Mechanical Harvesting of California Black Ripe Table Olives

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Finca La Bella and MaqTec
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Objective:

- Economically feasible mechanical harvesting: < $ 200/ton
- Produces commercially acceptable processed olives

Economically Feasible Mechanical Harvesting

- Harvesters
  - DSE 008
  - 4 Trunk Shakers
  - MacTeq Colossus
- Tree Shaping
  - Mechanical Pruning
  - Tree Training
- Abscission Agents
- Postharvest Treatments

Commercially Marketable Processed Olives


DSE 007


DMF


007
INTERNATIONAL
TULARE - PORTERVILLE


HYSTER
HYSTER 50
37
M F


RockyHill 17W
Date 9-25-08
Row 10/3
Trt HP/HH


Row 11A
Trt HP/HH
SAMPLE
101
Andross
Ha
RANU AND RAJ FARMS-66590
Field:09-0134
:42


DEL MONTE FOODS
792

SAMPLE

Rockyhill 17W

Date 9-25-08

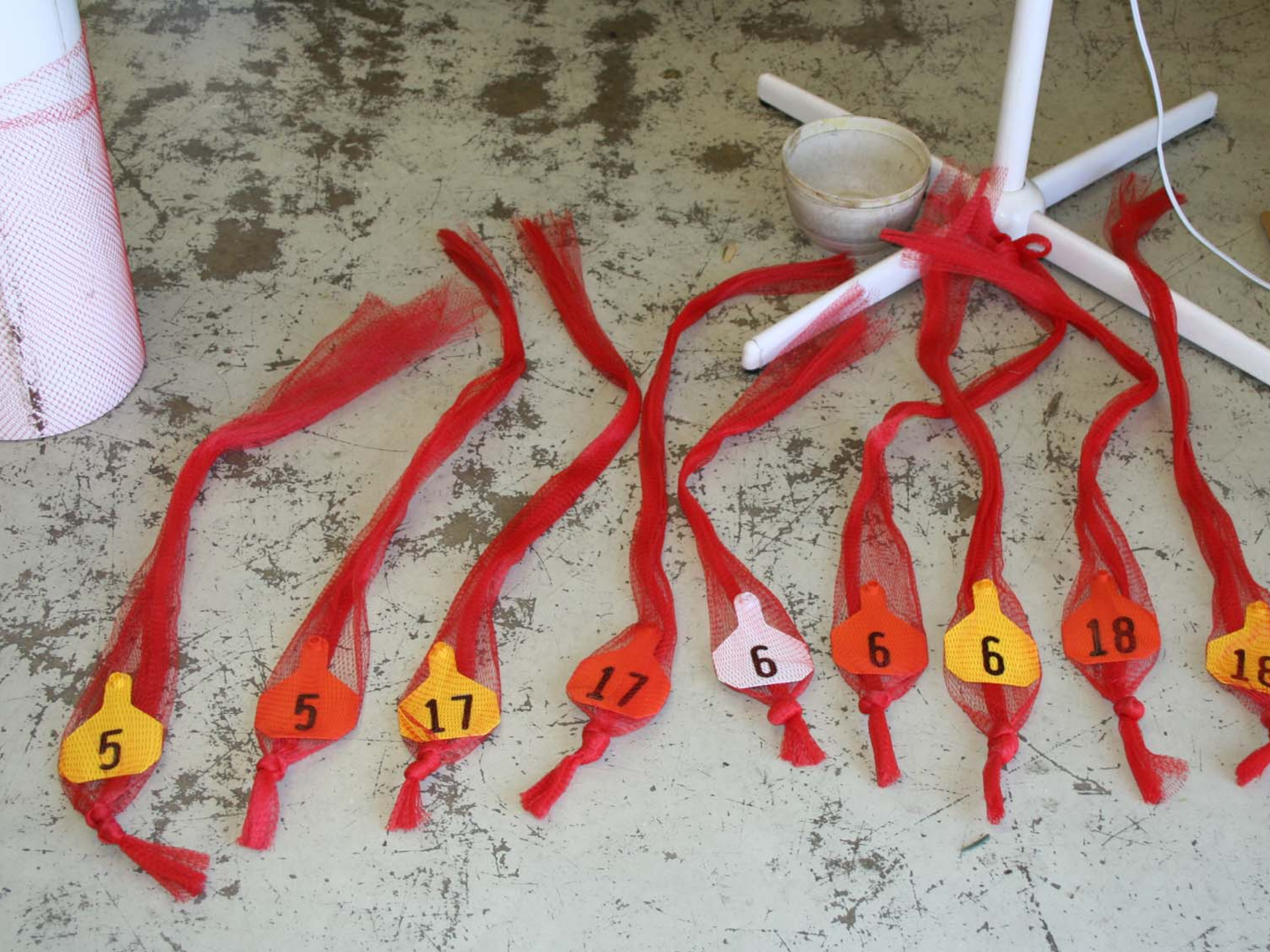

DMF


ROW 6 BLACK/WHITE
9/30/23


WARNING


THE MANCHESTER
ROAD RACE


8


5
5
17
17
6
6
6
18
18


WET FLOOR
ACHTUNG ATTENTION
CUIDADO


Abdul
Sigal
9/24/08

Small Lot Processing: 2008

Sensory Evaluation: May 2009

2008 Results: DSE 008

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

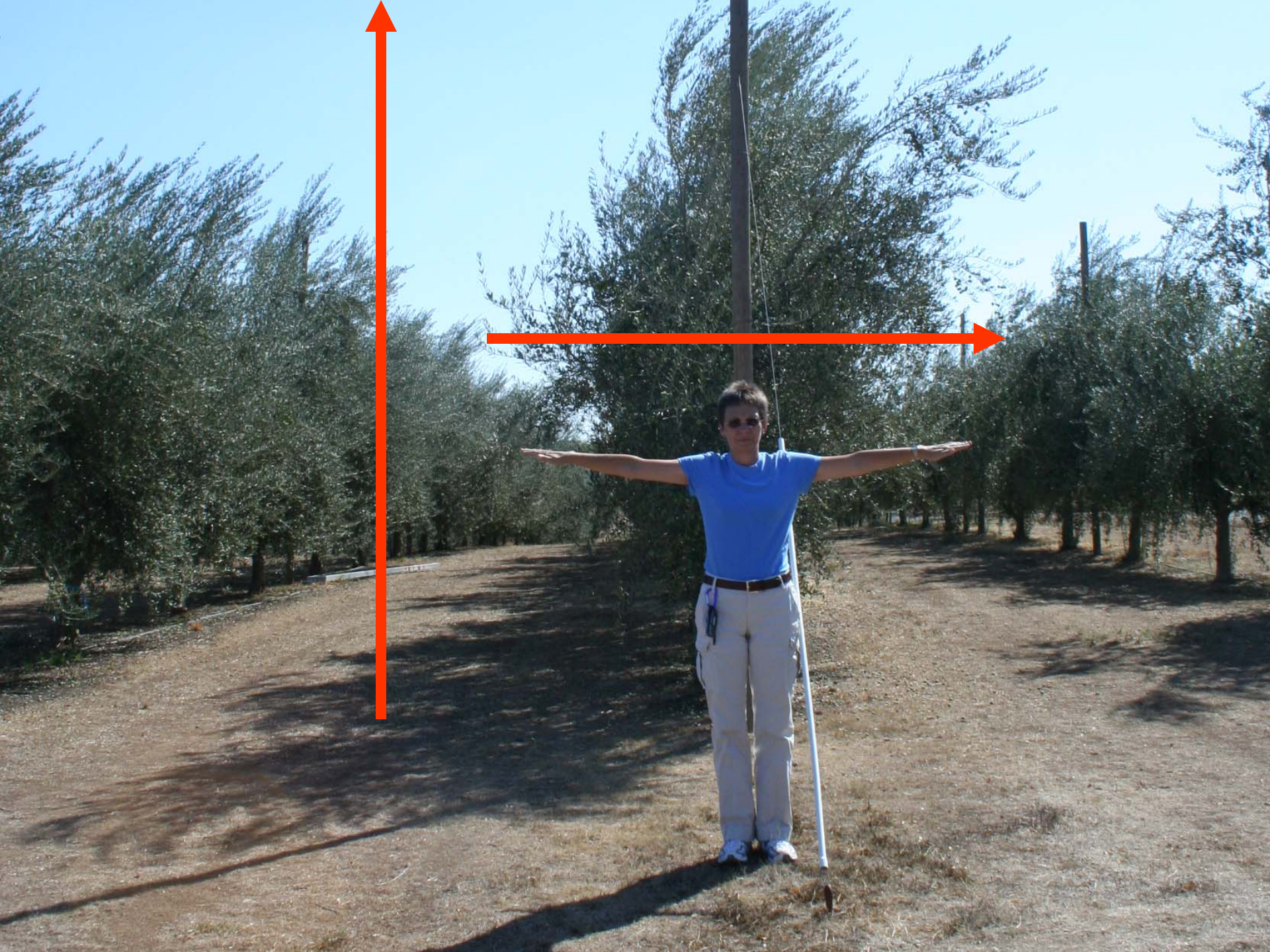
Sensory Evaluation: 2007-2008

- **Greater difference between processors than harvest method**
  - **45% variance**
- **Machine vs. hand harvested**
  - **less firm, crisp texture**

Conclusions: 2008

- DSE 008 Canopy picking head is functional
  - produces cannable olives
- Associated machine is
  - too slow
  - too large
  - inefficient in hedgerow and traditional orchards


Coe Pistachio Shaker
ENE Prune Shaker
OMC Pistachio Shaker
Wrap Around Shaker



Training	Harvest Eff. %	% Can.	Adj/ton	Shaker
Conventional	67.4	95.0	974	Shaker
Free Esp.	63.6	96.4	872	Shaker
Woven Esp.	65.3	95.3	963	Shaker
Tied Esp.	69.4	96.1	1,131	Shaker

Training	Harvest Eff. %	% Can.	Adj/ton	Shaker Hand
Conventional	67.4	95.0 97.1	974 1,035	Shaker Hand
Free Esp.	63.6	96.4 96.3	872 1,042	Shaker Hand
Woven Esp.	65.3	95.3 94.4	963 1,031	Shaker Hand
Tied Esp.	69.4	96.1 92.8	1,131 1,101	Shaker Hand

NSD

MaqTec Colossus: Argentina February 2008

Portugal: September 2008


Hand Harvest
24 hours
Machine Har

Harvester Conclusions: 2008

- Picking head produces acceptable fruit
  - need a functional platform and catch frame
- Trunk shakers have potential
  - eliminate trunk damage

Tree Training and Pruning : 2008

No Yield Reduction

Abscission Trials: 2008

- 2000 ppm Ethephon
- 4 ppm LA-901
  - significantly increased loosening
  - no significant difference among treatments

2006 - 2008 Conclusions:

- Modify/develop orchards for mechanical harvest
- Evaluate the commercially viable potential harvesters
- Screen abscission agents

2009 Objectives:

- **Objective I:**
  - **Evaluate tree training and mechanical pruning**
- **Objective II:**
  - **Evaluate four harvesters**
- **Objective III:**
  - **Screen abscission agents**

ENE INC Trunk Shaker


1 3:20 PM


1 12:58 PM


1 2:00 PM


MOLD


0679 BBW

Agright Olivia Harvester

2009 Objectives:

- **Abscission Screening:**
  - **Ethephon**
  - **LA-901**
    - **Randomized and replicated branch tests**
    - **Efficacy without leaf drop**

2009 Desired Results:

- Pruning and training don't decrease yields
- Machines that harvest:
  - < 200/ton
  - 1 acre hour
  - competitive fruit quality
- Identify potential abscission agents

Questions?