Training Young Walnut Trees
- exploring new ideas -

“Training” occurs in years 1-6

• Traditional way: modified central leader
  • Active scaffold selection & heading cuts
    • Establish a strong branching structure
    • Keep the tree growing to fill in space
    • Allow equipment access
    • Early crop will stunt the trees

• The new way: The No Heading method
  • Minimal scaffold selection (thinning cuts only)
  • NO heading cuts... ever
  • Results:
    • Well developed trees
    • Earlier fruit production
    • Lower pruning costs
## UCCE “No Heading” Training Trials

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Dates</th>
<th>County</th>
<th>Variety</th>
<th>Rootstock</th>
<th>Spacing</th>
<th>Vigor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lampinen</td>
<td>2004-2010</td>
<td>Colusa</td>
<td>Howard</td>
<td>Paradox</td>
<td>12’ x 25’</td>
<td>Fair</td>
</tr>
<tr>
<td>Lampinen/Hasey</td>
<td>2008-2010</td>
<td>Colusa</td>
<td>Chandler</td>
<td>Paradox</td>
<td>15’ x 22’</td>
<td>Fair</td>
</tr>
<tr>
<td>Doll</td>
<td>2011-2010</td>
<td>Merced</td>
<td>Chandler</td>
<td>Paradox</td>
<td>22’ x 24’</td>
<td>High</td>
</tr>
<tr>
<td>Caprile</td>
<td>2011-2010</td>
<td>Contra Costa</td>
<td>Chandler</td>
<td>Paradox Own rooted</td>
<td>18’ x 24’</td>
<td>Good</td>
</tr>
<tr>
<td>Caprile</td>
<td>2011-2010</td>
<td>Contra Costa</td>
<td>Howard</td>
<td>Own rooted</td>
<td>24’ x 24’</td>
<td>Low</td>
</tr>
</tbody>
</table>
**Thinning Cut:**
- Remove the entire branch
- Redirects growth to remaining branches
- Opens up the canopy

**Heading cut:**
- Remove top of a branch
- Encourages branching below the cut
- Makes a denser canopy
STEP BY STEP COMPARISON:

**At planting:** Both systems -> head at 3-5 buds

**1st season:** Both system -> grow a strong leader
1st Dormant Pruning:

- Select single leader
- Remove other branches

- Select single leader
- Remove other branches
- Head leader at 6-8’
2nd Dormant pruning:

[2nd Season Goal: grow 1st scaffolds]

- Select leader (tallest)
- Select 4-5 1st scaffolds
- Head leader/scaffolds by 1/4 - 1/3
- Remove branches below 4-5’

• Remove branches below 4-5’

More scaffolds!

No Heading

Modified Central Leader
3rd Dormant Pruning

[3rd Season Goal: grow 2o scaffolds]

- Prune for access

Alternate year shoot growth

Less water use

First crop?

Central leader

- Head leader (1/4 – 1/3)
- Head a few to all 2o scaffolds
- Prune for access

No Heading

Modified Central Leader
4th dormant pruning:

[4th Season Goal: grow 3º scaffolds]

- Head leader
- Head a few to all 3º scaffolds
- Prune for access

1st or 2nd harvest

No Heading

Modified Central Leader
~ 5th year and beyond: **Both systems**
- Prune for orchard access
## UCCE “No Heading” Trials Summary

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unheaded</th>
<th>Modified Central Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree size – trunk caliper</td>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>Tree size – Light interception</td>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>Nut quality</td>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>Limb breakage</td>
<td>similar</td>
<td>similar</td>
</tr>
<tr>
<td>Water use</td>
<td>similar (less in year 3)</td>
<td>similar</td>
</tr>
<tr>
<td>Yield</td>
<td>Higher early yield</td>
<td></td>
</tr>
<tr>
<td>Scaffold development</td>
<td>≥, smaller, well balanced</td>
<td>Fewer, heavier scaffolds</td>
</tr>
<tr>
<td>Tree structure</td>
<td>Central leader, open</td>
<td>Spreading, denser</td>
</tr>
<tr>
<td>Pruning costs (year 1-5)</td>
<td>~$ 120/A</td>
<td>~$ 600/A</td>
</tr>
</tbody>
</table>
2015: Blank Bud Problem

- Poor budbreak on 2\textsuperscript{nd} leaf trees
  - On headed and unheaded trees
  - Few branches below 8’ on unheaded trees

- Why?
  - Excessive shoot vigor $\rightarrow$ blind wood?
  - Low chill year $\rightarrow$ poor leafout?
  - Leaders painted white!

- Solution
  - Don’t paint where you want bud break
  - Head by mid May if bud break is poor
Still To Be Determined:

Will the UNHEADED trees on STANDARD SPACING:

• Fill in their tree spacing
• Develop strong structure to support high crop load
• Maximize productivity over the life of the orchard
  • Lower cost with early pruning & fewer trees
  • Earlier harvest (like hedgerows)
  • Without hedging -> maximize full yield potential (years 8 to 30+)

Precautions:

• 1st year leader vulnerable
• Sunburn, frost, excess vigor, white paint can reduce bud break
• Option: head in May if leaders don’t break correctly
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Presentation & handouts posted on Contra Costa County website:
http://cecontracosta.ucanr.edu

More detailed information:
• Walnut Research Reports: http://walnutresearch.ucdavis.edu