

CONTROL OF THE NATIVE GRAY 'FIELD' ANT, *FORMICA AERATA*, IN TABLE GRAPES IN KERN COUNTY, 2014

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Native gray ants are considered disruptive to mealybugs in table grapes. Growers wanting to achieve ant control have few options because most bait products are formulated for protein-feeding ants (like fire ants) whereas ants that tend mealybugs feed primarily on sugars. The purpose of this trial was to see if we could get protein-based ant baits to be effective against a sugar-feeding ant.

During 2014 we conducted a field trial near McFarland, CA to evaluate four ant baits and an untreated check. The baits included Clinch, Esteem, Altrevin and three rates of the beige-colored formulation of Seduce (see further explanation below). The trial was located in a 30-acre mature table grape vineyard that was regrafted to the variety Autumn King in 2011. The trial was organized into a randomized complete block design with six blocks. Plot size was 10 rows by approximately 43 vines long on a 12ft by 7ft vine spacing (0.7-acres per plot). The baits were applied on 23 Apr 2014, and applications were made using commercial bait application equipment owned by the grower.

Trial was evaluated at weekly intervals for approximately 6 weeks. A total of 4 Tomcat Glue Boards (with eugenol for enhanced stickiness) were placed on flat ground approximately 1ft from the base of approximately every 10-11th vine in the middle of the plot. Cards were left in the field for approximately 24 hours, at which time the number of ants captured were recorded. Data were analyzed by ANOVA with means separation determined by Fisher's Protected LSD (P=0.05) after square root ($x + 0.5$) transformation of data to satisfy model assumptions regarding homogeneity of variances.

After the completion of the trial we found out that there are two bait products called Seduce. Both products have the exact same name and active ingredient but one Seduce is beige in color and has a label stating that it is for earwigs and cutworms whereas the other Seduce is red in color and has a label stating that it is for ants, earwigs and cutworms. After the study was concluded we found out that the manufacturer sent us the beige bait when they should have sent us the red bait. As a result, in this report we have provided data showing that the beige bait called Seduce does not control native gray ant even though the intention by the manufacturer of the product was to send us the red bait.

Once the shipping error was discovered the manufacturer asked us if it would be possible to repeat the study with Seduce (the red one) instead of Seduce (the beige one). It was not possible to repeat the entire 30+ acre study, but we were able to do a small comparison. In this trial we applied Seduce (the red one) at a rate of 44 lbs/ac to six plots that were each 0.7 acres and compared ant densities in those plots to six similar-sized untreated checks in a 2 treatment by 6

reps randomized complete block design. Ants were monitored weekly for four weeks and data were analyzed as previously described.

The effects of baits on ant populations are shown in Table 1. There were significant differences among treatment 7, 14, and 21 DAT, but many of those same differences were also present in precounts. This means that it is not possible to determine if the differences among treatments were due to the treatments or due to a random factor that occurred when the randomized complete block design was established. However, even if the statistical differences were real, with the exception of 7 DAT, none of the treatments resulted in statistical reductions in ant density compared to the untreated check 14 to 21 DAT and ant density in all plots was statistically equivalent 28, 35 and 42 DAT. That means that none of the treatments provided a level of control that would justify their use commercially in table grapes, and that at best, some of the ant baits might have reduced the density of foraging ants for a few days.

Figure 1 shows the results of the small trial to evaluate the red-colored Seduce bait. Prior to treatment and 3 DAT there were approximately 20 to 30% more ants in the Seduce plots than in the untreated check ($P > 0.22$, n.s.). After treatment there were approximately 20 to 30% fewer ants in the Seduce plots than in the untreated check, though these differences were not significant 7, 10, 14 or 28 DAT ($P = 0.07$ to 0.92) and were only marginally different 21 DAT ($P = 0.0440$). This means that it is possible that Seduce might have caused a minor suppression in the number of foraging ants for a few weeks, but this trial was unable to prove definitely if that was true.

During each trial we also made some observations about ant bait attractiveness to *Formica aerata*. Foraging ants were attracted to flakes of Clinch, Esteem and Altrevin and the ants readily picked up the baits and took them back to their nest. However, the ants just walked right past Seduce pellets regardless of whether they were the red or beige-colored bait and baits could be seen left on the ground for several weeks following application.

Table 1. The effects of bait applications on the density of *Formica aerata* in table grapes, McFarland, 2014.

Treatment/ formulation	Rate/ Acre	Pre- count	Mean ants per glue card					
			7 DAT	14 DAT	21 DAT	28 DAT	35 DAT	42 DAT
Clinch	1.0 lb	4.0bc	4.6ab	1.9a	2.9a	2.4	3.4	3.0
Esteem	1.5 lb	4.9c	6.5bc	3.7cd	6.3c	2.8	3.4	4.0
Altrevin	1.5 lb	2.3a	3.9a	2.9abc	4.9abc	2.4	3.4	2.7
Seduce	10 lb	4.0abc	4.5ab	3.2c	4.3ab	1.9	3.2	3.2
Seduce	20 lb	2.9ab	5.5abc	2.8bc	3.8ab	1.8	2.7	2.3
Seduce	40 lb	2.9ab	5.9bc	5.3d	5.3bc	2.6	4.8	3.8
UTC	--	2.8ab	7.6c	2.1ab	4.3ab	2.0	2.5	2.8
	<i>F</i>	2.35	2.49	6.03	2.86	0.73	0.94	1.07
	<i>P</i>	0.0333	0.0249	<.0001	0.0114	0.6225	0.4649	0.3860

Means in a column followed by the same letter are not significantly different ($P > 0.05$, Fisher's protected LSD) with square root ($x + 0.5$). Untransformed means are shown.

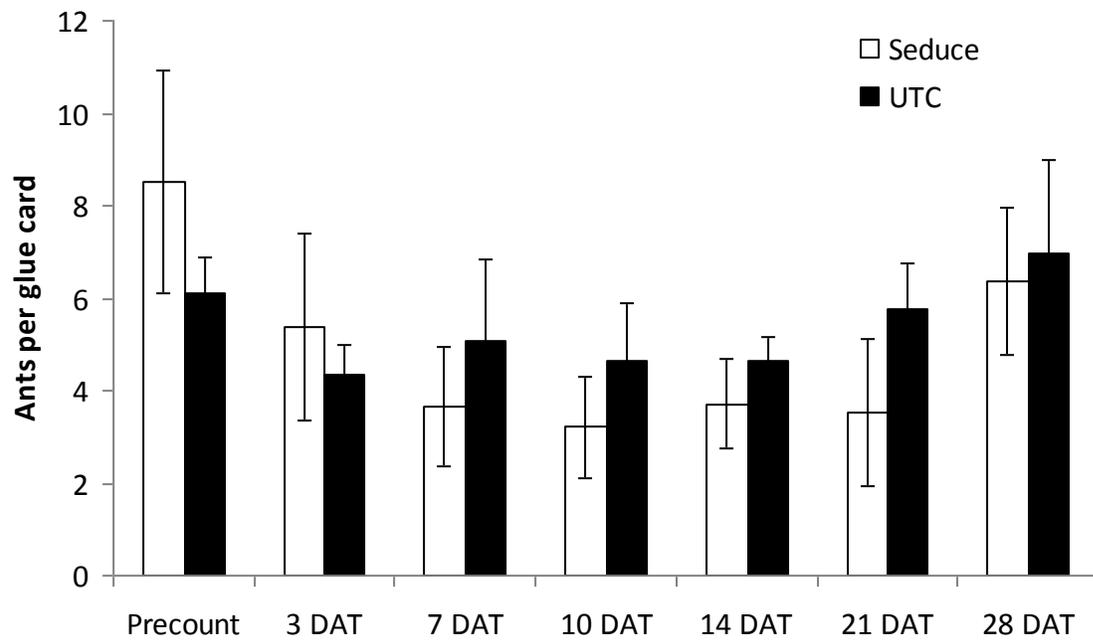


Figure 1. Comparisons of ant density in plots treated with Seduce compared to the untreated check.