

Title Can mechanical harvesting be extended in late season 'Valencia' sweet orange?
Author Melgar JC, Dunlop J and Syvertsen JP
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Abstract

Mechanical harvesting in late season 'Valencia' oranges faces the problem that mature and next year's young fruitlets are both present at harvesting. Late in the harvest season, fruitlets can become large enough to be removed during mechanical harvesting. We hypothesized that if bloom could be delayed 3 weeks using winter time drought stress, younger fruitlets should be smaller and less susceptible to late season mechanical harvesting losses after May. During 2007 and 2008, 14-year old 'Valencia' orange trees were successfully drought stressed by stopping irrigation and covering the soil beneath canopies with rain-out shelters for 100 days beginning in December. The best bloom occurred in trees that received rain only without irrigation. Rain out shelters were effective in delaying bloom 2-3 weeks without causing yield losses in the current crop or changes in percent juice or juice quality in both 2007 and 2008. Drought stressed trees set a larger percentage of fruit such that there were no differences in the number of young green fruit by July for next year's crop. During mechanical harvesting, there was a greater efficiency of fruit removal and less young fruitlet loss in previously drought stressed trees than in continuously well watered trees. Fruit growth after the drought stress-delayed bloom caught up with the irrigated treatments. Thus, winter time drought stress effectively delayed flowering and decreased young fruit loss during late season mechanical harvesting of 'Valencia' oranges.