Mechanical Pruning of a ‘Western’ Pecan Orchard
The Experimental Objective

Characterize impact of frequency of mechanical pruning on light interception, yield, and nut quality.
Pruning Treatments

- Cultivar ‘Western’ with severe alternate bearing— A rehabilitation project.
- Treatments thereafter:
  1. Every year
  2. Every other year
  3. Every 3rd year
  4. Un-pruned control
Mechanical Pruning: Dimensions

- Width: 12'-16'
- Height: 7'-9'
- Depth: 30'
- Space between trees: 30'
Light (PAR) Measurements

Funding from SCRI—USDA—NIFAProject No. 2010–01213. With Dr. Pedro Andrade, Univ. of AZ.
Light (PAR) Measurements

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CONTROL

8–9AM

9:30–11AM

11AM–12:30PM

TREATMENT 3
Average PAR by Sensor

~8am-9am

~9:30am-11am

~11am-12:30
Nut Yield

Inshell Yield (Pounds per Acre)

Pruned → ALL

CONTROL

Nut Yield

Inshell Yield (Pounds per Acre)


CONTROL

TRT 2
Nut Yield

Inshell Yield (Pounds per Acre)

Pruned → ALL 1 1 1 1 1 1 1 1 1

CONTROL

TRT 1

Alternate Bearing (2009–2013)

- **TRT1**: 0.10
- **TRT2**: 0.30
- **TRT3**: 0.20
- **CONTROL**: 0.60
Nuts per Pound (2006–2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>TRT1</th>
<th>TRT2</th>
<th>TRT3</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>91.2</td>
<td>93.6</td>
<td>85.4</td>
<td>104.7</td>
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<tr>
<td>2007</td>
<td>89.1</td>
<td>79.2</td>
<td>84.0</td>
<td>89.2</td>
</tr>
</tbody>
</table>

- On years
- Off years
Percentage Kernel (2006–2013)

- **TRT 1**: 56.9%
- **TRT 2**: 57.3%
- **TRT 3**: 57.5%
- **Control**: 54.9%

**On years** vs **Off years**
The Take Home Messages:

• Mechanical pruning increases the amount of light getting to the bottom zones of the canopy.
  – Some of that light is “lost” to the orchard floor

• Mechanical pruning reduces in-shell nut yield over the short term.
The Take Home Messages:

• Mechanical pruning, if timed correctly, can virtually eliminate alternate bearing.

• Mechanical pruning dramatically increases nut quality especially in ‘On’ years.
Acknowledgements

• Brad Lewis’ lab (esp. Larry Blackwell)

• Josh Sherman & Marisa Potter

• Funding from SCRI–USDA–NIFA Project No. 2010–01213