Basics of Pecan Production

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The Tree
• Can be anywhere from 7 to 12 years depending on variety and environmental conditions
• Some varieties more precocious than others
• Long range planning an essential consideration
Pecan Root System

• Tap root for tree stability
• Feeder roots near surface
• Severed taproot re-establishes
• Expansive root system
• Requires deeper soils
Pollination

• Pecan
  – Pollen moves by wind
  – Cross pollination needed
  – Protandrous
    – Anthers release pollen before the stigma of same flower is receptive
  – Protogenous
    – Stigma is receptive before the pollen is shed from the anthers of the same flower
Pecan Male Flower

• Catkin is male flower
• Produces pollen
• Borne at end of last season’s growth
• May release before female flower is receptive
• Variety selection
Pecan Female Flower

• Borne at end of current season’s growth
• Must be pollinated by male flower (catkin)
• Develops into the nut
• Variety selection
Planning and Early Management
Planning the Pecan Planting

• Determine tree number by yield/tree
  – Pecan - 75 to 100 lbs
• How many trees can you care for?
  – Weed and pest control
  – Water
  – Prune and harvest
Tree Spacing

• Spacing in the orchard
  – No closer than 40 feet apart
  – Will eventually need thinning at this spacing
  – Consider 60-80 feet apart
Site Selection

- Air drainage
  - Frost pockets
- Space available
  - May not have room for trees
- Soil
  - Heavy poorly drained soil may limit potential
Soils For Pecan Trees

• Depth
  – Effective rooting depth
  – May be limited by rock, water
  – Minimum of 3 feet in most cases

• Drainage
  – Internal: perk test
  – External: slope to open area
Pre-plant Fertilization

- Soil test
- Adjust pH
- Add nutrients to achieve normal levels
  - P, K, Mg, Ca, Fe, Mn
- Add N after planting
Pecan: Bare Root Tree Planting

- Plant in Fall
- Cut tap root to 18”
- Plant in hole large enough to accommodate roots
- Graft union at or slightly above ground level
Top Pruning of Bare Root Trees

- Cut pecan about half
- Balances top and root
- Can force bud growth
Rootstocks and Varieties
Homeowner Pecan Production

• Genetic disease resistance is a must

• Difficult to control diseases and insects once trees are large
Pecan Rootstocks

- May impart some characteristics to scion
  - Bud break
  - Increased/decreased Vigor
  - Cold hardiness
  - Disease/insect resistance
  - Precocity
Homeowner Varieties

- Candy
- Elliot (south only)
- Jackson
- Melrose (south only)
- Owens
- Sumner (south only)
Homeowner Plus Varieties

- Cape Fear (south only)
- Forkert
- Kiowa
- Pawnee
Other Varieties

- Caddo (commercial)
- Creek (commercial)
- Excel (homeowner, commercial)
- Kanza (north only) (homeowner, commercial)
- Lakota (north only) (homeowner, commercial)
- Mandan (homeowner, commercial)
- Oconee (homeowner plus, commercial)
Propagation and Grafting
Propagation

- **Sexual**
  - Accomplished through the seed
  - Variability prevents use on orchards
- **Asexual**
  - Without seed
  - Eliminates variability
  - Results in clones with identical members
Pecan Scion Wood

- Good wood must have viable buds
- Primary and secondary buds are visible
- Has two more buds for emergency use by the plant
Bark Graft

- Use on stock up to 4 inches
- Top working larger trees
- Put on two, remove one if both take
Four Flap Graft

- Use on stock up to size of scion wood
- Use to convert seedling trees to variety
- Remove wrapping in late summer and apply brace to prevent blow out
Tree Training and Pruning
Pruning

- Reasons to prune
  - Control tree size or shape
  - Correct injuries
  - Control bearing
2nd Leaf Pecan Tree Prior to Pruning

- Vigorous growth
- Many shoots
- Objective is central leader
2nd Leaf Pecan Tree After Pruning

- Central leader
- Temporary scaffolds spaced along leader
- No
  - narrow crotches
  - crow’s feet
- Emphasis on structure
Pecan Tree Training

• Ideal crotch angle is 45 degrees
• Establish by pruning
• Can establish with spacers
• Use spacers for permanent scaffolds
Tree Nutrition
Fertilization of Pecan Trees

- Too little
  - Unthrifty growth
  - Poor fruit set
  - Poor production
- Too much
  - Excessive growth, limb breakage
  - Poor color, soft fruit
  - Delayed ripening & bearing
  - Tree death
Tree Nutrition Monitoring

- Soil test
  - Generally useful for pre-plant needs only
  - Soil content and tree content usually not same
  - Nutrients not always available

- Leaf tissue analysis
  - Measures tissue content
  - Sample must reflect lab criteria
Leaf Sample Collection

- Collect in July from representative trees
- Sample middle of average growth
  - 100 leaves or leaflets
  - two leaves with petiole/shoot or leaflets/leaf
- Avoid galvanized containers
- Rinse, air dry
Sample technique for pecan leaves
First Year Fertilizer Application

- One pound (pint) of complete fertilizer (10-10-10) in band about 6” from trunk
- Apply half at bud break, remainder in May/June
Sample Fertilizer Schedule
(10-10-10 per tree)

- Pre-plant - soil sample, adjust pH, P, K, Mg, Ca, Fe, Mn as needed
- Year 1 (apply after bud break)
  - pecan 1 lb
  - water and control weeds
- Year 2 (apply before bud break)
  - Pecan 2 - 3 lbs
Sample Fertilizer Schedule
(10-10-10 per tree)

- Year 3
  - Pecan - 3 lbs in February or March
    - Zinc as needed
    - 36% zinc 1 lb per 50 gallons water
- Year 4 and up
  - fertilize by leaf analysis results
Nut Maturity and Harvest
Green Shuck

- Not ready for harvest
- Susceptible to freeze
- High moisture
- Nut development still affected by stress, e.g. moisture
Shuck Split

• Nut is mature and ready for harvest
• Nut is released from shuck
• No longer susceptible to freeze
• Nut begins to dry
• Time varies with variety
Pecan: Freeze Damage

- Freezing temperatures prior to nut maturity
- Nut may be salvaged in some cases
- Shuck will not open
- Use early maturing varieties
Excellent Kernel Quality

- Harder to achieve with large nuts
- Requires persistent management
- Usually requires crop load management
- Usually related to nut load and stress
Home Pecan Harvesting

- Wind may cause drop
- Long harvest period increases loss
- Knock nuts from clusters after shuck split
Pecan Kernels

- 35-55% of in shell wt.
- 70-75% fat
  - 92-97% unsaturated
- Get rancid with age
- Storage
  - 70°F  3 Month
  - 32°F   12 Month
  - 0°F    6-10 years
Important Pests
Insects of Interest

- Pecan nut casebearer
- Pecan phylloxera
- Aphids (yellow/black)
- Spittlebug
- Leafminer
- Mites
- Hickory Shuckworm
- Pecan Weevil
- Stink bugs/Leaf-footed bugs
- Walnut caterpillar (Walnut datana)
- Fall Webworm
Pecan Phylloxera

- Galls on stem or leaf
- Stem is more serious
- Insecticide must be applied shortly after bud break in spring
- Resistance in some varieties
Pecan Weevil Adult

- Overwinter in soil under tree
- Emerge after rain in July-September
- Must treat soon after emergence
- Must get full tree coverage with spray
Pecan Weevil Larvae

- Results from egg lay inside nut
- May be in nut at harvest
- Leaves “buckshot” hole at exit
- Must control prior to egg lay
Aphids
Webworms
Diseases of Interest

- Brown Leaf Spot
- Bunch Disease
- Crown Gall
- Downy Spot
- Fungal Leaf Scorch
- Liver Spot
- Powdery Mildew
- Pecan Scab
Pecan Scab

• Black splotches on nuts and leaves
• Results in
  • leaf drop
  • poor nut fill
  • shuck stick
• Treatment
  • Resistance
  • Fungicide spray
Important Resources

- [www.mspecans.org](http://www.mspecans.org) – Website for MS Pecan Growers Assoc.
- [http://msfruitextension.wordpress.com/category/pecans/](http://msfruitextension.wordpress.com/category/pecans/) -- my blog with pecan-specific information
- [http://pecan.ipmpipe.org/](http://pecan.ipmpipe.org/) -- Pecan ipmPipe website (Texas)
- [http://www.caes.uga.edu/commodities/fruits/pecan/](http://www.caes.uga.edu/commodities/fruits/pecan/) -- University of Georgia pecan page