

Mating Disruption/SIR

Peach Twig Borer in Almonds

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In the spring of 1994 EPA and CDFA granted permission to test CheckMate PTB on 250 acres in California stone fruits and almonds. Mating disruption alone and in combination with *Bt* were tested under a wide range of conditions in these plots throughout the central San Joaquin valley.

Methods

Experiments or demonstration plots were conducted in 3 peach and 5 almond orchards in the central San Joaquin valley in California. Orchards ranged in size from 20 to 100 acres. Where possible each test orchard received the following treatments: 1) untreated check, 2) *Bt* during bloom, 3) CheckMate PTB and 4) CheckMate PTB plus *Bt*. However because of possible crop loss, we were unable to leave an untreated check or test all combinations in all locations. In the plots receiving pheromone, sixty day CheckMate PTB was manually applied from the ground 2 times, (60 days apart) during the season at the rate of 200 per acre (400 per season). CheckMate PTB applications were timed to coincide with the beginning of the first and second adult male flights as determined by pheromone traps.

Peach twig borer mating disruption and suppression were measured using pheromone traps, preharvest shoot and fruit strikes, and harvest samples.

Results

Peaches. The number of adult PTB males caught in pheromone traps was suppressed in all pheromone treated peach orchards.

Two orchards suffered little PTB damage. However, harvest samples from an orchard near Clovis suffered 7.23% damage in a standard treated block. In the *Bt* only plot, PTB damage was reduced to 1.1%. With the addition of 2 applications of CheckMate PTB pheromone, harvest damage was reduced to 0.3%.

Almonds. In almonds, where initial populations were probably much higher, pheromone trap shut-down was not as successful as in peaches.

Shoot strikes were also common in all the almond plots including disrupted plots but most were caused by OFM.

Insect damage at harvest in the meats was low in all plots with the exception of one block in Kings County that suffered almost 5% damage in the check area. *Bt* applied in May reduced meats damage by approximately 50%. *Bt* + CheckMate PTB pheromone reduced damage by

75% when compared to the check. PTB damage in the hulls was much higher, averaging 21% in the check, 11.2% in the *Bt* plots and 5.8% in the *Bt* + CheckMate PTB treatment. PTB injury to meats was low in most other orchards at harvest. However, hull damage was moderate to high in all blocks. Mating disruption with or without *Bt* provided good control in all blocks except one where dispensers were applied too low in tall, mature trees.

Omnivorous leafroller was present in high numbers in two blocks and low to moderate levels were encountered in two others. However, as far as could be determined, almond orchards suffered little if any economic damage from this pest. In addition, parasitism by *Macrocentrus irridescens* was common in both high population orchards. Experience in prunes indicates *M. irridescens* can provide control of OLR if not disturbed with broad spectrum insecticides.