Codling Moth Mating Disruption Using Sprayable Pheromones

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Introduction

Sprayable pheromone technology continues to be evaluated for longevity and efficacy against codling moth populations. Codling moth is a challenging and evolving pest in most commercial orchards of Washington State.

Objective:

Evaluate rates and efficacy of Suterra CM-F sprayable pheromone on codling moth populations in commercial apple orchards in comparison with hand-applied dispensers.

Suterra CM-F Sprayable Pheromone

- 2-8 acre treatments
- Rates 7– 20 grams active ingredients per acre
- Variable application timings

Hand-Applied Dispensers

- Suterra Checkmate XL-1000 @ 200 dispensers/acre
- Isomate C+ @ 200 or 400 dispensers/acre
- Applied prior to first codling moth flight (Biofix)

Monitoring

- Delta-style traps loaded with Trécé 1x red septa, Pherotech SuperLure, Suterra BioLure 10x or 1x membrane, or Trécé DA lure.

Site 1 - Wapato 2003

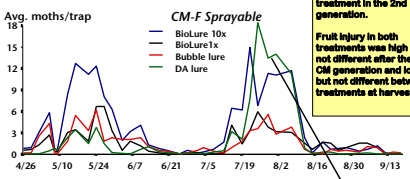
This was a 64 acres site. CM pressure was high based on experience in 2002. Two treatments, Suterra CM-F sprayable pheromone and Checkmate XL1000 hand-applied dispensers were compared. Each treatment was applied to 4-8 acre blocks.

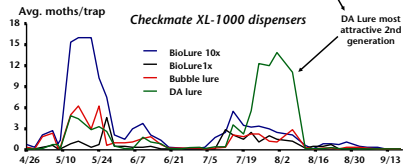
Each block was monitored with traps baited with different lure types (see figures). After the first CM generation and just prior to harvest a sample of fruit was taken to determine the level of injury in each block.

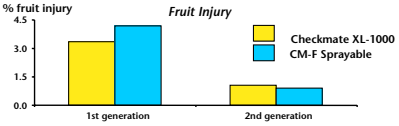
Conclusions

The DA lure baited traps indicated about equal CM pressure in all blocks and that pressure increased in the 2nd generation. Suppression of trap captures was about equal in both treatments in the first generation measured by different lures but lower in the Checkmate treatment in the 2nd generation.

Fruit injury in both treatments was high and not different after the 1st CM generation and lower but not different between treatments at harvest.



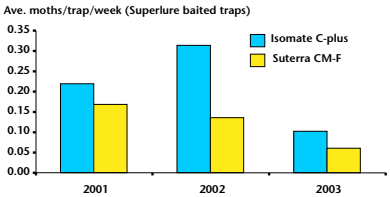


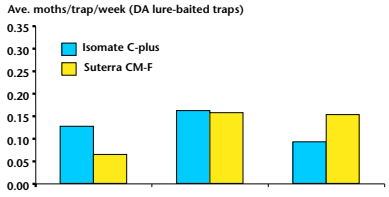


No significant fruit damage between treatments in either generation.

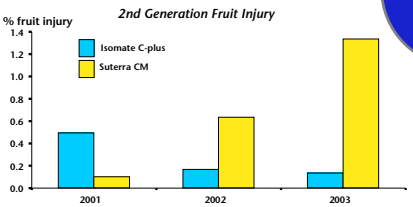
Site 2 - Pateros 2001-2003

The study area had low CM pressure. Each treatment, Suterra CM-F sprayable pheromone or Isomate C plus hand applied dispenser, was applied to paired 5 to 8 acre blocks, three blocks per treatment. Treated blocks were monitored with Superlures (10X) and DA lures in delta-type traps. Fruit injury was assessed at harvest of each year.





CM captures in the Superlure-baited traps was low and not statistically different between the treatments in any year. The DA lure-baited trap captures reflected a low CM density in the orchard and there were similar captures in all treatment blocks over the three years of the study.



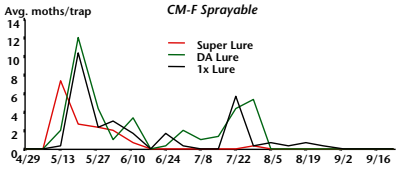
Summary

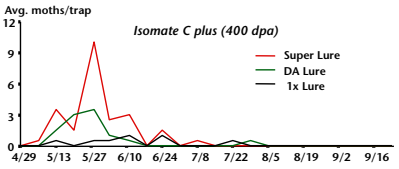
This was a low pressure site. Four to five applications of CM-F sprayable pheromone were applied per season. Applications of 20 grams ai/acre were made at biofix and subsequent applications of 10 grams ai/acre were made every 28-30 days.

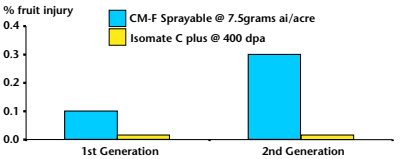
Suterra CM-F did reduce trap catch and fruit injury in 2001. There was a trap reduction in 2002 but it does not correlate with fruit injury. Fruit injury for 2002 and 2003 was lower in the Isomate C plus treatment of 200 dispensers per acre compared to of CM-F sprayable treated blocks.

Site 3 - Pateros (North) 2003

The study area had moderate CM pressure. Isomate C plus (@ 400 dpa) and Suterra CM-F sprayable pheromone were applied to different blocks. The sprayable pheromone was applied at a rate of 7.5 grams ai/acre about every 7 days.







The sprayable pheromone did not suppress moth captures in even the 1X lure-baited trap. Moth capture was suppressed by the Isomate C plus treatment. Fruit injury at harvest was higher in the sprayable pheromone treatment compared to the Isomate C plus treatments.

Conclusion

- Suterra CM-F sprayable pheromone performed in an acceptable manner only under low CM pressure situations, comparable to a "half rate" of a hand-applied pheromone dispenser.
- Hand-applied dispensers still provide the most consistent and reliable suppression of CM populations.
- Suterra CM-F sprayable pheromone should probably be considered as a supplement to an insecticide-based control program to help reduce CM populations instead of applying an additional insecticide.
- Monitoring programs are critical. It appears that 1X traps should be used with sprayable pheromone treatments. However, reduced trap catch is not directly correlated with fruit injury.