

1. Thresholds/Monitoring/Sampling

MONITORING CODLING MOTH IN PHEROMONE-TREATED ORCHARDS: COMPARISON OF TRAP DESIGNS

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Effectiveness of traps:

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.). The experimental design was a randomized complete block. Tests were conducted in 6 pheromone-treated blocks (Isomate C Plus at 400 dispensers/acre) at the Tree Fruit Research Center. All traps were baited with red septa loaded with 10 mg of codlemone (Trécé, Inc.). The number of male moths captured in the various traps 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) during the first generation flight and after two rotations (18 days) during the second generation flight. Trap bottoms were replaced after a cumulative catch of 30 moths, more often if dirty.

The effect of varying the size of the trapping surface was investigated during the second generation flight. We directly compared moth captures in a Delta trap deployed with the standard size sticky insert, and Delta, Pherocon IIB and Intercept A traps deployed with the same type of insert, but reduced in size by 33%. The standard inserts for Pherocon IIB and Intercept A traps were approximately the same size as this 66% Delta insert. The experimental design and methodology was as previously described.

The effectiveness of three kinds of pheromone traps are compared in Figure 2A. 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. It captured significantly more moths than the Intercept A and Pherocon IIB traps throughout the test. The intercept A trap was intermediate in effectiveness, capturing significantly more moths than the Pherocon IIB over the course of the study (All, Fig 2A).

The area of sticky surface available for capturing moths had a major influence on trap performance. A delta trap deployed with a sticky insert that covered the entire bottom (the same insert used in the first generation test) captured significantly more moths than a delta trap deployed with an insert that was 33% smaller (Fig. 2B). Furthermore, moths captures in Intercept A and Pherocon IIB traps fit with the 66% delta insert were equivalent to moth captures in a delta trap fit with the same, reduced-size, insert.

Using traps with a large sticky surface may provide an important means of improving trap performance. Results of the study reported herein suggest that significantly more moths are attracted to a trap than are captured. One way to improve capturing efficiency is to increase the size of the trapping surface. Further studies are needed to determine the optimal size for codling moth traps.

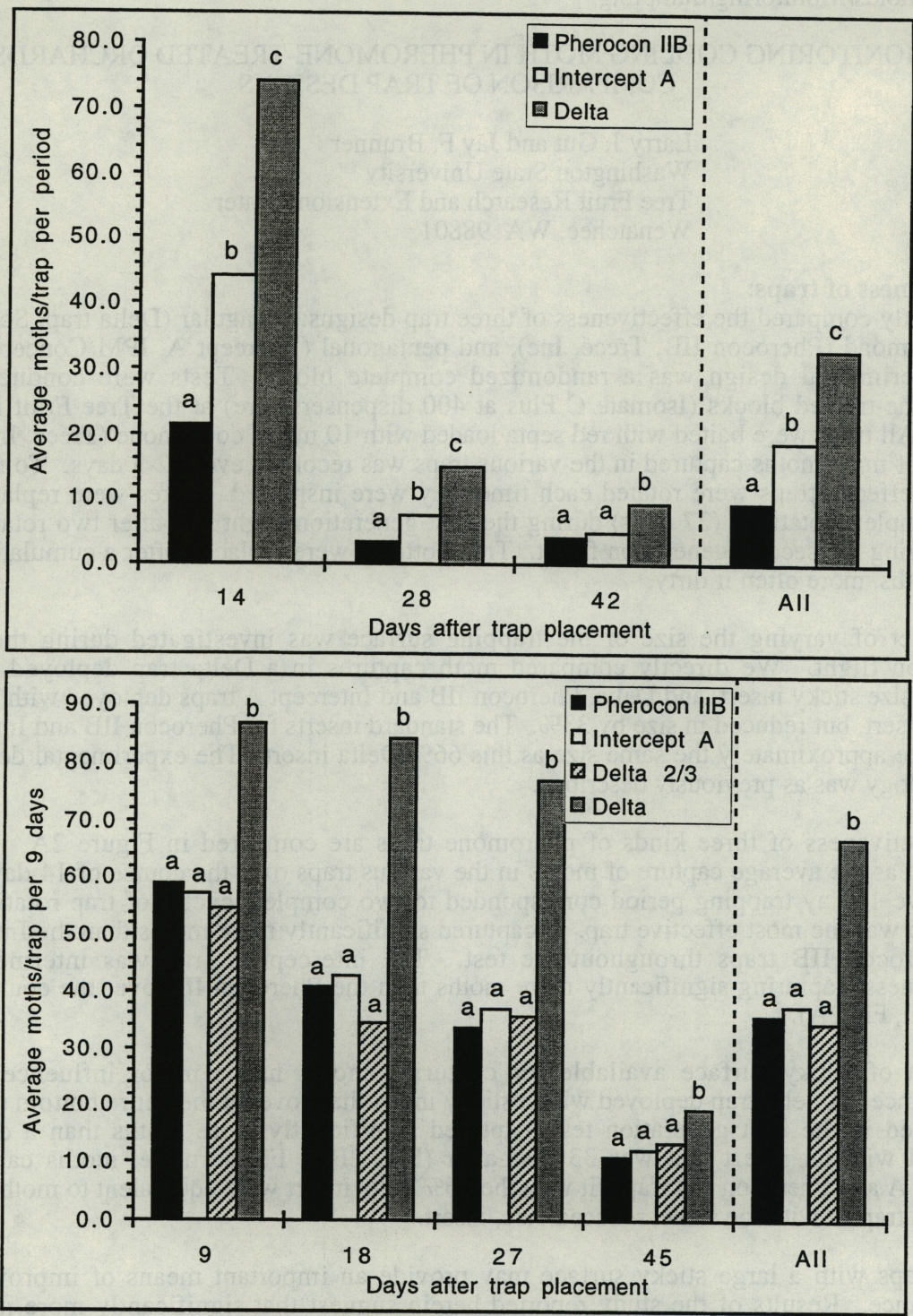


Figure 2. First generation (A) and second generation (B) capture of CM males in various types of pheromone traps. Each trap was baited with a 10 mg red septum. Means followed by different letters are significantly different ($P < 0.05$) according to Fisher's Protected LSD.