Mating Disruption/SIR

Puffer Trials in Washington

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Codling moth mating disruption trials using aerosol puffers for dispersion of the pheromone were conducted in Washington State in 1997. The trials were located in Wapato (40 acres), near Pateros on the Methow river (18 acres) and a site between Brewster and Malott (15 acres). All three sites had a previous history of mating disruption and codling moth pressure was considered low to moderate. Some codling moth damage (ca. 0.5%) had been observed at the Brewster site the previous year.

The puffers used in these trials were obtained from Technical Concepts (Elk Grove, IL). The individual cans were loaded with a mixture of codlemone, methanol and propellant (36 g codlemone + 118 g ethanol + 104 g propellant). The dispensers were operated on battery powered timers set to puff every 25 minutes, 24 hours each day. Each 60 µl puff emitted approximately 7.5 mg of codlemone or 432 mg per day (7.5 mg x 57.6 = 432 mg). The Wapato site was treated at a rate of 1 puffer per acre or 432 mg/acre/day of codlemone. The Pateros and Brewster sites were treated with 30 puffers per site or 720 mg/acre/day and 864 mg/acre/day, respectively. Each can required replacement mid-season in order to achieve season-long control.

The Wapato site (Golden Delicious and Red Delicious) was monitored with 29 wing traps baited with 10 mg codlemone lures. During the overwintering flight (May 4 through July 4) a total of 27 moths was captured in all traps. The highest number of moths caught in a single trap was four (2 traps). A cover spray of Guthion (2 lb a.i./acre) was applied to every other row. During the second flight a total of 23 moths was captured in all traps. The highest number of moths caught in a single trap was three (2 traps). No cover sprays for codling moth were made for the second generation. Tree samples and bin samples taken prior to and at harvest indicated one entry out of 6,000 fruit.

The Pateros site was discontinued after the first generation due to an unintended application of pheromone dispensers to the block. The Brewster (Golden Delicious, Red Delicious and Fuji) site received a border spray of Guthion during the first generation and no chemical treatments for codling moth control were made during the second generation. Bin samples at harvest found three codling moth stings in 1,400 fruit sampled or 0.21% codling moth damage.

Although significant fruit damage did not occur in any of the plots a number of technical difficulties were encountered with the operation of the puffers. A small number of the puffers failed to operate properly and required replacement during the season. A significant amount of

phytotoxicity was observed directly under the puffers in trees where the puffers were placed. The phytotoxicity was observed on both the foliage and the fruit. The puffer cans did not empty uniformly. During the mid-season replacement at Wapato, 9 of the 40 cans were found to be completely empty. At the Brewster site 7 of the 30 cans were completely empty. A problem occurred during the second application in which the valves on the cans became non-operational, necessitating replacement of all cans in all trials.

In spite of the numerous technical difficulties encountered, it appears that the puffer technique of mating disruption may have possibilities in situations of low to moderate codling moth pressure. Additional trials need to be conducted in larger blocks and higher codling moth pressure.