Economics of Mechanically Harvesting California Black Ripe Table Olives

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Introduction:
The California table olive industry’s primary cultivar is the Olea europaea Cv. ‘Manzanillo’. It is harvested physiologically immature when green and oxidized to produce the ‘California Black Ripe’ olive: Fig. 1. Hand harvest costs are the single largest production cost, often averaging 50-75% of gross return.

Economic analysis has demonstrated mechanical harvesting with => 60% efficiency would be as economical as the cheapest hand harvest costs at the same price per ton: Figures 2,3, and 4 demonstrate this economic analysis.

Figures 5, 6, and 7 show the traditional orchards, 96 – 139 trees to the acre that comprise the most of California’s 24,000 acre table olive industry as well as the new moderate density, 202 trees/acre, mechanically pruned hedgerow orchards now being developed.

Figures 9, 10 and 11 show the two forms of harvest technology we are attempting to adapt. The trunk shakers used in pistachios, almonds and prunes. And the canopy contact harvester head adapted from wine grape harvesters.

Fig. 2. Orchard assumptions for a moderate density hedgerow orchard.

- Sacramento Valley, 2011
- Manzanillo 90%, Sevillian 10%
- 12’ x 18’ spacing, 202 trees per acre
- 10 contiguous acres of olives
- Drip irrigation, 36 acre inches at maturity
- 25 year orchard life
- Mechanically harvest @ 80% efficiency

Fig. 3. Cost of producing California black ripe table olives.

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Fig. 4. Cost of demonstrating efficiency at which mechanical harvesting is more profitable than hand harvest.

Fig. 5. Typical traditional orchard, 96 trees/acre, and hand harvest methods.

Fig. 6. Traditional orchard, 139 trees to the acre, mechanically pruned, left, in preparation for a canopy contact harvester.

Fig. 7. New, moderate-density orchard, 202 trees/acre suitable for both trunk shakers and canopy contact harvesters.

Fig. 8. Prototype canopy contact harvester for traditional and new moderate density hedgerow orchards.

Fig. 9. Trunk shaker in a moderate density hedgerow, 202 trees/acre, orchard.

Fig. 10. Prototype canopy contact harvester in a traditional, 139 trees/acre orchard.

Fig. 11. Modified citrus harvester in a 100 year old orchard in Spain.