

Section V

Soil Arthropods

EVALUATION OF BAIT APPLICATIONS FOR CONTROL OF SOUTHERN FIRE ANTS

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

C. Fouché, D. Colbert, B. Villalpando & F. Marmor (Dupont)

University of California Cooperative Extension

420 South Wilson Way, Stockton CA 95205-6243

209/468-2085

bfouche@ucdavis.edu

This trial was established at Foiada Farms in Wesley, California in order to evaluate the effectiveness of an experimental ant bait with indoxacarb as the active ingredient. Currently abamectin (Clinch) and pyriproxyfen (Esteem) are formulated in soy oil on corn meal grit particles and broadcast for control of three ant species in California. The ants targeted are the red imported fire ant *Solenopsis invicta*, southern fire ant *Solenopsis xyloni*, and the pavement ant *Tetramorium caespitum*. Currently the RIFA is confined to Southern California with sporadic outbreaks in Northern California and eradication efforts are led by the California Department of Food and Agriculture. The pavement ant, which is native to California, can be responsible for extensive damage to plants by girdling the roots of vegetables and some tree species such as cherries and citrus. The primary agricultural use of the baits other than eradication efforts of the RIFA, are the suppression of southern fire ants and pavement ants in nut crops such as almonds and walnuts during harvest. Nuts can sustain considerable damage while on the ground drying. Good IPM practices such as the elimination of dormant sprays, using BT's for worm control in the spring rather than organophosphates, non-cultivation practices, cover crops and improved irrigation systems such as micro-sprinklers and drip irrigation, have all served to the advantage of the ant populations in California agricultural production systems.

Treatments were either broadcast with a hand held fertilizer spreader or mounded with a tablespoon in the sample plots on August 12, 2003. Plots were 200 feet long by 75 feet wide. Four replicates were used in a RCB design. Ant populations were evaluated by placing hot dog pieces in a small vial on the ground for several hours. As the ant activity in the fall decreased, vials were left on the ground for longer periods in order to obtain moderate damage in the untreated control plots. Five vials of hot dogs were used in each plot. Sunnyside Farms Chicken & Pork Frank links were used. One-eighth of a link containing 140 fat calories/link was placed in each bait station. Vials were frozen overnight, and the ants were counted the next day. The only ant species observed in this trial was the southern fire ant. Final evaluations this year were made with almonds by placing 10 nuts in a PVC tube with two 1/4" holes in the side and leaving it on the ground for 7 days. Evaluations will be made next spring to determine the longevity of the control. Past experience has shown that fall applications of baits will suppress ant foraging the next year before the colony has time to increase its population levels.

Treatments		Pre-Trt Aug 29 # Ants per Vial	Sept. 5 # Ants per Vial	Sept 12 # Ants per Vial	Sep 26 # Ants per Vial	Oct 10 # Ants per Vial	Oct 10 % Damage to Dogs
Untreated	-----	202.7 a	462.7 c	327.6 b	150.8b	140.3b	4.3b
Indoxacarb Broadcast	1.5 lb/ac	273.4 a	15.1 a	12.9 a	11.7a	0.0a	0.0a
Indoxacarb Mound	1.5 lb/ac	256.8 a	0.1 a	12.3 a	2.9a	0.0a	0.0a
Clinch Broadcast	1 lb/ ac	221.2 a	219.4 b	245.8 b	56.2a	20.4a	2.0ab

		Oct 24 % Nuts Consumed	Oct 24 % Nuts Rejected	Oct 22 % of Berms With Ant Activity After Hammer Impacts
1. Untreated	-----	31.1b	49.0b	65b
2. Indoxacarb Broadcast	1.5 lb/ac	0.6a	10.5b	10a
3. Indoxacarb Mound	1.5 lb/ac	0.01a	1.3b	0a
4. Clinch Broadcast	1 lb/ ac	0.2a	9.0b	50b

Means followed by the same letter are not significantly different (P=0.05DMRT)

A reject was any nut that showed signs of insect damage. This is a lower price category for the grower.

The indoxacarb ant bait appears to be a very effective. It reduced ant numbers within 10 days after the application and lasted for at least 6 weeks. It is not understood why the ants are still active in the Clinch treatments as indicated by the hammer impact sample, but apparently not at a level where they are able to do much damage to the nuts placed on the ground.