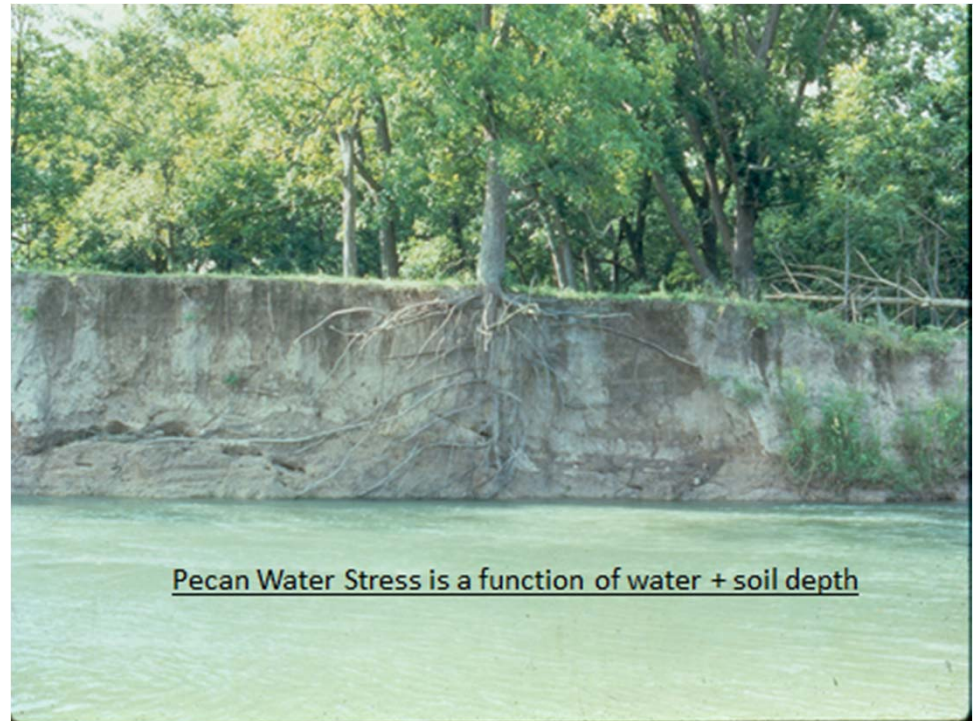


Soil

- DO NOT PLANT PECAN IN POORLY DRAINED SOIL!

Average soil organic matter
in Georgia Coastal Plain = 0.5%-2%

	Orchard Soil Organic Matter (1-6" depth)
Mean	3.63%
Sample Range	1.74-5.80%



- Organic Matter

- In the soil, humic and fulvic acids are important chelators, combining minerals into organic compounds that are more available to plants. They also tie up toxins, making them less available to plants. They will already be present in good soils with lots of organic matter.



Top 10 Priorities For Pecan Production

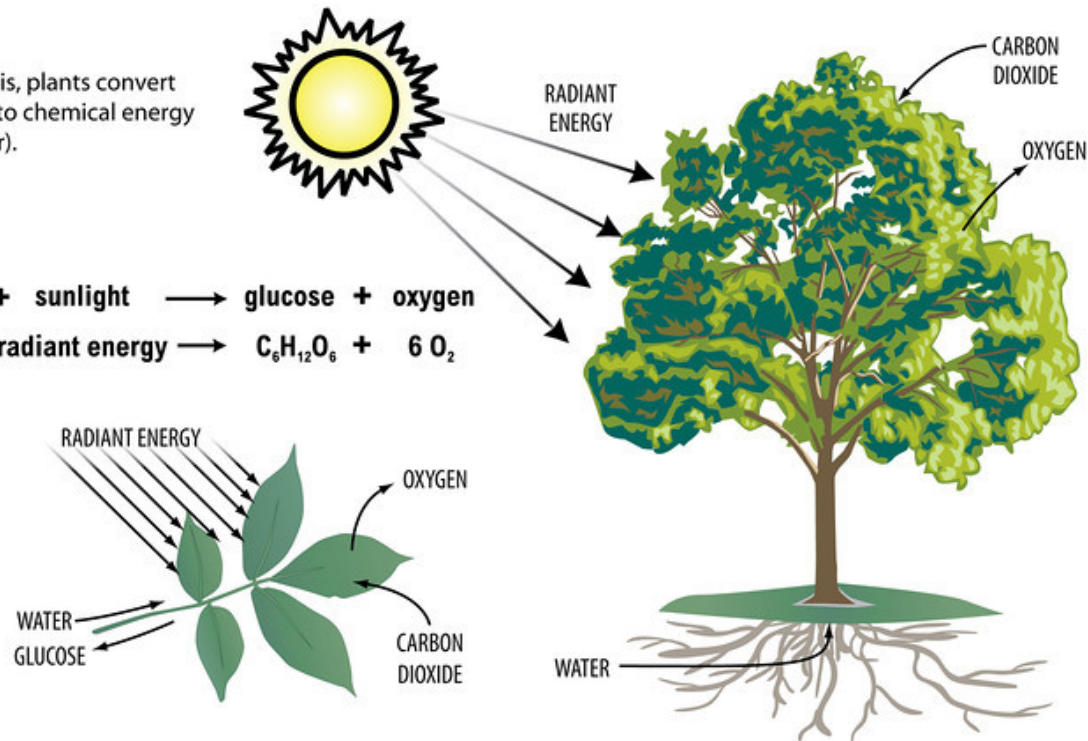
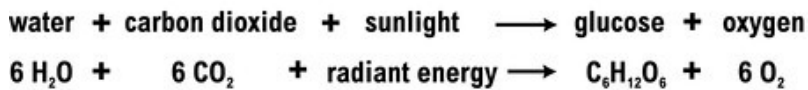
- Water
- Soil
- Sunlight/Air Flow



What do all plants (including pecan trees) need most?

Photosynthesis

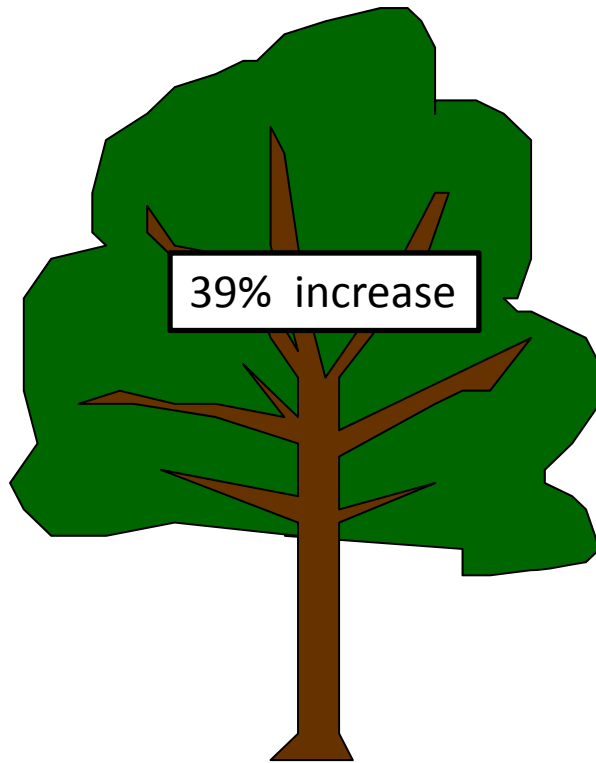
In the process of photosynthesis, plants convert radiant energy from the sun into chemical energy in the form of glucose (or sugar).



Sunlight+Water = carbs = Tree growth and Nut Production

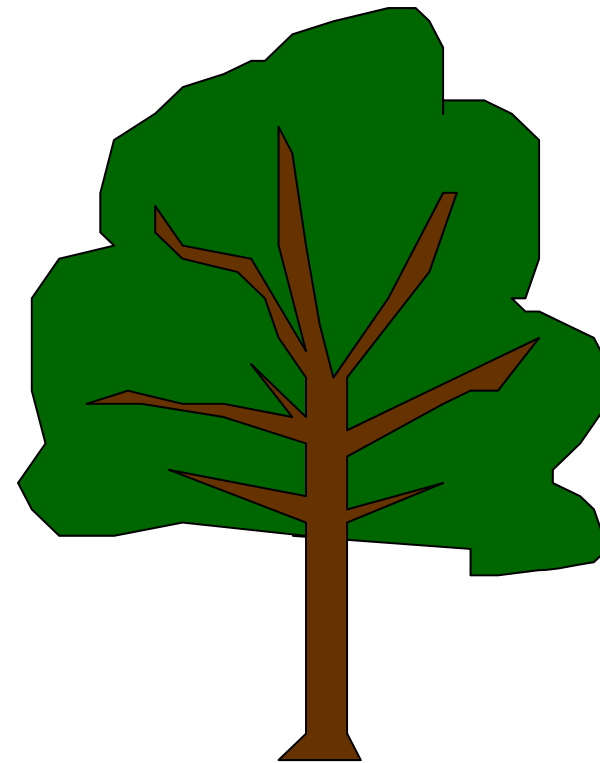
Effect of Sunlight and Air Movement on Yield---2013

OPEN



Sunlight=1176 lum/ft²
Yield=110.6/tree

CROWDED



Sunlight=996 lum/ft²
Yield=68 lbs/tree



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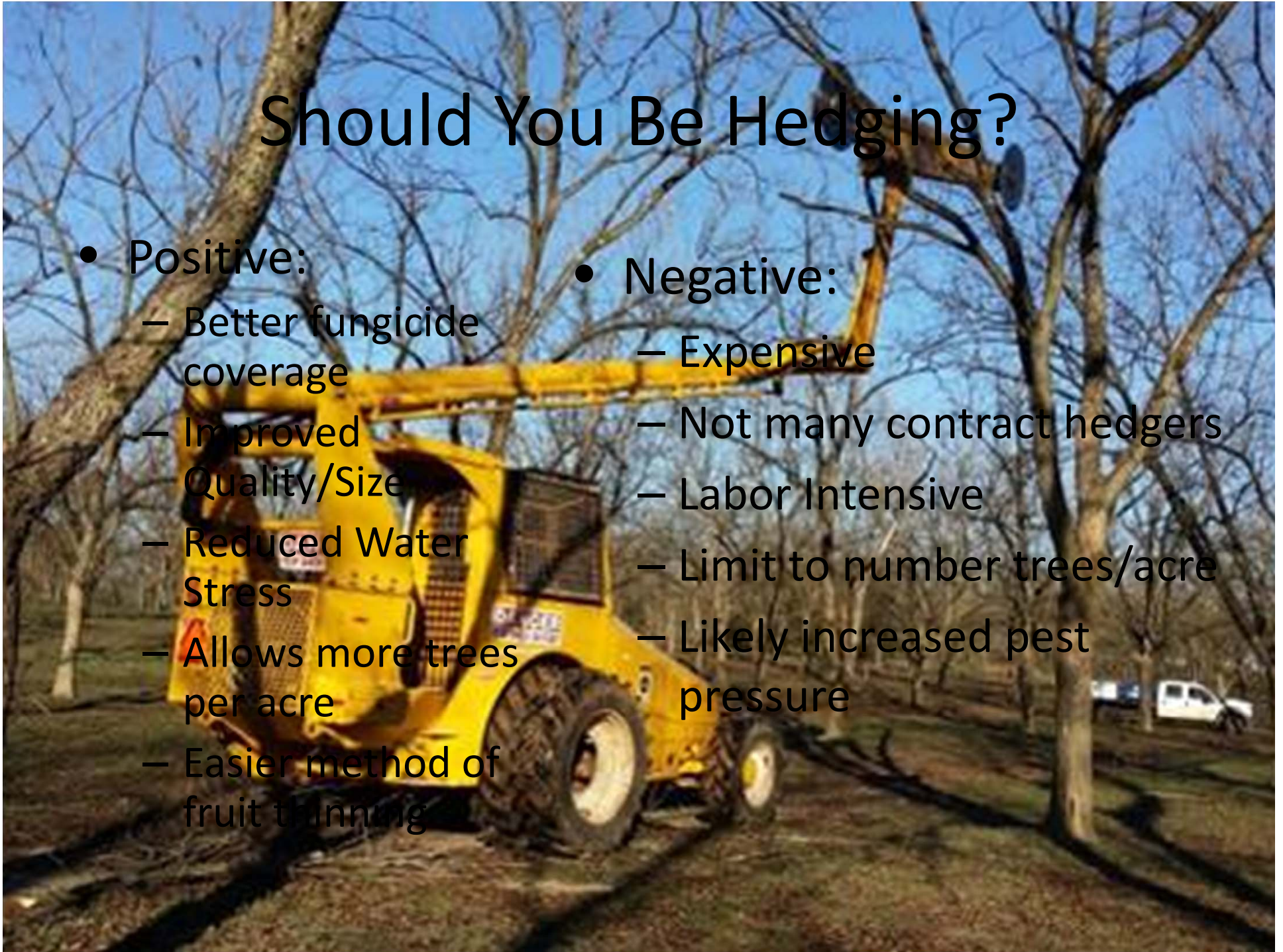
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Managing Sunlight



Should You Be Hedging?

- Positive:
 - Better fungicide coverage
 - Improved Quality/Size
 - Reduced Water Stress
 - Allows more trees per acre
 - Easier method of fruit thinning
- Negative:
 - Expensive
 - Not many contract hedgers
 - Labor Intensive
 - Limit to number trees/acre
 - Likely increased pest pressure



Tight Spacings/Hedging Not for Everybody



Safe Route:

Plant 25 X 50

30 X 50

40 X 40

***Avoid the following combination:
Tight Spacing, Scab Susceptible Varieties,
Poor air flow***

Top 10 Priorities For Pecan Production

- Water
- Soil
- Sunlight/Air Flow
- **Nutrition**



Nutrition

- Focus on N, P, K, Zn

	Desired Range (lbs/A)	Mean (lbs/A)	% Low	% High	Sample Range (lbs/A)
Soil P	30-60	98.3	0	90	48-183
Soil K	100-150	153	0	34	94-361
Soil Ca	400-900	988	3	48	192-2241
Soil Mg	90-100	184	7	90	35-436
Soil S	10-50	26.6	3	0	4-41
Soil Fe	12-25	22.6	3	24	8-76
Soil Zn	15-20	25	28	55	3.9-55.3
Soil B	0.5-1.0	0.99	41	14	0.22-6.0
Soil Cu	0.5-1.5	1.1	14	10	0.2-7.2
Soil Mn	15-40	31.9	28	7	13-45
Soil Ni ¹	?	1.26	N/A	N/A	1-7
pH	6.0-6.5	5.96	41	12	5.3-7.0

What's the Best Way to Fertilize Pecans with Nitrogen?

- Apply 75-125 lbs N
- Inject liquid N
 - 3 applications beginning in April (10 day intervals)
 - 1 application in June
 - 1 application in late August/early September if heavy crop
 - No more than 25 lbs N/acre/injection
- **Direct broadcast applications toward herbicide strip**
 - Base total acreage applied on width of spread, not on total size of orchard
 - Use rate of 75-125 lbs/acre on treated area only
- Eliminate late season applications of N with:
 - Poultry Litter Application in Feb/March or
 - Establishment of good clover stand for 3 yrs



How Often Should You Lime the Orchard?

pH	6.0-6.5	5.96	41	12	5.3-7.0
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- High N rates can lower pH in upper soil layers (2-3") in the short term
- Lime applied to surface raises soil pH in upper 2-3" only
- Once soil pH reaches 6-6.5 below surface layer, it tends to remain there for a long time
- There is **NO** research-based evidence for increased yield and growth of mature pecan trees with lime application (Hunter and Hammar, 1947; Johnson and Hagler, 1955; Hagler et al. 1957; Brooks, 1964; Hunter, 1965; Worley et al. 1972)
- Excessive liming can lead to Zn deficiency, mouse ear, and problems with K uptake
- **Lime when pH is <6.0, Ca or Mg low, or every 3rd year at most on SE Coastal Plain soils (6.0-6.5); Keep N rates between 75-125 lbs/acre**



How Often Should You Soil Apply Phosphorous

	Desired Range (lbs/A)	Mean (lbs/A)	% Low	% High	Sample Range (lbs/A)
Soil P	30-60	98.3	0	90	48-183

- P relatively immobile and accumulates on soil surface in non-tilled soils
- 1000 lb/acre pecan crop removes 1.6 lbs P per acre
- Annual turnover
- **Yield response to broadcast application of P on mature pecan is extremely rare** (Alben and Hammar, 1939; Worley and Harmon, 1964; Sullivan, 1974; Worley, 1974; **Sparks 1988**; Smith 1991;)
- Rates of >13,000 lbs P/acre only slightly increased nut size
- No benefit to annual maintenance broadcast application of P to pecans in most managed orchards
- Savings: \$20.40/acre
- **If soil P < 30 lbs per acre, broadcast P**
- **If soil P > 30 lbs/acre and leaf P < 0.12, band P**



How Often Should You Soil Apply Potassium?

Soil K	100-150	153	23	34	94-361
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- 1000 lb/acre pecan crop removes 2.3 lbs K per acre
- Annual turnover
 - 70% of total nutrient content of fruit returned to soil in shucks (Sparks, 1975)
- **Yield response to broadcast application of K on mature orchards is extremely rare** (Hunter and Hammar, 1947; Hunter and Hammar, 1948; Sharpe et al. 1950; Sharpe et al., 1952; Hunter, 1956; Gammon and Sharpe, 1959; Hunter and Hammar, 1961; Worley, 1974; Worley, 1994)
- No real benefit to maintenance broadcast application of K in most mature managed orchards
- Savings: \$23.40/acre
- **If soil K drops below 100 lbs/acre: broadcast K**
- **If soil K is >100 lbs/acre and leaf K is less than 1.1: band K**
 - Need to keep leaf K at 2:1-2.5 ratio with leaf N, but broadcast application will not increase leaf K to 1.25



How Often Should You SOIL-apply Zinc?

Soil Zn	15-20	25	28	55	3.9-55.3
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- Most Coastal Plain soils not planted to pecan are very low in Zn
- Most mature orchards have high soil Zn levels
- Zn is immobile in soil
- **Broadcast Zinc Sulfate when soil Zn is <15 lbs/acre**
- **If soil Zn >15 lbs/acre and leaf Zn<50 ppm or visible rosette: band Zn or apply Zn EDTA via irrigation**
- **Make annual foliar Zn applications**



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- Nutrition
- **Cultivars**

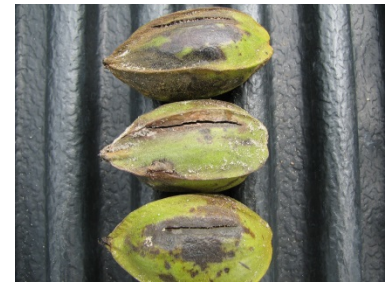
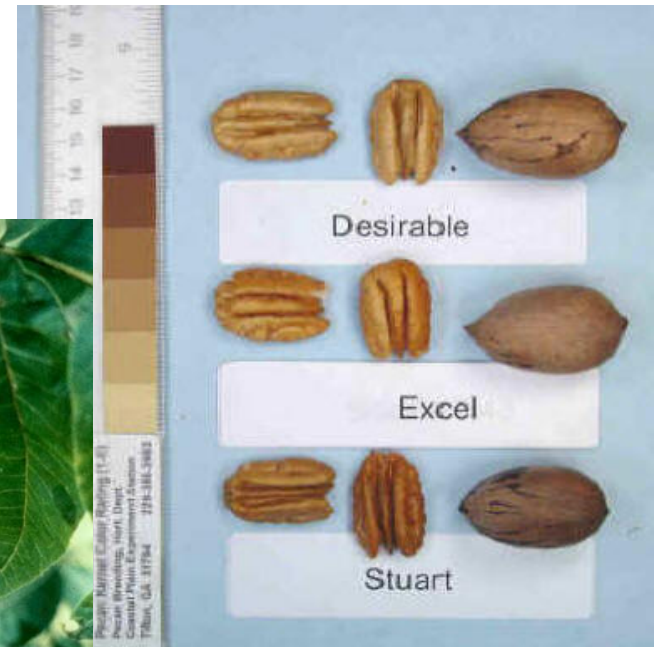


Cultivars

- Choose cultivars based on your willingness to manage
 - Google “UGA Pecan Breeding”



extens



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- Nutrition
- Cultivars
- Disease/Insect Management



Managing Scab

- Spray Based on Weather and Location
 - Air Flow and Sunlight
 - Spray on time
 - Do not go more than 14 days from mid June-mid August on Desirable no matter what
- Get Good Coverage
- Rotate Fungicides
- If its not broke don't fix it
- Nuts don't have to be 100% clean
- If nuts are clean at shell hardening you will not lose them to scab



Insect Management

- Ignore Casebearers
- Ignore yellow aphids
- Apply imidacloprid over drip emitters in mid/late June for black aphid
- If spray needed before imidacloprid reaches trees, apply Carbine or Fulfill
- Intrepid for Shuckworm in mid July and mid August
- Nexter for mites in August (if black aphids present) or Portal, Envidor if aphids not present
- Closer for black aphid in late August/early September
- Abba Ultra for mites as needed until mid September
- Bifenthrin for weevil in September



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- **Crop Load Management**



Crop Load Management



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- **Weed Management**

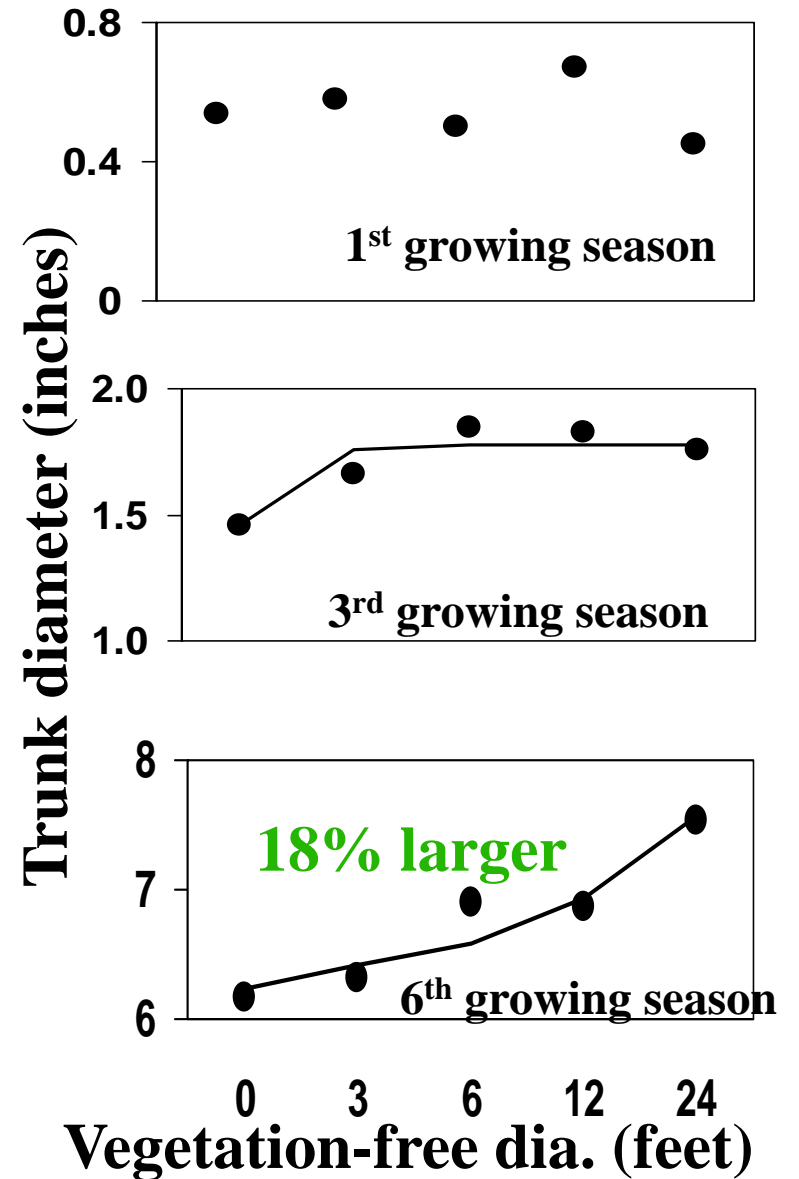
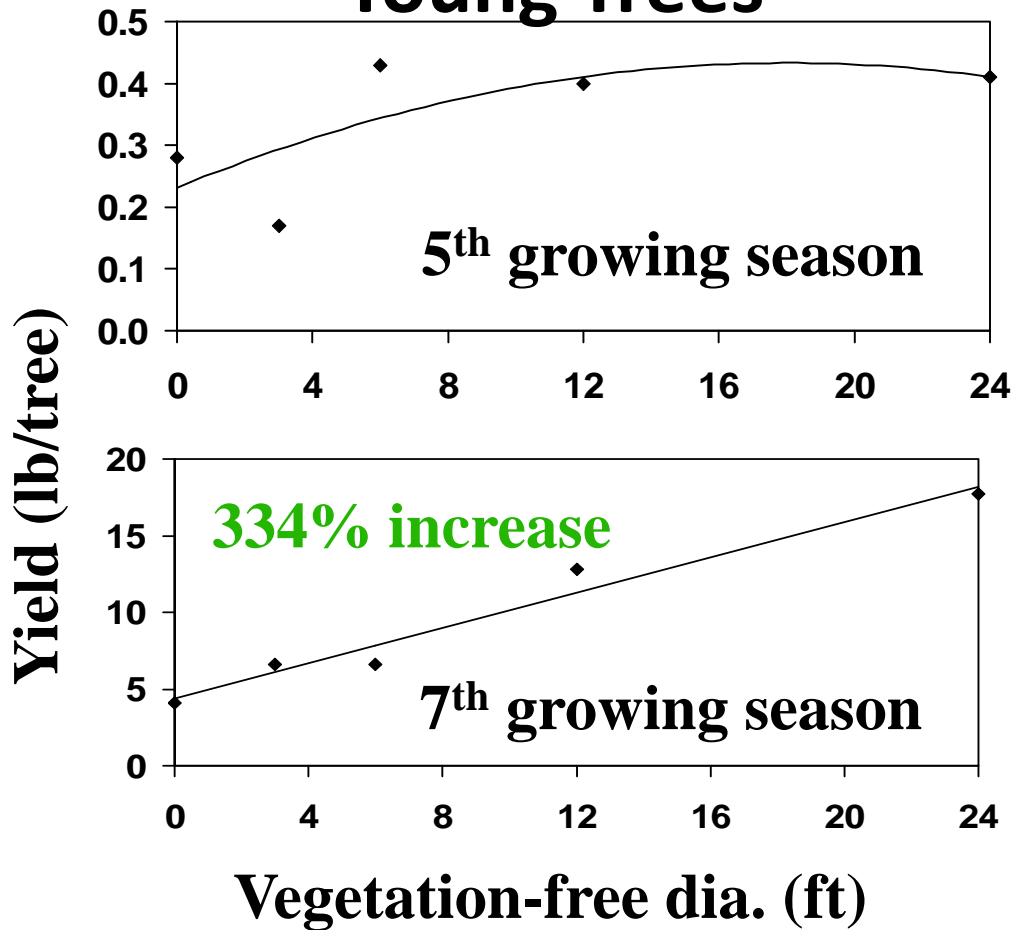


Weed Management

- Rotate Burndown Chemistries
- Use Pre-Emerge Herbicides



Weed Management Young Trees



Herbicides

- Postmergence:
 - Glyphosate, Paraquat, or Glufosinate ---burndown
 - Sandea---nutsedge, pigweed, wild radish
 - Aim---pigweed/morning glory
 - Venue---wild radish, pigweed, morning glory
 - Basagran—some broadleafs and yellow nutsedge
 - Poast---annual and perennial grasses
 - Select---annual/perennial grasses
 - Fusilade---annual/perennial grasses
- Pre-emergence:
 - Surflan
 - Prowl
 - Chateau
 - Alion can be used after year 3.
 - Simazine can be used after year 2
 - Diuron can be used after year 3 (avoid on sandy soils)



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- Nutrition
- Cultivars
- Disease/Insect Management
- Crop Load Management
- Weed Management
- Don't Over-Manage



Don't Over-manage

- Ask for data on pecans in the Southeast



Snake oil is wonderful stuff!

"Just try it once, dear friends, just try it once and you'll never be without it. For nervousness, for upset stomach, for all types of aches and ailments, for building the blood! It's good, my friends. It's just naturally the best!"

There's a peculiar brand of "snake oil" being peddled in America today. It's the "cure-all" variety whose sponsors talk like this: "Let the federal government solve our problems by running things. Let it take over the doctors... the railroads... the electric light and power companies... and other industries and services."

Most of these people would say they're against socialism. They just think control of this business or that industry or service by the government would benefit themselves, or their community, or maybe everybody.

What they don't realize is: when any government takes over enough things, socialism automatically.

Every time you let government take control, you lose another freedom. And as freedom moves you closer to a socialistic Socialism's promises might sound sooth-ing. But so do the promises of the man who sells snake oil. Neither cures anything. Both are dangerous when people fall for them.

The business-managed, tax-paying Electric and Power Companies" which publish advertisements are fighting creeping socialism wherever we find it. We believe it's your business too. Why not talk it over this week with your friends and neighbors? The truth is: American socialism is everyone's problem because it's everyone's danger.



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- Crop Load Management
- Weed Management
- Don't Over-Manage
- Time in the Orchard



Time in The Orchard

- Spend time in the orchard
- Do things on time

