

1. Thresholds/Monitoring/Sampling

MONITORING CODLING MOTH IN PHEROMONE-TREATED ORCHARDS: COMPARISON OF HIGH LOAD LURES

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Pheromone traps baited with a high load-rate red septum (10 mg of codlemone) have been adopted as a tool for monitoring codling moth (CM) in mating disruption (MD) orchards. This trapping system can be used to track CM flight and to determine the need for supplemental treatments of pheromone or conventional insecticides where MD is failing to control CM. However, the reliability of a 10 mg lure-baited trap to indicate the potential for fruit injury in MD orchards is not as good as growers and crops consultants would like. Here we report on efforts to develop more effective high load CM lures.

Two kinds of experimental high load lures were tested, a plastic membrane (Consep, Inc.) and a luretape (Hercon, Inc.). Both were engineered to release 5-10 μg of codlemone per hour. This emission rate was targeted because previous studies indicated a high degree of attractancy of the 10 mg red septa releasing these quantities of pheromone. We directly compared the attractancy of the two experimental lures and the commercially available red septum loaded with 10 mg of codlemone (Trécé, Inc.). The experimental design was a randomized complete block (6-8 blocks). The number of male moths captured in Pherocon 1CP traps baited with the different lures was recorded every 2-3 days. To minimize position effects, traps were rotated each time they were inspected. Lures were replaced after three complete rotations (27 days). To evaluate the effect of aging on attractiveness of lures, a trap baited with a red septum replaced at the end of each rotation, every 9 days, was included as a control. Trap bottoms were replaced after a cumulative catch of 30 moths, more often if dirty.

The relative attractancy of the various high load lures during the first and second generation flights of CM are shown in Figures 1A and B. Data are presented as the average capture of moths in traps baited with different lures over the course of 9 days. Each successive 9-day trapping period corresponded to a complete cycle of trap rotations. The experimental high load biolure engineered by Consep was the most effective lure. It was as attractive as the commercial standard, a 10 mg red septum, and maintained its attractancy for a longer period of time. The biolure remained as attractive as a red septum replaced at regular intervals throughout the first 27 days of the first and second generation flights. In contrast, a significant reduction in the relative attractancy of the unreplaced red septum was observed between the second and third trapping periods in the first flight and the first and second trapping periods in the second flight. The experimental high load lure engineered by Hercon was the least attractive lure, capturing about a third as many moths as the red septum replaced at regular intervals and the biolure during both flights.

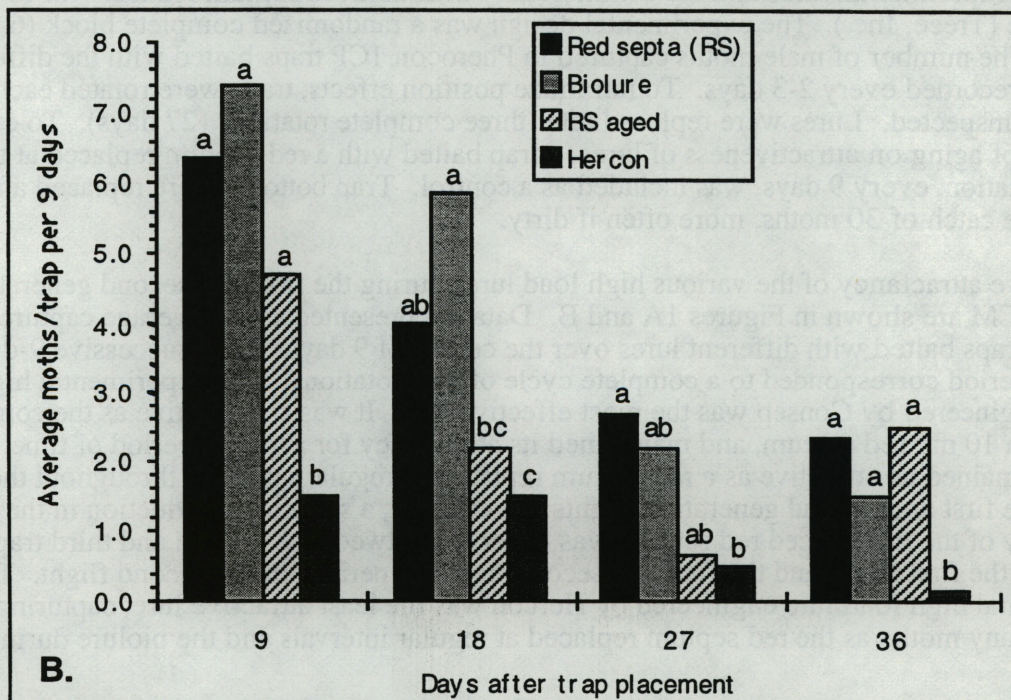
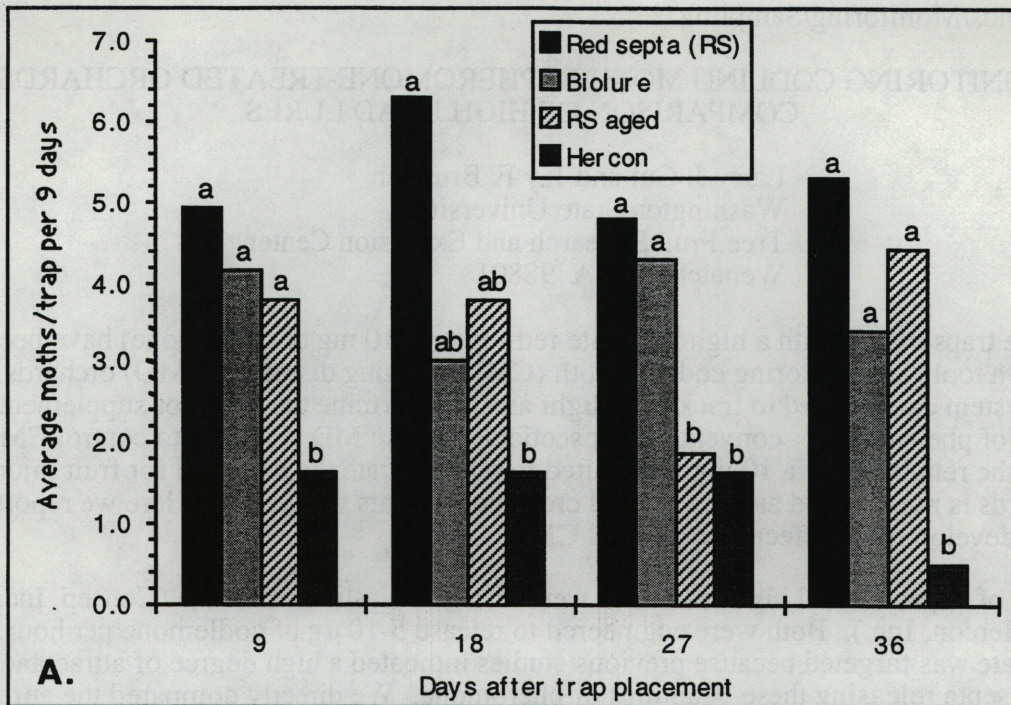


Figure 1. First generation (A) and second generation (B) capture of CM males in pheromone traps baited with various types of high load lures. A 10 mg red septum replaced every 9 days is included as a standard; all other lures were replaced on day 27. Means followed by different letters are significantly different ($P < 0.05$) according to Fisher's Protected LSD.