Mating Disruption/SIR

Ridding orchards of codling moth – one female at a time

Alan Knight
U.S.D.A., A.R.S., Wapato, WA

Abstract: Following the discovery that ethyl (2*E*, 4*Z*)-2,4-decadienoate (DA) was a potent attractant for both sexes of codling moth (CM) we initiated studies to develop adult control strategies. This work has shown that the use of traps baited with a DA lure is a fairly expensive approach and reduces fruit injury by CM ca. 50% in MD-treated apple orchards. Parallel studies using insecticide-treated bait stations, however, have been more effective. Grids of esfenvalerate-treated delta-shaped stations at densities of 24-50 per acre have reduced fruit injury up to 98% at mid-season in MD-treated orchards. However, fruit injury in these studies at harvest was only reduced 30-40%. The reduction in efficacy of this approach toward the end of the season was likely impacted by several factors. All plots were 0.6–2.0 ac and surrounded by orchards heavily infested with CM (60-100% fruit injury). The influx of mated females from these areas into our plots likely overwhelmed the bait stations. The DA lure appears to be less attractive in the second versus the first CM flight. In addition, the presence of infested fruit is thought to contribute to the production of much higher levels of competing fruit volatiles that may further decrease the attraction of the DA lure. Unfortunately, CM emerges as an adult capable of mating their first night and subsequently laying eggs. Typically >75% of females trapped with the DA lure in MD-treated orchards are mated. This situation is made worse due to a bias of the DA lure for mated females.

EVOLUTION (1) TRAP OUT
(2) MD
(3) A&K
(4) Fruit Based Sat = DA 3mg/Septa