

Mating Disruption/SIR

Puffing Pheromones: The IHELP (Integrated High Emission Low Point) Strategy

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New technology is needed to reduce the cost of mating disruption, increase growers' flexibility in integrating this approach with other tactics, and improving its effectiveness. Various studies are in progress to develop the use of paraffinic emulsions, sprayable formulations, attract and kill formulations, and aerosol puffers. These products will allow growers to better manage their use of pheromones both spatially and temporally. The puffer technology appears particularly attractive due to its ease of application and high level of flexibility. Puffers can be programmed to release pheromone at preselected rates, frequency, and time periods. The initial development of this technology was conducted by Dr. Harry Shorey in California using 1-2 puffers per acre arranged around the perimeter of the treated orchard. However, his results in various walnuts, apple, and pear orchards have been mixed during the past three years. My studies conducted in Washington during 1998 used a different approach that is much more cost effective and may avoid the difficulty of distributing pheromone around the orchard's perimeter.

A 50-acre apple orchard in Malott was treated with a 10 m band of Isomate-C+ dispensers at the full rate around its perimeter and then one puffer per hectare (2.5 acres) was deployed internally. My hypothesis is that a high density of point sources is needed to treat the orchard's edge due to the extreme variability in wind patterns that can occur in this area and its potentially higher moth density. Codling moth pressure surrounding the Malott orchard was high to moderate (32 moths were caught in an adjoining, upwind orchard treated with Isomate-C+). Within the puffer-treated orchard a low level of injury (0.1-0.2%) occurred only on the upwind edge. This edge (6 rows) was sprayed with two organophosphate applications and the remainder of the orchard was free of injury and was left unsprayed. In addition, aerosol puffers were evaluated in four 40-acre orchards for OBLR. Orchards were treated with 16 puffers placed one per hectare, and the perimeter of the orchards was treated with the hand-applied Hamaki-con dispenser. Orchards were also treated with Isomate-C+ for codling moth. Moth catches and fruit injury varied widely among these four blocks and were similar to surrounding orchards treated with Isomate CM/LR. Moth catches in traps placed either on the orchard's borders, 50 m from a puffer within the same row, or 50 m away from the puffer row showed that disruption is not consistent within the orchard. An idea to supplement the use of puffers with sprayable leafroller pheromones will be presented.