

Mating Disruption/SIR

Aerosol Dispensers for Codling Moth Mating Disruption

Thomas E. Larsen¹ and Bradley S. Higbee²

¹Consep, Inc., Bend, OR

²USDA/ARS, Wapato, WA

Keywords: codling moth, aerosol dispensers, pear, apple

Codling moth mating disruption trials using aerosol dispensers for dispersion of the pheromone were conducted for the second year in Washington State during 1998. The trials were located at a 36-acre site in Wapato, a 12-acre site near Pateros (Pateros Site 1) that was treated for the second year, and on a 5-acre site within the city limits of Pateros (Pateros Site 2). All three sites had a previous history of mating disruption and codling moth pressure was considered moderate to low. Some codling moth damage (ca. 0.5%) had been observed at the Wapato site the previous year.

The dispensers used in these trials were obtained from Technical Concepts (Elk Grove, IL). The individual cans in the dispensers were loaded with a mixture of codlemone, ethanol, lauryl alcohol and propellant (24 grams of codlemone + 127.5 grams of ethanol + 2.5 grams of lauryl alcohol + 102.4 grams of propellant). The dispensers were placed approximately 140 feet apart around the perimeter of the orchards. The dispensers were operated on battery-powered timers set to puff every 25 minutes, 24 hours each day. Each 80 μ l 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 1.11 dispensers per acre or 480 mg/acre/day of codlemone. The Pateros Site 1 was treated at a rate of 1.9 dispensers per acre or 827 mg/acre/day of codlemone. The Pateros Site 2 was treated with 1.2 dispensers per acre or 518 mg/acre/day of codlemone. Each dispenser required replacement of the cans twice during the season in order to achieve season-long control.

The Wapato site (pears and Red Delicious apples) was monitored with 23 wing traps baited with 10x codlemone lures. During the overwintering flight (April 11 through July 6) a total of 6 moths was captured in 23 traps. The highest number of moths caught in a single trap was three (1 trap). A cover spray of Guthion (2 lb. a.i./acre) was applied during the overwintering flight. During the second flight a total of 14 moths was captured in 23 traps. The highest number of moths caught in a single trap was seven in one trap located next to a prop pile. No cover sprays for codling moth were made for the second generation. Tree samples taken at the end of the overwintering flight found one codling moth entry in apples and zero in the pears. Packout records from the warehouse indicated zero codling moth damage found in pears.

A total of six moths was captured in six 10x traps during the overwintering flight at Pateros Site 1 (two moths in one trap and four moths in another). All moths were captured in border traps. A cover spray of Guthion (2 pounds of 50WP) was applied during the overwintering flight. No moths were captured during the second flight and no chemical treatments for codling moth control were made during the second flight. Bin samples taken at

harvest found one codling moth entry (0.05%). No moths were captured in the six 10x traps at Pateros Site 2 during the first or second flight. A spray of Guthion (2 pounds 50WP) was made during the first generation and no chemical treatments for codling moth control were made during the second flight. Bin samples at harvest found zero codling moth damage in 1,000 fruit sampled.

All dispensers operated properly during the season and none required replacement after a second season of use. Phytotoxicity observed in 1997 trials was dramatically reduced by paying careful attention to the placement of the dispensers in trees to avoid contact of the spray with fruit.

This second season of experience with aerosol dispensers indicates good potential for use of this technique to apply codlemone for mating disruption of codling moth in orchards with moderate to low populations of this pest.