1. Thresholds/Monitoring/Sampling

PHEROMONE TRAPS FOR MONITORING LEAFROLLERS

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The ability to monitor and prevent the establishment of leafroller populations is crucial to the success of pheromone based pest management programs throughout the western region. Detecting larval infestations before they reach damaging levels is very difficult. An alternative approach is to monitor leafroller populations with pheromone traps. Pheromone trapping systems are commercially available for PLR and OBLR, but their use has been limited primarily to tracking the seasonal phenology of leafrollers.

We directly compared the effectiveness of three trap designs: triangular (Delta trap, Scenturion, Inc.), diamond (Pherocon IIB, Trécé, Inc), and pentagonal (Intercept A, IPM Concepts, Inc.) for capturing PLR or OBLR males. Two other trap designs, wing (Pherocon 1C, Trécé, Inc) and bucket (Multipher) were included in OBLR tests only. The experimental design was a randomized complete block. PLR tests were conducted in 6 orchards at the Tree Fruit Research Center, Washington. OBLR tests were conducted in 4 commercial orchards in northeastern Oregon. All traps were baited with standard PLR or OBLR lures (Trécé, Inc.). The number of male moths captured in the different traps was recorded every 2-3 days. To minimize position effects, traps were rotated each time they were inspected. Trap bottoms were replaced after a cumulative catch of 50 moths, more often if dirty. The multipher trap is a non-sticky type trap, and moths were removed each time it was inspected.

The effectiveness of three kinds of pheromone traps for capturing PLR are compared in Figure 1. Data are presented as the average capture of moths in the various traps over the course of 14 days. Each successive 14 day trapping period corresponded to two complete cycles of trap rotation. The Delta trap was the most effective trap, capturing significantly more PLR moths than the Intercept A and Pherocon IIB traps. The intercept A and Pherocon IIB traps captured similar numbers of moths over the course of the study (All, Fig 1A).

The effectiveness of five kinds of pheromone traps for capturing OBLR are compared in Figure 2. Data are presented as the average capture of moths per 9 to 12 days of trapping. This period corresponded to a complete cycle of trap rotations. Tests were conducted for 2 trapping cycles (18d) during the first generation and 3 trapping cycles (30d) during the second generation. The Delta triangular trap performed as well as the widely used, Pherocon C wing trap (Fig 2A). The Multipher trap was also a highly effective trap, capturing a similar number of OBLR moths as the Delta trap (Figure 2B). All of these trap were more effective than the Pherocon IIB and Intercept A traps. The performance of the Intercept A was especially weak during the second generation test, capturing significantly fewer moths than all other traps including the Pherocon IIB.

For PLR, we also directly compared the effect of varying the size and age of the knockdown strip used to immobilize moths that are attracted to the Multipher trap. Four treatments were evaluated, 1/2 inch or 1 inch kill strips that were either replaced every 9 days or not replaced over the course of the test (45 days). PLR moth catch in the Multipher trap was not significantly influenced by either the size of the kill strip or the frequency of its replacement.

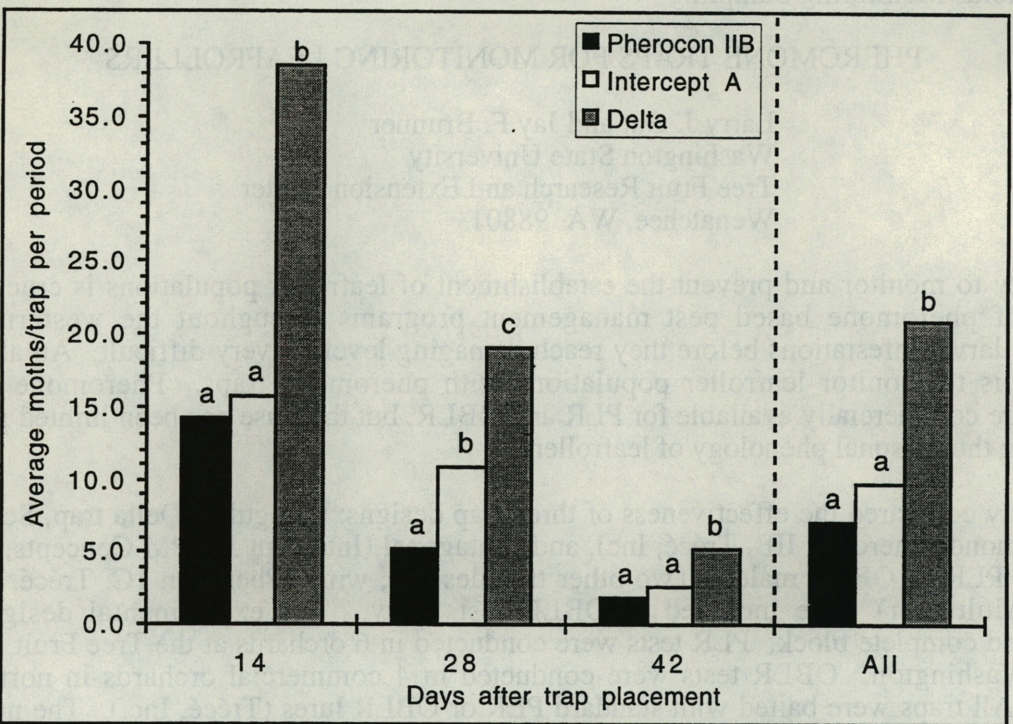

Figure 1. First generation capture of PLR males in various types of pheromone traps.

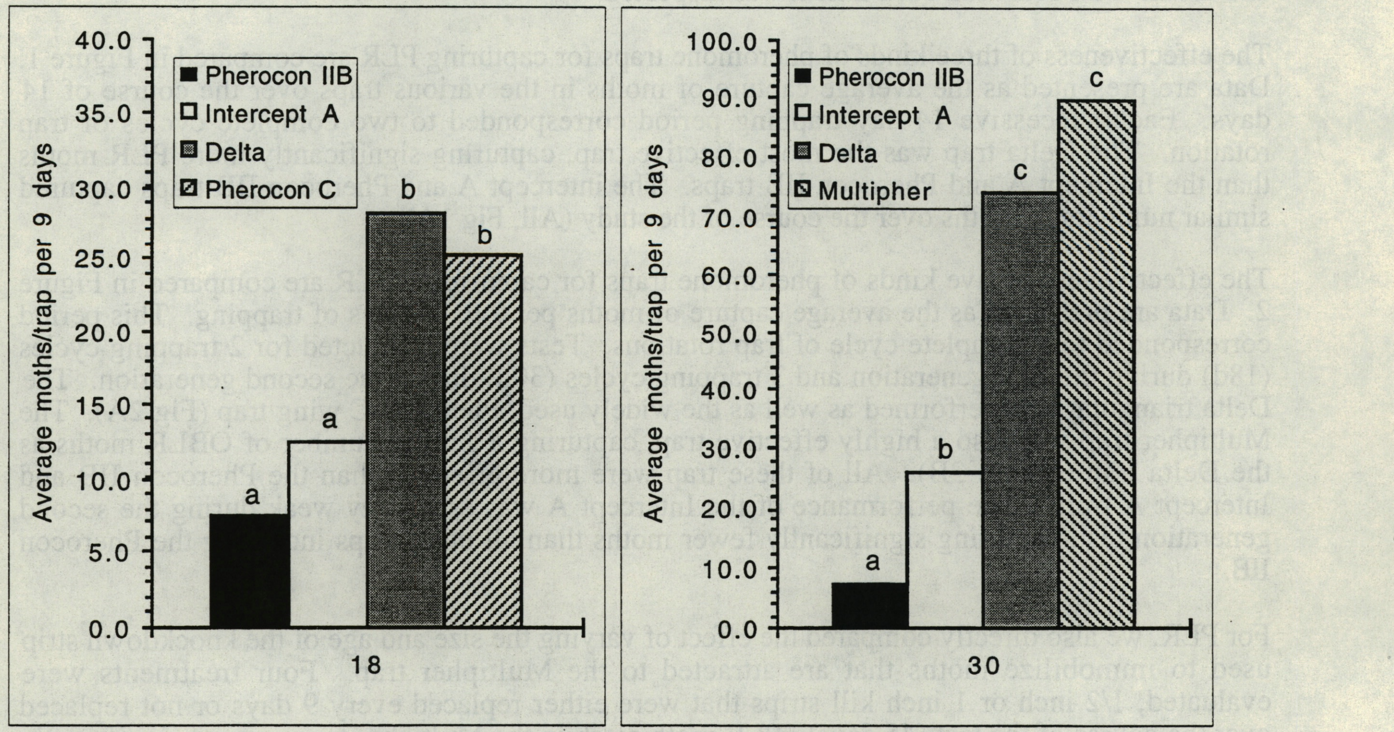

Figure 2. First generation (A) and second generation (B) capture of OBLR males in various types of pheromone traps.