MATING DISRUPTION FOR CONTROL OF THE NAVEL ORANGEWORM IN THE ORCHARD

Charles S. Burks[a]*, Roland G. Gerber[b], and David G. Brandl[a]
[a]USDA-ARS, San Joaquin Valley Agricultural Sciences Center, Parlier, CA 93648
[b]Paramount Agricultural Technologies, Bakersfield, CA 93308

The navel orangeworm *Amyelois transitella* (Walker) is the insect pest of greatest concern to dried fig producers in California. "Calimyrna" is the most commercially valuable fig type, and also the most susceptible to insect infestation. Malathion, used to control nitidulid beetles, can also provide some control of the navel orangeworm, but producers prefer not to use it because of restrictive pre-harvest intervals. Dried figs are usually fumigated multiple times after harvest to prevent further damage from the navel orangeworm and other postharvest pests. Reduction of infestation in the orchard could reduce the total amount of fumigant used.

Mating disruption has been used for management of lepidopteran pests in a variety of agroecosystems. A timed release system, the Paramount Puffer, has been to disrupt mating of the navel orangeworm *Amyelois transitella* (Walker) in walnuts, almonds, and pistachios. In the current work we examine the impact of this timed-release system on insect damage in Calimyrna figs.

Materials and Methods

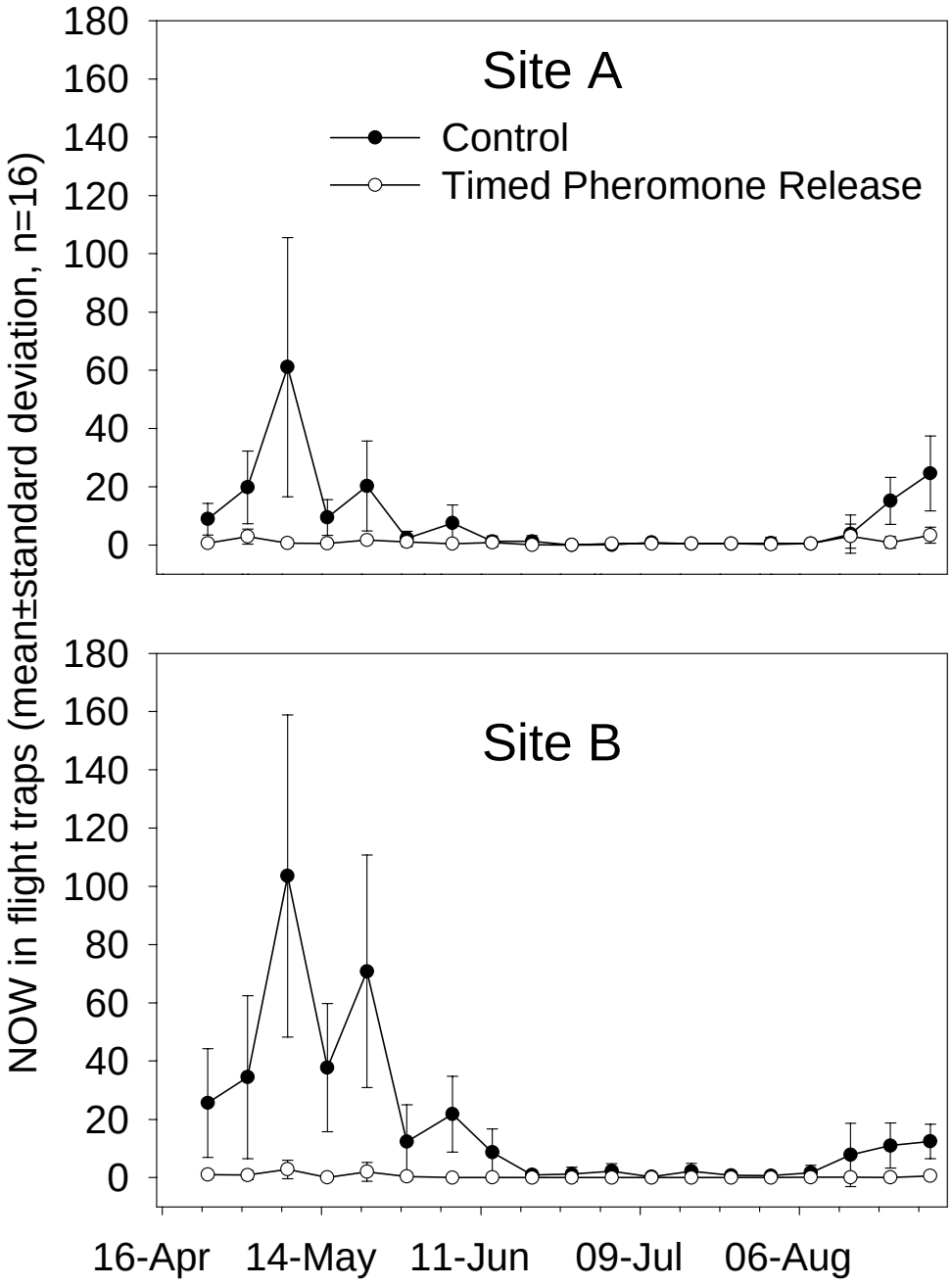
Tests were performed using 2 paired 16 hectare blocks of Calimyrna figs, a treatment block and a control block. These paired blocks were 1-2 km from each other, and the two paired blocks were at locations approximately 10 kilometers apart, referred to here as sites A and B. The navel orangeworm pheromone component Z,Z-1,12,14-heptadecatriene was dispensed using the Paramount Puffer® system (Paramount Agricultural Technologies, Bakersfield CA) according to the manufacturer's directions. Canisters containing pheromone and aerosol propellant were placed in cabinets and programmed to deliver 0.2 mg of active ingredient every 15 minutes between 6:00 PM and 6:00 AM PDT, between March 26 and the end of September. These dispenser cabinets were placed at 20-meter intervals around the perimeter of the 16 hectare blocks.

Differences between the treatment and control blocks were assessed using oviposition traps, flight traps baited with unmated females, and by comparing samples of figs taken at harvest times. Grids of 16 flight traps and 9 oviposition traps were placed evenly throughout each treatment and control block. Samples of 100 figs each were taken at time of harvest and divided randomly between two

samples. One was examined in our laboratory, and the other was evaluated by the DFA of California.

Results and Discussion

Large numbers of navel orangeworm males were captured in the flight traps between April and June, and an increase was observed in late August (Fig. 1). Population trends were consistent between the two sites. During times of greater prevalence there were significantly fewer moths captured in flight traps in the pheromone-treated block compared to the control blocks, indicating that the timed-release system successfully disrupted mating. There was a significant non-zero correlation between oviposition trap captures and flight trap captures, but the oviposition trap data were far more variable and aggregated than the flight trap data. Evaluation of fruit samples was not completed at the time of preparation of the abstract.


Site A
Control
Timed Pheromone Release
Site B
NOW in flight traps (mean±standard deviation, n=16)
180
160
140
120
100
80
60
40
20
0
16-Apr
14-May
11-Jun
09-Jul
06-Aug