COLLECTION OF SOYBEAN LOOPER AND OTHER NOCTUIDS IN PHENYLACETALDEHYDE-BAITED FIELD TRAPS

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Many adult lepidopteran pests are monitored in agricultural systems using sex pheromone-baited traps. However, chemicals other than sex pheromones have been isolated, identified and bioassayed as moth attractants. Field studies have shown that traps baited with phenylacetaldehyde capture various noctuid subfamilies, especially Plusiinae (Smith et al. 1943, Creighton et al. 1973, Cantelo & Jacobson 1979). Enhanced upwind flight and increased trap capture have resulted when phenylacetaldehyde has been combined with sex pheromones (Creighton et al. 1973, Meagher & Mitchell 1998) or blacklights (Cantelo & Jacobson 1979). Phenylacetaldehyde has the potential in agricultural systems to non-specifically attract both female and male moths.

Soybean looper moths, *Pseudoplusia includens* (Walker), have been captured in traps baited with phenylacetaldehyde (Smith et al. 1943, Creighton et al. 1973), but the traps were large and are not in use today. This note describes capture of *P. includens* and other noctuids in traps currently used in agricultural settings.

Two experiments were conducted in northwestern Alachua County, Florida. The first experiment used Unitraps (Great Lakes IPM, Vestaburg, MI) that were placed along roads and edges in an 80-ha field of cotton, *Gossypium hirsutum* L. Traps were baited with lures containing phenylacetaldehyde (0.5 ml) placed in hollow polyethylene stoppers (Kimble, Vineland, NJ, purchased through Thomas Scientific, Swedesboro, NJ, #9713-F28). Traps contained insecticide strips to kill moths that were captured (Hercon® Vaportape II containing 10% 2, 2-dichlorovinyl dimethyl phosphate, Hercon Environmental Co., Emigsville, PA). Trap contents were removed three times per week and soybean looper moths were collected from 21 July to 12 September 1997.

The second experiment was designed to capture noctuid moths during a part of the season when there was no commercial field crop. Unitraps baited with 0.5 ml phenylacetaldehyde in stoppers or unbaited traps were placed in the middle of a 60-ha field of grain sorghum, *Sorghum bicolor* (L.) Moench, that was harvested and regrew prior to the experiment. The experiment was designed as a randomized complete block with three blocks of the two treatments (baited or unbaited), and trap location within a block was randomized weekly. Moths were collected from 4 December 1998 through 17 February 1999.

Moths were identified with the aid of Kimball (1965) and Covell (1984), and comparison with identified specimens in the Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville.

Moth numbers per night from the sorghum field were compared across treatments using a split block analysis of variance (ANOVA), where treatment was the main plot and date was the subplot (Steel & Torrie 1980). To satisfy ANOVA assumptions, counts were *log* (x + 1) transformed before analysis. Treatment means were separated using an LSD mean separation test (PROC GLM, SAS Institute 1996). Untransformed means (±SE) are given in the text, whereas statistical results refer to transformed data.

In the cotton field, soybean looper moths were noticed in traps starting in early August but were not recorded numerically until late August (Fig. 1). Moths were collected in traps through September. In the sorghum field, almost one half of the moths collected were either *Mocis latipes* (Guenée) or *Leucania* sp., although species from six noctuid subfamilies were represented in trap captures (Table 1). Similar numbers of male and female moths were collected in traps baited with phenylacetaldehyde. Baited traps collected more moths than unbaited traps ($P < 0.05$), as only 1 moth was collected in the unbaited traps.

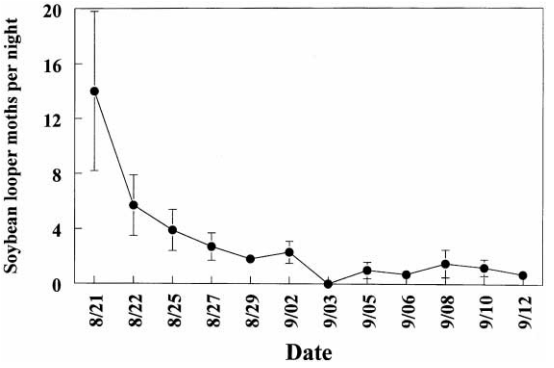

Fig. 1. Collection of soybean looper moths in a cotton field with Unitraps baited with phenylacetaldehyde, Alachua Co., FL, 1997.

TABLE 1. NUMBER OF NOCTUID MOTHS COLLECTED IN A FIELD OF REGROWTH SORGHUM WITH UNITRAPS BAITED WITH PHENYLACETALDEHYDE, 4 DECEMBER, 1998—17 FEBRUARY, 1999, ALACHUA, FL.

Subfamily/Species	Females	Males
Amphipyrinae		
Platysenta mobilis (Walker)	1	0
Spodoptera dolichos (F.)	0	1
S. latifascia (Walker)	1	4
Catocalinae		
Mocis disseverans (Walker)	2	0
M. latipes (Guenée)	16	14
M. marcida (Guenée)	5	5
Hadeninae		
Leucania sp.	22	15
Pseudaletia unipuncta (Haworth)	1	0
Heliothinae		
Helicoverpa zea (Boddie)	1	0
Heliothis virescens (F.)	1	0
Noctuinae		
Agrotis subterranea (F.)	3	5
Anicla infecta (Ochsenheimer)	1	1
Plusiinae		
Agrapha oxygramma (Geyer)	3	1
Argyrogramma verruca (F.)	0	3
Autographa biloba (Stephens)	2	1
Pseudoplusia includens (Walker)	0	2
Rachiplusia ou (Guenée)	4	6
TOTAL	63	58

SUMMARY

This research determined some of the economically-important noctuids that can be captured using phenylacetaldehyde as a lure. It was confirmed that phenylacetaldehyde can be used for monitoring (presence or absence) or sampling (numbers per time per area) using commercially available insect traps. These traps are currently used to sample pest noctuids by growers, consultants and county extension workers.

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