

LABORATORY EVALUATION OF ANT BAIT STATIONS FOR CONTROL OF THE RED IMPORTED FIRE ANT

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Currently, there are no bait -formulated insecticide products specifically registered for control of indoor colonies of the red imported fire ant, *Solenopsis invicta* Buren. Other materials, such as arsenic-based baits, registered for control of ants, have not been found to be effective for eliminating the large (10,000 and or more) fire ant laboratory colonies. Three bait products currently on the market contain active ingredients found in outdoor ant baits (hydramethylnon in Combat® and Maxforce®) or that are being developed for outdoor use (sulfuramid in RaidMax®). However, they are formulated differently than their registered outdoor products. Indoor products contain peanut butter, sugar or wax moth caterpillar based bait in solid form within a plastic bait station. Outdoor products are formulated in soybean oil on de-fated de-hydrogenated corn cob grit. This trial was conducted to determine if these newer bait products are effective for eliminating indoor laboratory fire ant colonies.

Materials and Methods

On October 17, 1990 twelve laboratory fire ant colonies maintained on a consistent laboratory dietary regime were selected for study. One bait station of each type was placed in each of three colonies and replicated four times. Products tested and their formulations are as follows:

1. Combat® Ant Control System - 0.9% hydramethylnon in what appears to be a sugar cake bait; \$1.89/3 = \$0.63 each.
2. Raid Max® Ant Bait - 0.5% N-ethyl perfluorooctanesulfonamide (sulfuramid) in what appears to be a peanut butter bait; \$3.19/4 = \$0.79 each.
3. Maxforce® Pharoah Ant Killer - 0.9% hydramethylnon in what appears to be a ground insect bait; 6 for \$12.00 = \$2.00 each (sold only through Private Pest Control Operators or their suppliers).

Estimated number of ants per colony, presence of brood (larvae and pupae) and presence of queen ants were determined weekly. Resulting ant number estimates were subjected to analysis using ANOVA and the Least Significant Difference (LSD) test at P 0.05.

Results and Discussion

Results listed in **Table 1** show that Maxforce® and Combat® decreased red imported fire ant colony size relative to the untreated colonies within 1 week of exposure. Raid Max® was slower to reduce ant numbers, requiring 3 weeks for a significant reduction to occur. Unexplained declining numbers of ants in untreated colonies reduced differences between treatments. However, Maxforce® treated colonies continued to decline through the four week monitoring period. Colonies were never eliminated. However, numbers of ants declined dramatically and brood production was eliminated. Queen ants, however, were not observed to be eliminated in these multiple queen colonies. Although colony decline in this test was slow, more bait stations per colony, as suggested in an actual indoor ant problem situation, may have improved the rate and degree of decline.

Table 1. Effects of ant bait stations on laboratory colonies of the red imported fire ant (one station per colony).

No. of ants x 1000/percent colonies with brood^a/

	Maxforce ®	Combat ®	Raid Max®	Control	LSD
Pre-count	13ab/100	11.25/100	15.00/100	20.00/100	7.054
1 week	12.50b/75	11.25/100	14.37ab/75	20.00a/100	7.429
2 week	9.25b/75	8.13b/100	11.25ab/75	20.00a/100	8.844
3 week	5.88b/75	5.63b/75	8.00b/100	17.50a/100	6.536
4 weeks	0.50b/0	4.25ab/10	5.75ab/25	10.00a/50	5.801

^a/Means with similar letters are not significantly different according to ANOVA and the Least Significant Difference (LSD) test (p 0.05).