

# *Pecan Water & Crop Management:*



Monte L. Nesbitt

TEXAS A&M  
**AGRI**LIFE  
EXTENSION



# WATER IS CRITICAL TO PRODUCING HIGH QUALITY PECANS

Too Little or  
too much must  
be avoided









Must Find Balance Between  
Too Little & Too Much



Daily water requirement is a function of canopy size, evapo-transpiration rate & cropload



Pan evaporation water-use factor for pecans=0.70

# Average Daily Pan Evaporation Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
College Station	.08	.10	.15	.19	.22	.27	.28	.28	.22	.17	.12	.09
Fort Stockton	.13	.17	.29	.36	.41	.48	.44	.40	.30	.23	.17	.13
Austin	.08	.11	.17	.20	.23	.28	.30	.31	.23	.17	.12	.08
Temple	.08	.11	.16	.20	.22	.28	.31	.31	.24	.18	.12	.09

$$Q \text{ (Gal/tree/day)} = D2 \times E \times 0.70 \times 0.49$$

30 ft Trees, Fort Stockton, June=148 Gallons per Day

10 ft Trees, Fort Stockton, June=16 Gallons per Day

148 G/Day x 7 days=36,260 GPA (35 Trees/A)

Research by Dr. Jody Worthington at Stephenville using weighing lysimeters. Based on research with medium-sized trees with little crop.

One acre-inch water=27,154 gallons



# Mature Tree Water Requirement



150 Gal/Tree X 35 Trees/Acre X 7 Days/week=1.35 Acre  
Inches/Week

40-50% Increase for ON-Crop=1.9 -2.0 Acre Inches/Week



Not many people  
can guess  
accurately whether  
soil is at, above or  
below

**Plant Available  
Water**





# What is Pecan Tree Stress? Any external factor that negatively influences plant growth, productivity, reproductive capacity or survival. (Rhodes and Nadolska-Orczyk 2001)

- ▶ BIOTIC
  - ▶ Insects
  - ▶ Fungi/Bacteria
  - ▶ Animals
  - ▶ People with axes
- ▶ ABIOTIC
  - ▶ Dry Soil
  - ▶ Root Oxygen Deficit
  - ▶ Nutritional
  - ▶ Shade
  - ▶ Overcropping





Prevent overcropping with mechanical shaking





Excess-crop trees rarely produce #1 kernels and tree limb breakage can be significant





# Make an accurate crop assessment by field, variety, age class.

- ▶ Count 50-100 terminal branches on 10 similar trees.
- ▶ No Crop=0-10%
- ▶ Light Crop=11-33%
- ▶ Medium Crop=34-66%
- ▶ Heavy Crop=67-80%
- ▶ Excess Crop=80%+





# Shake Trees in Early Summer

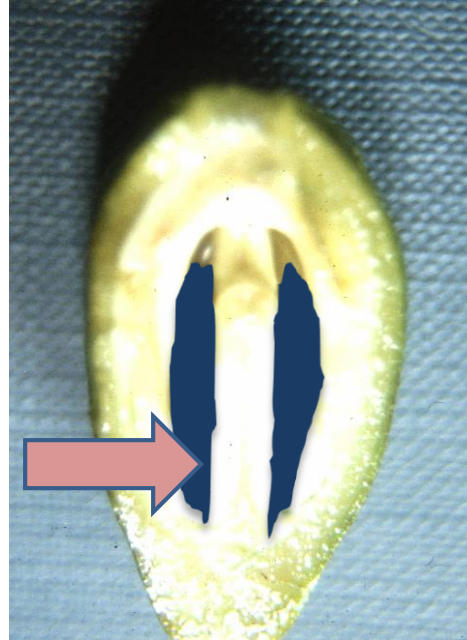


Slide Credit: Stein



# Guidance on Pecan Thinning

- ▶ Shake at 2/3 kernel elongation if nuts will release.
- ▶ Operate equipment carefully
- ▶ Pads must not slip, but excess compression can crush lush-growing trees



July-August

- ▶ Target for Terminal Fruiting is to reduce trees from 80-90% bearing terminals down to 50-70% bearing terminals
- ▶ Large nut, High INDEX varieties should target 50%



## IMPORTANCE OF LEAVES

- ▶ Six (6 compound leaves) (70 leaflets) needed to produce one Stuart nut.
- ▶ Two additional leaves per nut are needed to produce a crop next year.
- ▶ 100 lbs of a 50 nut per pound variety then requires 40,000 compound leaves



# Questions?



Email:  
[MLNesbitt@tamu.edu](mailto:MLNesbitt@tamu.edu)

(979) 862-1218