Chemical Thinning of Stone Fruits Grown in the Sierra Foothills

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Abstract

During the second year of this project we continued to evaluate the effect of a chemical thinning agent on fruit set, size of fruit prior to thinning, number of fruit hand-thinned, and fruit size and weight at harvest. We used a commercial airblast sprayer to apply Entry™ (Wilbur-Ellis) at the full label rate of 3% in the equivalent of approx. 300 gal./acre during 60-95% bloom to commercial four-tree plots, three replicates of each in a randomized block design.

Varieties treated included 'Rosemary' and 'Friar' plum, 'Arctic Rose' nectarine, and 'O'Henry' and 'Cal Red' peach. A second application was applied to trees in the 'Arctic Rose' block to compare the effect of one Entry spray vs. two. Due to spring frost, the bloom on the 'Rosemary' and 'Friar' plum varieties was injured and very little fruit was set; therefore, these varieties could not be evaluated.

Measurements were taken from the middle two trees of each four-tree plot in the peach and nectarine varieties. Flowers and subsequent fruit on eight shoots of each tree were counted and the percent fruit set was calculated. The total number of fruit removed from each tree during hand thinning was recorded. The diameter of at least ten random fruit per tree was measured prior to hand thinning and at harvest. The number of fruit per box harvested from each tree was counted and the box was weighed and then all data was summed to determine average fruit weight/tree at harvest.

Results appeared promising for the peach and nectarine varieties. Mean percent fruit set was reduced ($p < 0.01$) in the 'Arctic Rose', 'O'Henry' and 'Cal Red' varieties, although the 'O'Henry' peaches appeared over-thinned by the chemical treatment, likely due in part to severe frost during bloom. The reduction in fruit set ranged from about 10% less in the treated 'Arctic Rose' and 'Cal Red' varieties to 34% less set in the treated 'O'Henry' peach, as compared to the untreated controls.

The mean number of fruit removed during hand-thinning was also significantly reduced ($p< 0.01$) in these varieties. Differences in the mean number of fruit removed during hand thinning from untreated trees compared to treated trees ranged from 86 fruit in the 'Cal Red', to 114 fruit in the 'O'Henry' and 122 fruit in the 'Arctic Rose'.

At harvest, the mean fruit diameter and the mean fruit weight/tree was greater (at $p < 0.01$ and $p < 0.05$, respectively) in the chemically thinned 'Arctic Rose' and 'O'Henry' blocks as compared to the untreated controls. The mean fruit diameter was not statistically different for the 'Arctic Rose' Treatment 1 (1 Entry spray), 2.53 inches, compared to Treatment 2 (2 Entry sprays), 2.56 inches, but both were different from the untreated control, 2.45 inches. The mean fruit diameter at harvest from the Entry treated 'O'Henry' trees was 3.29 inches, 0.21 inch greater than the untreated mean fruit diameter. The mean fruit weight from Entry-treated trees in the 'Arctic Rose' was 0.4 ounces greater than the controls.

The gain in weight at harvest was greatest in the 'O'Henry', where fruit from Entry-treated trees had a mean weight 1.5 ounces greater than the untreated trees. The frost during bloom appeared to affect the 'O'Henry' block the greatest, however. Therefore, although we saw the greatest differences in fruit size and weight in that block we cannot attribute those results to our thinning spray alone. It would be worthwhile to repeat this experiment in a frost-free year in order to test the effect of thinning spray volume on different varieties.