

1. Thresholds/Monitoring/Sampling

MONITORING CODLING MOTH AND LEAFROLLERS WITH PHEROMONE TRAPS

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Pheromone lures and traps used to monitor codling moth and obliquebanded leafroller were compared for efficacy and longevity. We directly compared the effectiveness of four trap designs for monitoring codling moth - triangular, wing, small diamond, and large diamond. The triangular and large diamond traps were significantly more effective than the other two traps. The small surface available for capturing moths in the small diamond trap appeared to be the major factor limiting the performance of this trap.

Three kinds of standard-load codling moth lures were tested: a flex type (Pherotech, Inc.), a long-life septum (TRE L2, Trécé, Inc.), and a red septum (Trécé, Inc.). The TRE L2 lure engineered by Trécé was the most effective lure. This long-life lure lived up to its name during the first and second generation comparisons, maintaining the highest level of attraction without replacement for the entire 56 days of codling moth adult activity. The experimental flex lure engineered by Pherotech also performed well, but a decline in efficacy was recorded prior to the end of the first and second generation codling moth flights. The performance of the red septa declined after only one to three weeks.

Obliquebanded leafroller lures produced for commercial use by three companies, or lures manufactured by a single company but loaded with an eastern or western blend of obliquebanded leafroller pheromone were tested. The eastern blend lure engineered by Scenturion was significantly more attractive than eastern blend lure produced by Trécé. The Scentry eastern blend lure used in the first generation comparison was essentially unattractive, but the problem was identified and corrected prior to the start of the second generation flight. The performance of the new Scentry lure was similar to that of the Scenturion lure. Obliquebanded leafroller males were more responsive to the western than the eastern blend lures. The Trécé produced western lure was significantly more attractive than the Trécé produced eastern lure. Furthermore, there was no significant difference in effectiveness of the Trécé and Scenturion western blend lures.

The utility of pheromone trapping systems may be improved by identifying the best lures and traps. Two lures, the Trécé long-life lure and the Pherotech flex lure, were attractive for significantly longer periods compared to the industry standard, red septum lure. The performance of the long-life lure was especially impressive, with a field life of at least 8 weeks or one complete codling moth generation. The strong performance of the Pherotech bubble-cap lure was also very encouraging. This experimental high-load lure was as attractive as the industry standard, 10 mg red septa, and lasted substantially longer. It appears that a season-long trapping program in pheromone-treated orchards may only require 2 bubble cap lures. This would compare quite favorably with the 7 to 8 red septa lures that are currently required to accomplish the same task. Moth capture also can be significantly influenced by trap design. Knowing the relative effectiveness of various traps will become increasingly valuable as researchers develop treatment thresholds based on moth captures in pheromone traps. A good pheromone trap must be effective at capturing moths and user friendly. The triangular trap captured the most moths and was the easiest to use.