# California Medium Density Table Olives

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California Olive Committee

Traditional Orchards:  96 – 139 t/a

**Hedgerow Orchard #2:**
**12' X 18' = 202 trees/acre**

# What Are the Differences?

- **Cultivar: 'Manzanillo'**
- **Production Costs and Breakdown**
- **Spacing**
- **Yields**
- **Olive Size = Thinning and Irrigation**
- **Olive Fly Tolerance**
- **State of Maturity at Harvest = FRF**
- **Olive Quality at Delivery**
- **Disease Susceptibility**
- **Mechanical Harvesting Technology**

# What Are the Differences?

- **Cultivar: 'Manzanillo'**

California Black Ripe 'Manzanillo' Table Olive

# What Are the Differences?

- **Cultivar: 'Manzanillo'**
- Production Costs and Breakdown

# Cost to Produce Table Olives
# $4,543/acre (2009)

Non-cash overhead

Cultural

$970

$1,308

Cash overhead

$515

$1,750

UC Coop Ext OL-SV-09

# What Are the Differences?

- **Cultivar: 'Manzanillo'**
- **Production Costs and Breakdown**
- Spacing
- Yields

12 Feet

6 Feet

3 feet

**New Orchards: 12' X 18 (200+ T/ac)**

| Treatmeant | 2004 (4th yr.) Tons/A | 2005 (5th yr.) Tons/A | 2006 (6th yr.) Tons/A | 2007 (7th yr.) Tons/A | 2008 (8th yr.) Tons/A | 2009 (9th yr.) Tons/A | 2009 $/Ton | 2009 $/Acre | Cum. Yield (2004-09) Tons/A |
|---|---|---|---|---|---|---|---|---|---|
| Conventional | 4.09 | 1.75 | 2.81 | 6.39 | 5.96 | 3.35 | 1193 | 3991 | 24.35 |
| Free Standing | 3.66 | 1.51 | 2.26 | 6.4 | 5.04 | 4.37 | 1189 | 5192 | 23.24 |
| Trellised, Woven | 4.21 | 1.68 | 2.28 | 6.07 | 5.88 | 2.29 | 1192 | 2731 | 22.41 |
| Trellised, Tied | 3.58 | 3.45 | 1.76 | 7.51 | 4.52 | 4.42 | 1179 | 5178 | 25.24 |
| | NS* | NS | NS | NS | NS | NS | NS | NS | NS |

*NS (Not Significant at the 5% level using Ficher's Test)

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Set fruit: will be an olive

**Heavy Crop Set:**
if representative of total tree and orchard will produce a heavy crop of small fruit.

# Chemical Thinning of Olives

Removes fruit:
    changes leaf to fruit ratio = larger fruit

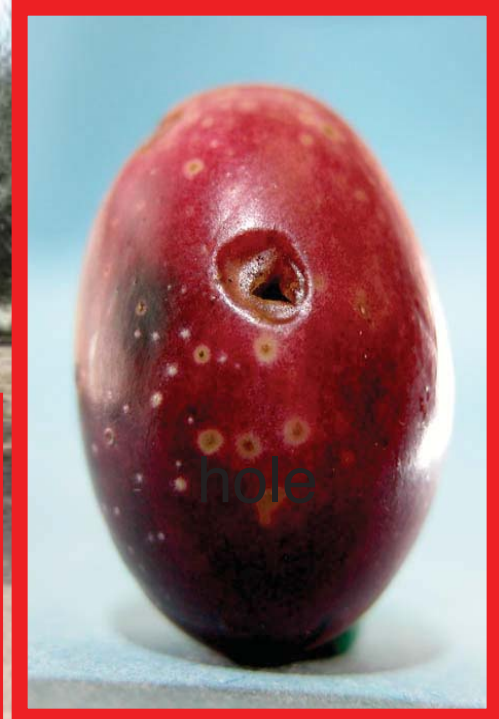Fruit Size Method – 1/8 to 3/16 inch

**Preharvest Irrigation**

# What Are the Differences?

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No Tolerance!!

hole

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- State of Maturity at Harvest = FRF

**Physiologically Immature Fruit: FRF >0.5 Kg**

# Overcome Biological Constraints

**Find a selective abscission agent:**
- Use model abscission agents as treatments
- Define seasonal response
- Examine physiological, molecular changes
- Select compounds based on
- metabolic changes
- Focus on 'natural' compounds
- Screen available compounds

**Incorporate into a 'mechanical harvesting system':**
- Define effective application parameters
- Establish tree architecture criteria

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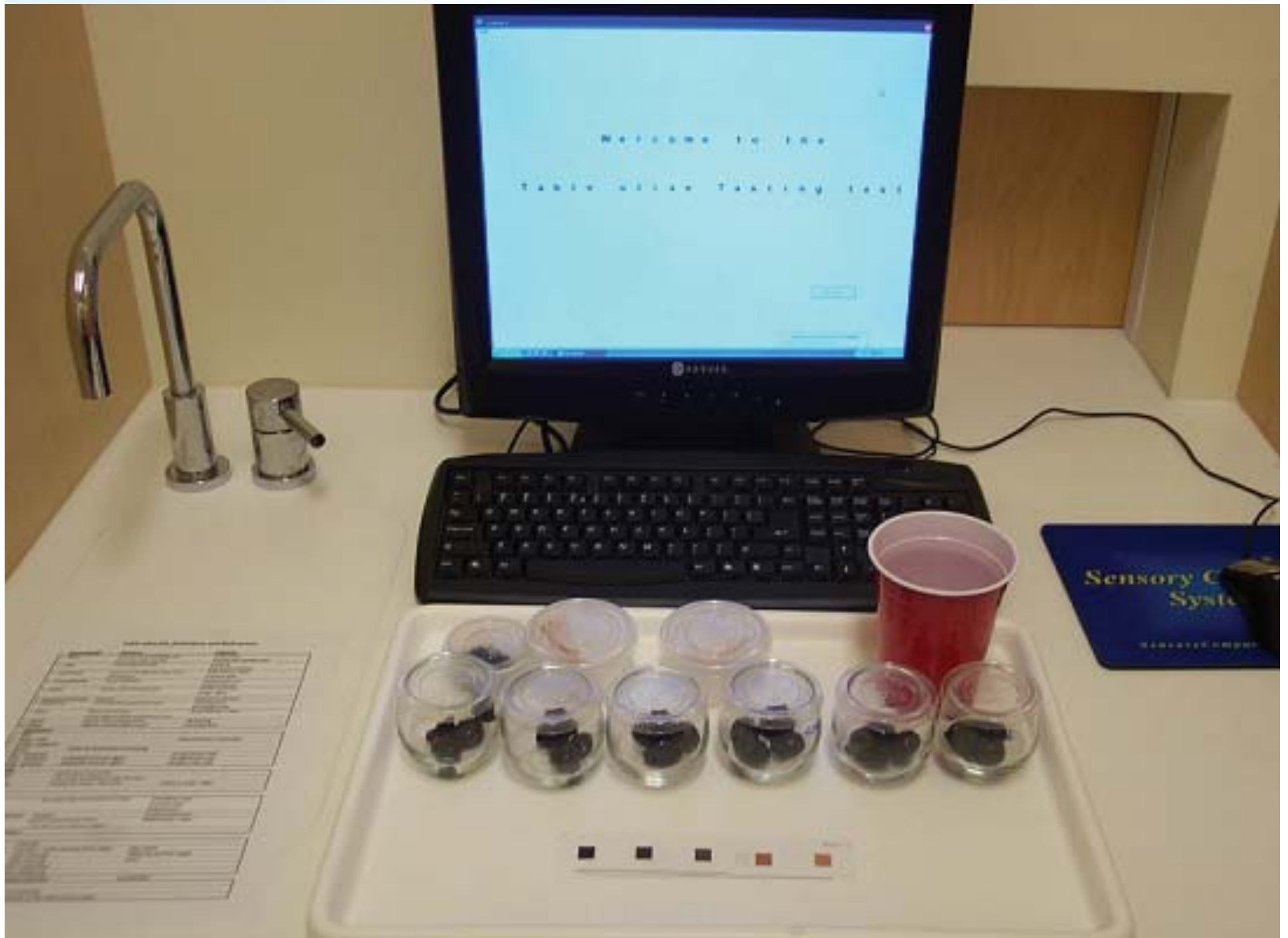
**Hand Harvest     24 hours    Machine Har**

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- Disease Susceptibility

**Olive knot, caused by *Pseudomonas savastanoi* pv. *savastanoi*, is the most common bacterial disease of olive trees.**

**Characteristic symptoms are galls, usually developing on twigs and branches.**

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- Production Costs and Breakdown
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- Olive Size = Thinning and Irrigation
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- State of Maturity at Harvest = FRF
- Olive Quality at Delivery
- Disease Susceptibility
- Mechanical Harvesting Technology

"Harvest Method determines the tree training method."

Ricardo Gucci (2009)

Hedgerow Orchard #1:
12' X 26' = 139 Trees/acre

12 feet

6 feet

**3 Feet**

**Mechanical Pruning Reduces Yield!**

DSE 006, 007, 008, 2010

**Hedgerow Orchard #2:**
      **12' X 18' = 202 trees/acre**

# Progress from 2006 - 2010

## Initial Objectives:

- ◆ Decrease fruit damage
- ◆ Increase harvester efficiency:
  - ◆ Engineering
  - ◆ Tree pruning
  - ◆ Abscission agent

## Achieved:

- ◆ Fruit damage eliminated
- ◆ Harvester efficiency < 64%

# Current Objective: 2011

◆ **Increase harvester efficiency > 64%:**

- ◆ **<u>Engineering</u>**
  - ◆ **Canopy Contact**
  - ◆ **Trunk Shakers**

Oxbo in Spain: 2011

# Current Objectives: 2011

◆ **Increase harvester efficiency > 64%:**

  ◆ **Pruning before and during harvest:**

   ◆ **139 trees/acre hedgerow**

   ◆ **202 trees/acre hedgerow**
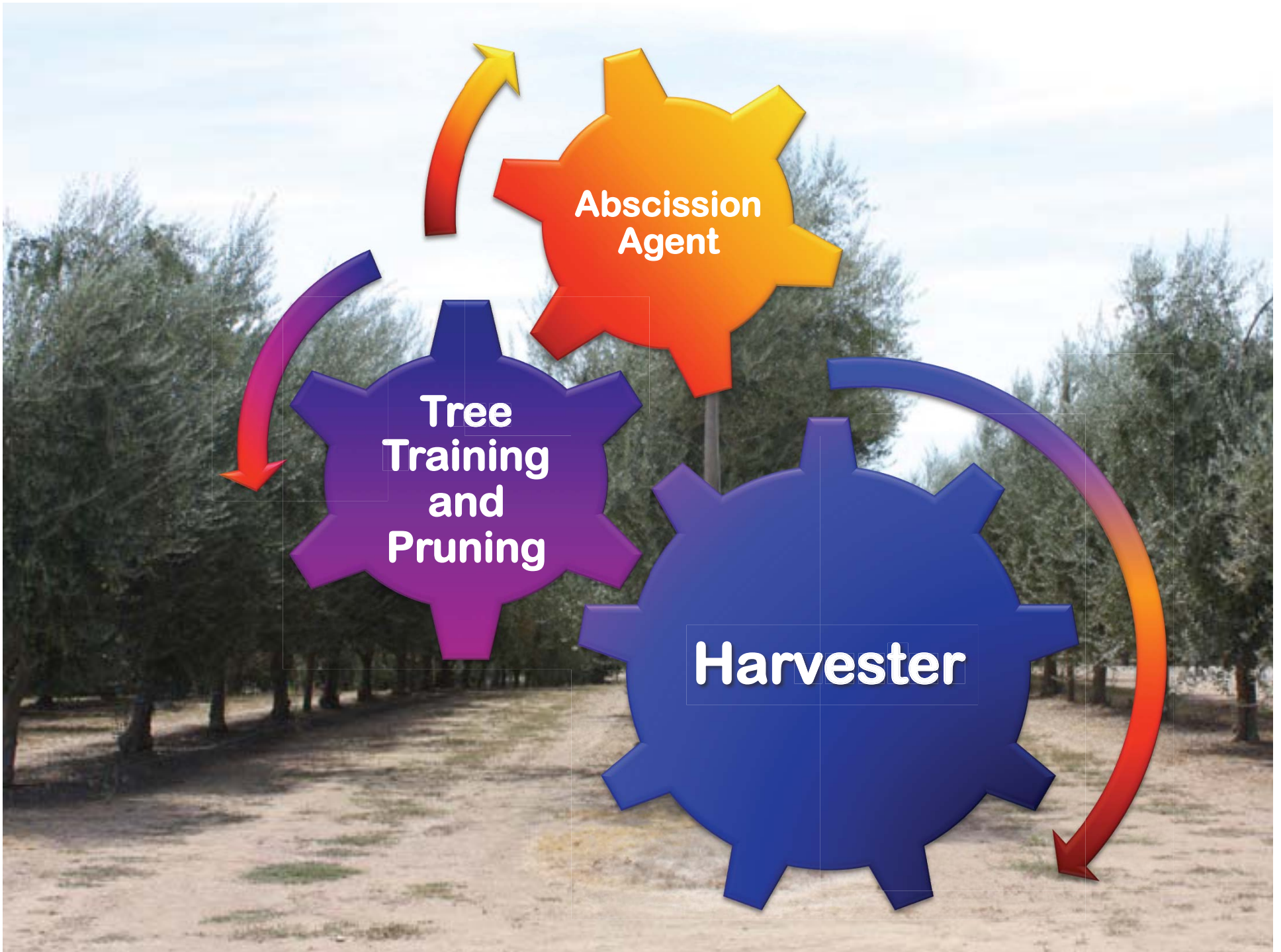
Hedgerow Orchard #1:
12' X 26' = 139 Trees/acre

**Hedgerow Orchard #2:**
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Pruning during harvest to increase % removal efficiency

http://groups.ucanr.org/olive_harvest

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The California table olive industry relies on hand harvesting of its primary 'Manzanillo' cultivar.  In recent years the increasing cost and uncertainty of labor have adversely affected California's competitiveness in the table olive market. Consequently, research attention has been devoted to the mechanical harvest of table olives, a practice common in the olive oil industry.

Mechanizing the harvest of table olives presents some unique challenges. The tree canopy and trunk must be adapted to the interface with the harvester, avoiding damage to the tree, and the fruit must be collected with minimum bruising. Our team brings dedication and diverse experience to these tasks, with the support of the growers and proccessors of the table olive industry.

Site was last updated on 5/11/10 at 12:22 PM

**Mechanical Harvest**

View More

**Highlights**

**Mechanical harvesting of California table and oil olives** provides an overview of the history and the future of olive harvesting in California.(click here for the pdf)

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