What Yield, Harvest Cost, and Price are Profitable?

KAREN KLONSKY
DEPT. OF AGRICULTURAL & RESOURCE ECONOMICS
UNIVERSITY OF CALIFORNIA, DAVIS
Orchard assumptions for mechanical harvest

- 90% Manzanillo and 10% Sevillano
- 12’ x 18’ spacing, 203 trees per acre
- Trellis
- Double drip line on the ground
  - 36” apart, ½ gallon emitters
- 40 year orchard life
Orchard assumptions for hand harvest

- 90% Manzanillo and 10% Sevillano
- 22’ x 22’ spacing, 90 trees per acre
- Drip line on the ground
- 40 year orchard life
Additional considerations for mechanical harvest

- Additional suckering needed at establishment up to 36” for tree shakers to avoid knots on trees that could create pressure points and cause the shaker to slip off.
- Quality seems to be acceptable.
- Acceptance of mechanically harvested fruit can be a problem nonetheless.
## Estimated orchard establishment costs for mechanical harvest

<table>
<thead>
<tr>
<th>Description</th>
<th>$ per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees, 203 @ $6/tree</td>
<td>$1,218</td>
</tr>
<tr>
<td>Level ground</td>
<td>$500</td>
</tr>
<tr>
<td>Irrigation system with well</td>
<td>$1,000</td>
</tr>
<tr>
<td>Trellis system and planting</td>
<td>$1,000</td>
</tr>
<tr>
<td>Suckering</td>
<td>$2</td>
</tr>
<tr>
<td>Cultural costs (pest control, fertilization, water, etc.)</td>
<td>$300</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$4,020</strong></td>
</tr>
<tr>
<td><strong>Amortized over 40 years @ 7.65%</strong></td>
<td><strong>$325</strong></td>
</tr>
</tbody>
</table>
## Estimated orchard establishment costs for hand harvest

<table>
<thead>
<tr>
<th>Item</th>
<th>$ per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees, 90 @ $6/tree</td>
<td>$540</td>
</tr>
<tr>
<td>Level ground</td>
<td>$500</td>
</tr>
<tr>
<td>Irrigation system with well</td>
<td>$1,000</td>
</tr>
<tr>
<td>Trellis system and planting</td>
<td>____</td>
</tr>
<tr>
<td>Suckering</td>
<td></td>
</tr>
<tr>
<td>Cultural costs (pest control, fertilization, water, etc.)</td>
<td>$300</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$2,622</td>
</tr>
</tbody>
</table>

Amortized over 40 years @ 7.65% $212
Harvest cost assumptions

- **Hand harvest**
  - $350 per ton custom to pick
  - $19.50 per ton to haul

- **Mechanical harvest**
  - $400 per acre to shake and catch
  - $19.50 per ton to haul
Table olives, hand harvest 5 tons
Total cost of production, $4,481

- Cultural costs: $1,267 (28%)
- Harvest: $1,750 (39%)
- Trees: $212 (5%)
- Land: $353 (8%)
- Equipment: $384 (9%)
- Cash overhead: $515 (11%)

Total cost: $4,481
Table olives, mechanical harvest 5 tons
Total cost of production, $3,322

- Land: $353 (11%)
- Trees: $325 (10%)
- Equipment: $384 (12%)
- Cash overhead: $515 (15%)
- Harvest: $478 (14%)
- Cultural costs: $1,267 (38%)
### Table Olives mechanical and hand harvest

**Total cost of production per acre**

<table>
<thead>
<tr>
<th>Category</th>
<th>Hand harvest</th>
<th>Mechanical harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees</td>
<td>$212</td>
<td>$325</td>
</tr>
<tr>
<td>Land</td>
<td>$353</td>
<td>$353</td>
</tr>
<tr>
<td>Equipment</td>
<td>$384</td>
<td>$384</td>
</tr>
<tr>
<td>Cash overhead</td>
<td>$515</td>
<td>$515</td>
</tr>
<tr>
<td>Harvest</td>
<td>$1,750</td>
<td></td>
</tr>
<tr>
<td>Cultural costs</td>
<td>$1,267</td>
<td>$1,267</td>
</tr>
</tbody>
</table>

Hand harvest - $4,496 per acre
Mechanical harvest - $3,322 per acre
Table Olives – Expected Yields and Prices

- Expected yield range: 3.5 – 9 tons per acre
- Removal rate range: 60% – 80%
- Expected price range: $675 - $1,075 per ton
Table Olives – Hand and Mechanical Harvest
Total Costs per ton at varying yields

Cost per Ton

Hand harvest
Mechanical

$0
$200
$400
$600
$800
$1,000
$1,200
$1,400
$1,600
$1,800
$2,000

2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
Table Olives – Hand and Mechanical Harvest
Total Costs per ton at varying yields

Cost per Ton

Expected range of price per ton

Hand harvest
Mechanical
Table Olives – Hand and Mechanical Harvest
Breakeven yield at $1,075 per ton
Table Olives – Hand and Mechanical Harvest
Breakeven yield at $675 per ton
Table Olives – Hand and Mechanical Harvest
Breakeven Yields at $800/ton
Table Olives – Hand and Mechanical Harvest
Tons per Acre at 60% and 80% Removal

[Graph showing tons per acre at 60% and 80% removal for hand and mechanical harvest.]
Table Olives – Hand and Mechanical Harvest
Breakeven Yields at $1,075/ton

![Graph showing hand and mechanical harvesting yields.](image-url)
Table Olives – Hand and Mechanical Harvest
Breakeven Yields at $800/ton

- Hand harvest
- Mechanical 80%
- Mechanical 60%

Graph showing the relationship between maximum tons per acre and tons per acre for different harvest methods.
Table Olives – Hand and Mechanical Harvest

Breakeven Yields at $675/ton

- Hand harvest
- Mechanical 80%
- Mechanical 60%
## Summary of Results

<table>
<thead>
<tr>
<th></th>
<th>Hand harvest</th>
<th>Mechanical 60%</th>
<th>Mechanical 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost/Acre @ 5 tons</strong></td>
<td>$4,544</td>
<td>$3,341</td>
<td>$3,341</td>
</tr>
<tr>
<td><strong>Cost /Ton @ 5 tons</strong></td>
<td>$909</td>
<td>$668</td>
<td>$668</td>
</tr>
<tr>
<td><strong>Breakeven yield @ $675/ton</strong></td>
<td>7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>Breakeven yield at $800/ton</strong></td>
<td>6</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Breakeven yield at $1,075</strong></td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Equivalent hand yield @ $675</strong></td>
<td>7</td>
<td>6.3</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Equivalent hand yield @ $800</strong></td>
<td>6</td>
<td>5.0</td>
<td>6.7</td>
</tr>
<tr>
<td><strong>Equivalent hand yield @ $1,075</strong></td>
<td>4</td>
<td>3.8</td>
<td>5.0</td>
</tr>
</tbody>
</table>
Take home guesses

- Establishing an olive orchard for mechanical harvest adds about $1,400 in cost or $110 per year amortized over 40 years.
- Mechanical harvest saves $650 per acre at 3 tons per acre and $2,050 at 7 tons per acre.
- You make more money with mechanical harvest if you have 80% removal.
- But with 60% removal you make less money than with hand harvest.
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