Is Hedging the Key to the Future of Southeastern Pecan Production?

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Cloud Cover
Las Cruces, NM

- Clear (71%)
- Partly Cloudy (41%)
- Mostly Cloudy (11%)
- Overcast (13%)

Graph showing the percentage of cloud cover for each month.
Cloud Cover,
Moree, New South Wales, Australia
Cloud Cover, Albany, GA
Every 4th Row
Every Other Middle
Mechanical Pruning: Direction

- Hedgerow direction makes a difference.
  - **Both sides** of N-S oriented hedgerows receive sunlight.
  - **Only south side** of W-E oriented hedgerows receives sunlight.
# Mechanical Pruning: Direction

## Table 3. Influence of row orientation on yield and nut quality characteristics of continuous canopy pruned ‘Wichita’ and ‘Western Schley’ pecan trees (CCHP/1 + T/1) on a 1-year pruning cycle.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Row orientation</th>
<th>In-shell yield (lb/acre)</th>
<th>Shellout (%)</th>
<th>Premium kernel (%)</th>
<th>Choice kernel (%)</th>
<th>Nuts a/ lb (no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wichita</td>
<td>N–S</td>
<td>3121 b</td>
<td>61.7</td>
<td>78.7</td>
<td>17.0</td>
<td>51</td>
</tr>
<tr>
<td>Wichita</td>
<td>E–W</td>
<td>1973 a</td>
<td>61.2</td>
<td>85.4</td>
<td>12.5</td>
<td>49</td>
</tr>
<tr>
<td>Western Schley</td>
<td>N–S</td>
<td>2536 b</td>
<td>55.9</td>
<td>55.9</td>
<td>40.5</td>
<td>65</td>
</tr>
<tr>
<td>Western Schley</td>
<td>E–W</td>
<td>1459 a</td>
<td>57.9</td>
<td>55.4</td>
<td>39.5</td>
<td>64</td>
</tr>
</tbody>
</table>

*Canopies hedge pruned to about 3.5 ft (1.07 m) from row center and pruned at 4 ft (1.2 m) in subsequent years. 1 lb/acre = 1.12 kg·ha⁻¹.

*Rows running either north–south (N–S) or east–west (E–W).

*Means followed by different letters are statistically different at \( P = 0.05 \) with main effects and interactions tested using resampling techniques using bootstrapping with hypothesis testing at 10,000 iterations for determining confidence limits of \( P = 0.05 \) for main effects and \( P = 0.10 \) for interactions.

*Percentage kernel.

*Percentage of kernels rating a premium or choice grade.

*1 nut/lb = 2.2 nuts/kg.

Wood and Stahmann, 2004
Hedge pruning effects on scab?

- After hedge pruning, fresh growth is produced and grows throughout the season.
- These leaves are susceptible to scab (susceptible cultivars).
- Could make it more challenging to manage scab?
- Consequently, fruit on hedged trees may have more severe scab.
- However, an advantage may be hedged orchards are more open (more air movement, therefore conditions less conducive to scab).
- Also hedged trees are shorter providing opportunity for better fungicide coverage.

Clive Bock, USDA
Under the same fungicide regime, hedge pruning cannot be said to increase or decrease scab severity in the canopy up to 40 ft (12.5 m).

There is an increasing advantage to hedging as more of the fruit are within reach of effective fungicide coverage.

If trees are young (<40 ft, 12.5 m) there are advantages to maintaining this height on a hedging program:
- Prevent scab developing in the canopy at heights >40-45 ft.
- Overall yield and kernel quality will be less impacted by poorly controlled scab.
- Removes scab in the upper canopy as a source of inoculum.

~12-14 m (40-45 ft)
Hedging Trial – Marshallville, GA

- Desirable trees 14 m (~46 ft) and hedged to 12-14 m (39-46 ft)
- Planted 1996
- Hedged alternate rows - one side March 2013, other side March 2014 (sampled trees hedged on West in 2013 and 2016, East in 2014)
Hedging Trial Yields

Desirable

Sumner

*No statistical diff.
Hedging Quality—Desirable
Percent Kernel

<table>
<thead>
<tr>
<th>Year</th>
<th>Hedged</th>
<th>Non-Hedged</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>2014</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>2015</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>2016</td>
<td>a</td>
<td>b</td>
</tr>
</tbody>
</table>

Legend:
- **Hedged**
- **Non-Hedged**

Note: The graph shows the percent kernel for Hedged and Non-Hedged scenarios from 2013 to 2016.
Hedging Quality—Desirable Nut Size

Hedged vs. Non-Hedged Mean Nuts per lb. from 2013 to 2016.
Water Stress in Hedged vs. Non-Hedged Trees---2015
Water Stress in Hedged vs. Non-Hedged Trees---2016

![Graph showing the mean stem water potential (psi) for hedged and non-hedged trees over time. The graph indicates that non-hedged trees generally have lower water stress compared to hedged trees, especially towards the end of the year. There is also a bar chart comparing the mean stem water potential between hedged and non-hedged trees, with non-hedged trees showing a higher water potential.]
How close is too close?

30 X 30  ---  9 years old
Potential Yields of ‘Creek’ at Various Spacings

<table>
<thead>
<tr>
<th>Trees/acre</th>
<th>48.4</th>
<th>54.45</th>
<th>72.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>30 X 30</td>
<td>20 X 40</td>
<td>20 X 30</td>
</tr>
<tr>
<td>4</td>
<td>336</td>
<td>378</td>
<td>504</td>
</tr>
<tr>
<td>5</td>
<td>480</td>
<td>540</td>
<td>720</td>
</tr>
<tr>
<td>6</td>
<td>720</td>
<td>810</td>
<td>1080</td>
</tr>
<tr>
<td>7</td>
<td>960</td>
<td>1080</td>
<td>1440</td>
</tr>
</tbody>
</table>

Cost/Acre of Tree Spading in Year 8: $960, $1040, and $1440

Potential gross* income/acre over 4 year period: $6240, $7020, and $9360

--Does not include cost of spraying, fertilization, irrigation, hedging, etc.
Tight Spacings/Hedging
Not for Everybody

• Expensive
• Labor Intensive
• Difficult
  Psychologically

Safe Route:
Plant  25 X 50
  30 X 50
  40 X 40

Avoid the following combination:
Tight Spacing, Scab Susceptible Varieties,
Poor air flow
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
  - Labor Intensive
  - Limit to number trees/acre
  - Likely increased pest pressure
  - Allows more trees per acre