

Stone Fruits—Biological Control

Reevaluation of Peach Twig Borer Pheromone Isomers

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Comparisons of PTB pheromone trapping data from several researchers at the Kearney Agricultural Center in the spring of 1990 showed considerable variations and discrepancies in trap numbers that could not be explained through weather or known population densities. As a result of these comparisons, a research project was established to reevaluate and examine the components of natural peach twig borer pheromone produced by virgin female moths and also to identify the reasons for the extreme variations in PTB trap counts observed in 1989 and 1990. Dr. Jocelyn Millar at U.C. Riverside has identified several minor constituents in extracts of female PTB pheromone glands as decyl acetate, (E)- and (Z)-4-decenyl acetate and (E,E)- and (Z,E)-decadienyl acetate. Decyl acetate and (E)-4-decenyl acetate were also identified in effluvia from live female moths. None of these identified compounds enhanced the attractiveness of the standard blend of (E)-5-decenol and (E)-5-decenyl acetate (20:80) in field tests (Table 1). However, the analogous compounds (E)-6-decenyl acetate and (Z)-6-decenyl acetate were identified as behavioral antagonists and suppressed trap captures (Table 2). The contents of a variety of commercial pheromone lures and mating disruption devices were analyzed and one batch of lures which had performed very poorly in field tests was found to contain the inhibitory compound (E)-6-decenyl acetate.

**Table 1.** Trap catches in traps baited with the PTB pheromone standard blend vs. the standard blend plus minor components.

Host crop	Trap catches (males)	
	Lure <sup>1</sup>	Mean <sup>3</sup>
Almond	Standard blend	729a
	Std. blend + minor comp. <sup>2</sup>	723a
Plum	Standard blend	340a
	Std. blend + minor comp.	345a
Peach	Standard blend	96.2a
	Std. blend + minor comp.	72.5a

<sup>1,3</sup>Standard blend, E5-10:Ac (400 µg) + E5-10:OH (100 µg). Six replicates per treatment, traps counted 3 times.

<sup>2</sup>Minor components, E4-10:Ac (5 µg), Z4-10:Ac (5 µg), 10:AC (20 µg), Z3,E5-10:Ac (5 µg), E3,E5-10:Ac (10 µg).

**Table 2.** Field bioassay in almonds of standard peach twig borer pheromone blend and potential inhibitors, Caruthers, CA, 1990.

Attractant	Total no. PTB collected <sup>1</sup>			
1 Standard PTB pheromone	7235	A		
2 Standard + 20 µg E-6 Ac.	1207		C	
3 Standard + 100 µg E-6 Ac.	496			D
4 Standard + 20 µg Z-6 Ac.	6702	A	B	
5 Standard + 100 µg Z-6 Ac.	6095		B	
6 Blank septa	97			E

<sup>1</sup>4 traps (reps) per treatment; 8 counts from Oct. 3-22, 1990.