Mechanical Harvesting of California Black Ripe Table Olives

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Peter Searles and Cecelia Rosseaux Searles
and
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Rocky Hill Ranch and Burreson Ranch
Bell Carter Olives and Musco Family Olive Company
Finca La Bella and MaqTec
Erick Nielsen, Matt Coe, Don Mayo
47% of Gross Return
Objectives: 1996 - 2009

- Economically feasible mechanical harvesting:
  - for existing orchards
  - future orchards
Major Factors: 1996 - 2009

- **Final goal:**
  - commercially competitive product

- **Develop picking method:**
  - harvester second

- **How must orchards change?**

- Canopy Contact
- DSE Harvester
  - 2006, 7, 8

Commercially Marketable Processed Olives
DSE 006, 007 and 008

- Final Efficiency: 57.8% (44.1 – 77.6%)
- % Cannable: 88*** vs 96
- Adj. value/Ton ($): 1,013*** vs. 1137

- Canopy contact head is viable
  - marketable processed olives
- The harvester is marginal
  - slow and inefficient

- MaqTec Colossus
  - Argentina
  - Portugal
  - 2008

Commercially Marketable Processed Olives
Rabodoa, Portugal: September 2008
MacTeq Research Conclusions: Argentina and Portugal, 2008

- Colossus is very efficient:
  - > 90% efficiency

- Fruit damage is unacceptable
  - but it could be improved
Evaluated Existing Mechanical Harvesters 2007, 2008

- Trunk Shakers
  - ENE
  - COE
  - OMC
- Spanish Wraparound
  - 2007, 2008

Commercially Marketable Processed Olives
<table>
<thead>
<tr>
<th>Training</th>
<th>Harvest Eff. %</th>
<th>% Can.</th>
<th>Adj/ton</th>
<th>Hand</th>
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<tbody>
<tr>
<td>Conventional</td>
<td>100%</td>
<td>97.1</td>
<td>1,035</td>
<td>Hand</td>
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<td>Free Esp.</td>
<td>100%</td>
<td>96.3</td>
<td>1,042</td>
<td>Hand</td>
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<tr>
<td>Woven Esp.</td>
<td>100%</td>
<td>94.4</td>
<td>1,031</td>
<td>Hand</td>
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<tr>
<td>Tied Esp.</td>
<td>100%</td>
<td>92.8</td>
<td>1,101</td>
<td>Hand</td>
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<td>Training</td>
<td>Harvest Eff. %*</td>
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Trunk Shaker Research
Conclusions: 2008

- Trunk damage is unacceptable
- Harvest efficiency is marginal
- Fruit quality is excellent
Conclusions: 2006 - 2008

- Canopy and Trunk Harvesters
  - fruit damage is not limiting factor
  - harvest efficiency remains low
Major Factors: 1996 - 2009

- Final goal:
  - commercially competitive product

- Develop picking method first:
  - harvester second

- How must orchards change?
Harvester Evaluations: 2009

- Canopy Contact
  - Coe
  - Agright
- Trunk Shakers
  - ENE
- Small Orchard Prototypes
  - AH Rake
  - WHK Wheel Rake
  - CSU Chico Air Pulse Harvester
COE Harvester
AgRight Olivia
ENE Trunk Shaker
AH Rake
WH Krueger Wheelrake
Questions?

Groups.ucanr.edu/olive_harvest
To develop mechanical harvesting for the California table olive industry.

This site presents the following: current research; project proposals and reports; project investigators; industry cooperators, and field days and meetings.

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