Thresholds/Monitoring/Sampling

Improved Pheromone Lures for *Phytocoris relativus* (Hemiptera: Miridae)

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Due to the high volatility of *Phytocoris* pheromones their retention on rubber septa lures is unacceptably short for commercial field use in pheromone traps. Several new pheromone dispenser designs and types were evaluated in 1998 in an attempt to overcome this short residual and release activity of *Phytocoris* pheromones on rubber septa.

Preliminary field trials with a variety of polyethylene microcentrifuge tubes loaded with *P. relativus* pheromones indicated that a small 0.5 ml polyethylene tube and a larger 1.5 ml conical microcentrifuge tube should be considered in further trials. Subsequently, a field trial compared the two types of tubes, each loaded at two rates of *P. relativus* pheromone (100 and 200 mg/lure), with a commercial lure comprised of a paraffin and wax matrix (Scenturion, Inc., Clinton, WA) impregnated with *P. relativus* pheromone. This lure was also provided with two load rates (190 and 380 mg per lure). The six experimental lures were then compared to U.C. standard rubber septa lures provided by Dr. Millar. This trial was established in a mature almond orchard near Caruthers, CA, on July 21, 1998. The trial was comprised of five traps (replicates) for each lure type with the U.C. standard rubber septa lure being changed at two-week intervals and the six experimental lures not changed through the duration of the trial. Lures were placed in standard Pherocon® 1C sticky traps (Trécé, Inc.) spaced at 200 ft intervals. The traps were counted twice weekly and rotated to the next position in the trap array at each count date.

The comparisons of the experimental lures to the standard rubber septa *Phytocoris* lure showed all of the experimental lures collecting significantly more *P. relativus* males than the U.C. standard lure at one and two weeks after lure placement (Table 1). Initially the smaller thin-walled centrifuge tube lures (PR-98-13, 14) were more attractive than the larger, thicker-walled tube lures (PR-98-11, 12) and were comparable to the Scenturion paraffin/wax lures. As expected, the higher Scenturion lure load (380 mg) initially caught more *relativus* males than the lower 190 mg load. Between weeks 5 and 8 the polymer centrifuge tube lures had lost much of their pheromone and began to fall behind collection rates of the two Scenturion lures. Following the 11-week count the four polymer tube lures were eliminated from further consideration in this trial. At week 11 the 190 mg Scenturion lure was also no better in *Phytocoris* attraction than a fresh U.C. standard septa lure while the 380 mg Scenturion load was still significantly better than the other two lures remaining in the test; this continued through week 17.

The results of this trial show quite clearly that high loads of *Phytocoris* pheromones blended into paraffin wax dispensers or plastic reservoir lures will provide considerably longer field life and attraction for *Phytocoris* males compared to the standard rubber septa lure that must be changed every two weeks in order to retain high attractancy for responding bugs. These results will undoubtedly point the way to improved monitoring lures for all pheromones of relatively high volatility, including pheromones for other Hemiptera and Lepidoptera such as peach twig borer.

Table 1. Efficacy of standard rubber septa, paraffin/wax, and polyethylene tube lures for collection of *Phytocoris relativus,* Fresno County, CA, 1998.

		Mean number *P. relativus* per trap at week[1]						
Lure type	Load (mg)	1	2	5	8	11	14	17
U.C. standard septa	5	51.6a	14.6a	72.8b	39.4b	21.0c	31.8a	18.8a
Scenturion 1102	190	103.2bc	101.2b	84.0bc	58.0c	17.8c	22.2a	18.8a
Scenturion 1101	380	129.2c	120.2bc	127.8d	89.6d	27.8d	44.2b	30.0b
PR-98-11	100	23.6a	115.0bc	103.0cd	32.8b	3.4ab	--	--
PR-98-12	200	18.6a	138.8c	225.2f	54.4c	4.2b	--	--
PR-98-13	100	148.0c	172.4d	11.2a	1.8a	0.0a	--	--
PR-98-14	200	117.2c	193.6d	191.6e	6.8a	0.4ab	--	--

[1]Means in columns followed by the same letter are not significantly different at *P.* = 0.05, Fisher's Protected LSD test.