

Thresholds, Monitoring and Sampling

BIASED SAMPLING OF CODLING MOTH OVIPOSITION USING A CUT FRUIT TECHNIQUE TO MONITOR MATING DISRUPTION IN BARTLETT PEARS

B. G. Zoller and A. M. Zoller
The Pear Doctor, Inc., Kelseyville, CA

Keywords: codling moth, *Cydia pomonella*, pears, wound preference, oviposition monitoring

An oviposition-biased sampling method for detecting the presence of mated female codling moths was utilized in pest management of 1055 acres of Bartlett pears undergoing mating disruption in the Big Valley area of Lake County, California. At 39 to 18 days before first harvest, intact fruit cluster samples (4.8 clusters/acre per week) were inspected at random for oviposition at 1050–1800 degree days (88°F/50°F basis). They were paired with cluster samples containing a fruit wounded the previous week by removing a 2–3 cm diameter portion of epidermis and fruit cortex to 0.5–1 cm maximum depth. The cut fruit clusters were at eye level on the east sides of trees. An average of 0.52 cut fruit/acre per week was inspected. Three cut fruit (0.29/acre) were located on 1 sample tree near the center of each of 107 ten-acre sample areas and an average 2.4 cut fruit (0.23/acre) were placed in other locations of the sample areas thought to be potential hot spots.

Results and Discussion

Codling moth eggs were observed in 2 (0.01%) of 20,200 intact clusters examined vs 21 (0.95%) of 2212 wounded clusters examined 39 to 18 days before first harvest. In considering the 1055 acres, this was a 95-fold increase in the detection of oviposition using the cut fruit technique. In considering specific locations, oviposition was detected in 9 orchards encompassing 24 sample areas using the cut fruit technique. The mean detection ratio of cut/uncut fruit clusters diminished from >29 at 39 days before harvest to >8 at 18 days before harvest (Fig. 1). It is interesting that the detection ratio value of >8 was reached about 1 month earlier before harvest than in the Sacramento Valley Bartlett pear comparisons discussed in the companion abstract (Fig. 2). This perhaps indicates an earlier release of the attracting factor(s) from intact fruit in the Big Valley area.

In the 9 positive orchards, extra random inspections of intact clusters were performed. Three of the orchards received extra preharvest organophosphate treatments but control was below average. Of the 6 untreated orchards, 5 blocks achieved acceptable control below 1% infestation. The remaining block was heavily infested along the southeast 1-5% of the orchard while the cut fruit and random intact cluster testing did not sample this problem area.

Of the remaining 44 orchards (83 sample areas) with no positive cut fruit detection of oviposition, six minor peripheral hotspot infestations, two major peripheral hotspot infestations and one fairly general 1.5% infestation were present at harvest.

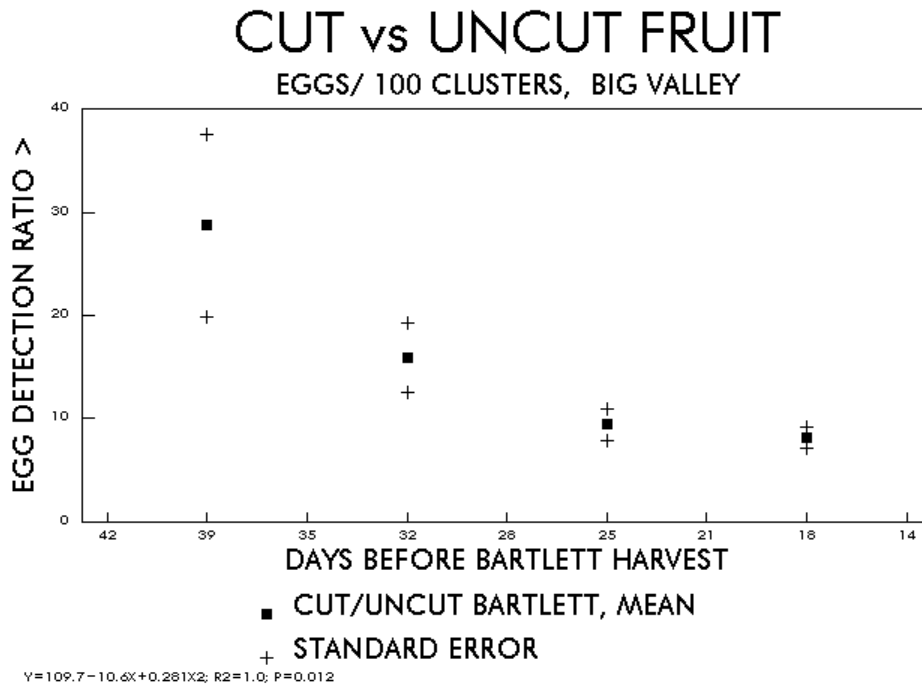


Figure 1.

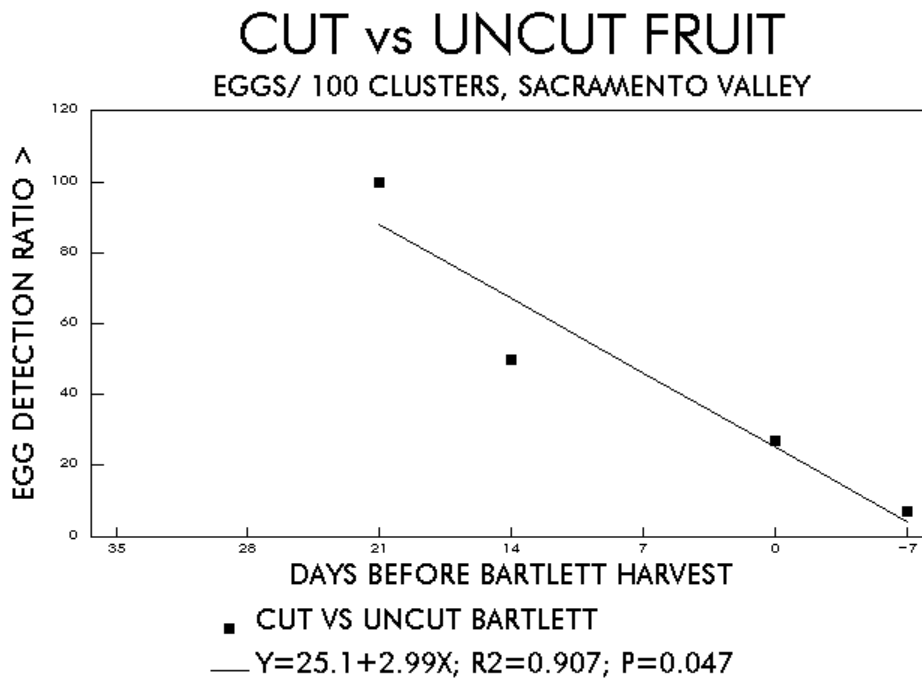


Figure 2.