programs provides an understanding of current public perceptions. Three of the top four — consumer skills, leadership skills, and computers — might all be viewed as related to general lifestyle survival skills that are increasingly important in society today. Some of the more specific, and perhaps career-oriented, topics — animal-raising, engineering, plants and soil sciences — were judged only moderately important. Activities that might be viewed (perhaps narrowly) as leisure-related or just for fun — outdoor camping, sports clubs, and creative arts — were ranked low. The subject "coed activities for teens," which received a relatively high ranking, was the sole exception to this interpretation, but its high position is easily understandable in light of continuing media attention to problems of adolescent development.

If there is a pattern to these rankings, it seems to be that respondents felt youth need to be spending their out-of-school time seriously developing self-reliance skills for the future. In a broader context, the public might be starting to view community youth programs as legitimate educational adjuncts to schools, with the important task of guiding the development of those essential skills.

The results also carry some clear implications for 4-H in the increasingly important area of program marketing. First, despite the very high name recognition of 4-H, 70 percent of the public was not aware of one of the major factors making 4-H unique as a youth-serving program — its administrative home in the University of California. Because of the strong educational and scientific support resulting from this link, wider knowledge of the relationship would most probably stimulate program growth. Second, respondents were largely unclear about where to go for further information. None of the possible sources was mentioned by more than 19 percent of the sample, indicating that no one information source will reach or be used by most of the community. Two of the top four sources frequently mentioned could be classified as "in-house," in that they required some prior program knowledge.

It may be concluded that eligible families, even interested ones, will remain largely unaware of the program if left to their own resources. Taken in combination, these results suggest that potential members must be reached through active efforts aimed at increasing general program visibility, informing the public on selected substantive points, and publicizing available information channels.

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Monitoring peach twig borer by standardized trapping methods

Roger R. Youngman □ Martin M. Barnes

The economic thresholds need reconsideration

The peach twig borer, a pest of California almond and stone fruit orchards, can be monitored by following male adult emergence with sex pheromone traps. The ability to use such traps effectively and reliably year after year against this insect, *Anarsia lineatella* Zeller, depends upon standardization of factors that can affect their performance. Our study included two factors: the optimum field life of the commercially available peach twig borer pheromone dispenser, and the optimum density of traps. All of the dispensers used in the following field trials came from stock supplies and were kept frozen until used.

Aging trials

From July 16 to September 16, 1981, we aged individual lots of seven pheromone dispensers (rubber septa) in a Madera County almond orchard, so that septa were zero, two, four, six, eight, and nine weeks old. For aging, we placed each lot of dispensers in a Pherocon 1C pheromone trap without a sticky liner and hung it in the northeast quadrant of a tree at a height of 5 to 7 feet. This aging process exposed the rubber septa to actual field conditions of fluctuating temperature and humidity, wind currents, and ultraviolet light. A hygrothermograph in a weather shelter adjacent to the aging site recorded daily temperatures.

After aging, the septa were individually placed on sticky liners in Pherocon 1C traps and installed in a Fresno County almond orchard. The test plot covered 8.3 acres near the center of a 494-acre orchard. A completely randomized design, involving seven replicates, was used in which the septa of five different ages were compared with unaged septa. The traps were hung as described previously and set out in a 6-by-7 matrix, separated by 100 to 120 feet from one another. All traps were re-randomized daily and, after five days, the number of male peach twig borer moths per trap was recorded.

We also conducted an aging trial in the spring of 1982 in Kern County to determine if lower temperatures would affect septa longevity. Aging was conducted weekly for seven weeks as described previously, beginning April 23, with a new batch of septa produced on April 6, 1982. The test plot covered 6.4 acres and was near the north side of a 119-acre almond orchard.

We used eight treatments, including an unaged control, replicated five times and set out in a completely randomized design. On June 12, the traps were placed in a 5-by-8 matrix 100 feet apart from one another. All traps were re-randomized daily and, after one week, the number of male moths caught was recorded.

In both trials, aging significantly affected ($p<.05$) attractiveness of rubber septa to male peach twig borer moths (fig. 1 and 2). In the 1981 trial, there was no statistically significant difference between two-week-old septa and fresh septa in male moths caught. Four-week-old septa, however, caught only 34.3 percent as many moths as fresh septa. Traps baited with septa aged six weeks or more caught virtually no moths at all.

In the 1982 trial, traps baited with one- or two-week-old septa were not significantly ($p<.05$) different from each other, although they were significantly different from traps containing fresh septa, having caught 73 and 64 percent as many moths, respectively. Of more importance from a pest management standpoint was the finding that traps baited with three-week-old septa caught only 22 percent as many moths as those with fresh septa, and, as in the 1981 trial, traps containing septa aged for six or seven weeks caught almost no moths.

Despite the higher temperatures during the 1981 summer aging period, the de-

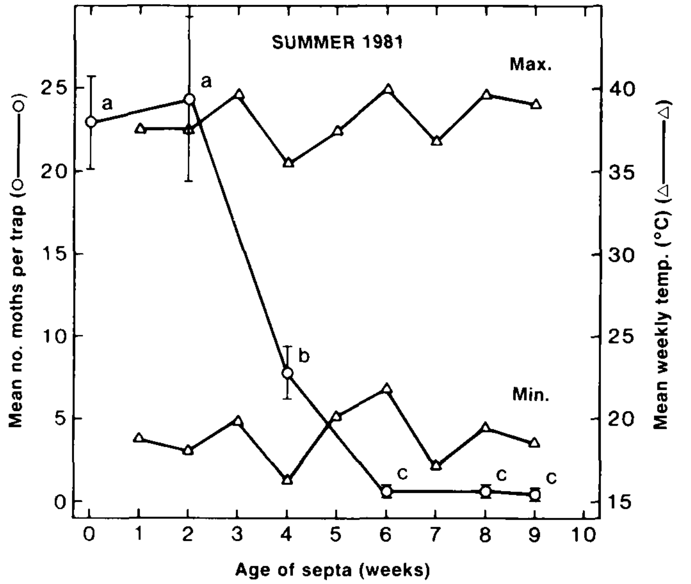

Fig. 1. Two-week-old and fresh pheromone dispensers were similar in attractiveness, but number of male peach twig borer moths caught declined sharply after two weeks. (Circles with same letter are not significantly different.)

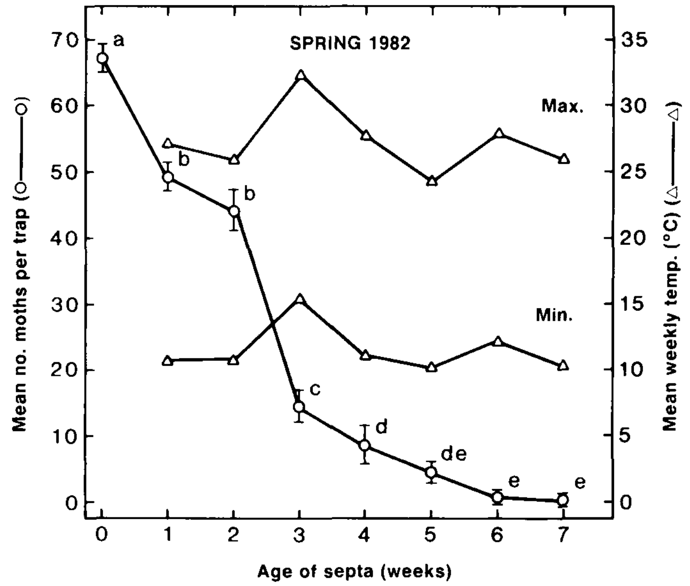

Fig. 2. The trend was similar in the spring study — a sharp drop in pheromone dispenser attractiveness after two weeks, suggesting that the dispenser needs to be replaced every two weeks regardless of the time of year.

cline in moth catches in relation to increasing septa age was very similar in both trials. Some factor other than temperature seems to have been responsible for the relatively brief period of attraction of male moths to the pheromone dispenser.

Our results suggest that the current peach twig borer pheromone dispenser should be replaced every two weeks, regardless of the time of year in which it is used. Based on these findings, the tentative economic threshold of 9.4 moths per trap per day previously reported for peach twig borer in almonds needs reconsideration, since the pheromone rubber septa in those earlier studies were replaced at four- to six-week intervals.

Trap density experiment

The trap density trial took place in a Kern County orchard, which had had no foliar insecticide treatments since 1980, and which consisted of 'Merced', 'Nonpareil', and 'Mission' cultivars planted 24 by 24 feet in a ratio of 1:2:1 rows respectively. The test plot, near the center of the 304-acre block, comprised four subplots. Within each subplot, 16 Pherocon 1C traps were set out in a 4-by-4 grid; all traps were hung in the northeast quadrant of a tree at a height of 5 to 8 feet. The 16 traps in each subplot were placed at densities of 1 trap per every: tree and row, second tree and second row, fourth tree and fourth row, and eighth tree and eighth row. The ratio of traps to trees was, therefore, 1:1, 1:4, 1:16, and 1:64, respectively. The four subplots were separated from one another by about 1,250 feet to the north and south and 1,000 feet to the east and west. The four treatment locations within the main plot were re-randomized weekly.

A fifth and lowest trap-density treatment of 1:324 trap to trees was also established, but only for purposes of observation. It consisted of three traps spaced 18 trees apart in a row and was about 900 feet to the west of the main plot in the same orchard. Because this treatment required too large an area to be replicated, it was not included in the statistical analysis.

From June 22, when the traps were set out, through September 13, 1983, we counted and removed all peach twig borer male moths from the inner 4 traps (within the 16) once a week. Moths in the surrounding 12 traps were removed at 14-day intervals but not recorded. This procedure was based on the assumption that the inner 4 traps, unlike the surrounding 12, were under equivalent trap competition conditions. Pheromone rubber septa were replaced every two weeks, and sticky liners were changed every two to four weeks, depending on moth flight activity.

Because the peach twig borer population did not remain static from week to week, the average moth catch per treatment was divided by the average catch of the highest trap density (1 trap per tree) for each week, providing a trap catch factor for comparison. Traps at the lowest density to trees (1:64, table 1) caught significantly ($p < .05$) more moths than those at the higher densities of 1:1, 1:4, and 1:16. As the area increased to 0.84 acre per trap, the trap catch factor increased and reached a peak at 1.96. Competition for moths among pheromone traps too close to one another can substantially decrease catches. When an optimum density of traps has been achieved, catches would be expected to level out.

TABLE 1. Influence of pheromone trap density on the trap catch factor of male peach twig borer moths — Kern County, 1983

Ratio of traps to trees	Trap area (acres/trap)	Trap catch factor*
1:1	0.01	1.00 a
1:4	0.05	1.06 a
1:16	0.21	1.45 a
1:64	0.84	1.96 b
1:324†	4.3	1.69

* Means are averages of 11 weekly replicates (four traps per treatment). Means followed by the same letter are not significantly different at $P < 0.05$ according to Duncan's new multiple range test.

† Because this treatment was not replicated, it was not included in the analysis.

The results of this study indicated that the magnitude of trap catches of male peach twig borer moths leveled off at one trap per 0.84 acre. This density can be achieved by placing traps no closer than 192 feet to one another. Although not included in the analysis, the results of the much lower density of 1:324 traps to trees (table 1) in an area adjacent to the test site do not conflict with this finding.

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