Evaluation of Fire Ant Insecticide Bait Products as Single Mound Treatments

Paul R. Nester, Ph.D.
Extension Agent- IPM - Fire Ant Project
Texas Agricultural Extension Service
Harris County

Summary: The red imported fire ant, *Solenopsis invicta* Buren, (herein referred to as the fire ant) has become an important economic threat in urban Texas. The fire ant affects recreational activities as well as agricultural operations. This trial evaluated two new fire ant bait products and one established fire ant bait product as single mound treatments on large fire ant mounds on newly cleared residential property. All products reduced fire ant activity after two weeks. The established bait product was slightly faster acting after one week. This trial was applied May 23, 2000 when temperatures were moderate, moisture was good and fire ant activity was good. This trial demonstrates that the newer baits can be used as single mound treatments.

Problem

The fire ant, *Solenopsis invicta* Buren, has become an important economic threat in urban Texas. According to a 1998 study conducted by the Department of Agricultural Economics, TX A&M University, of fire ant related costs in Dallas, Fort Worth, Austin, San Antonio, and Houston, fire ants have serious economic effects for these metro areas of Texas. Households experienced the largest costs among sectors examined with a average of $151 per households spent annually which included repairs to property and equipment, first-aid, pesticides, baits, and professional services. A full damage assessment for Texas must include additional sectors, and the estimated costs of $581 million per year for the selected sectors underscore the impact of this pest. Treatment costs accounted for over 50 percent of this total cost. In Houston the average medical treatment costs per household of $25.46. The duration of injury for children and adults was 6.6 days and 5.6 days, respectively. The fire ant limits outdoor activities and homeowners and producers incur added costs in managing the fire ant.

Objectives

This trial was established to evaluate two new fire ant bait products and one established fire ant bait product as single mound treatments on large fire ant mounds on newly cleared residential property. The trial was designed to observe the effectiveness of the materials in reducing fire ant activity over a four week period.

Materials and Methods

This trial was established on newly cleared residential property near The Woodlands, TX in south Montgomery County. The site was cleared in 1996 of all underbrush and small trees, leaving only trees 12 inches or greater in diameter. The plot area was lightly wooded and located 700 feet north of a creek bed. A preliminary count showed 75 fire ant mounds of 12 inches or greater per acre. Forty-eight mounds were identified as being 12 inches or greater in diameter. The mounds were grouped into 4 equal groups of 12 mounds with similar diameters.

Fire ant bait materials evaluated were: Amdro® , Clinch® and, Eliminator®. Amdro® contains 0.73% by weight hydramethylnon; Clinch® contains 0.011% by weight abamectin; and, Eliminator® contains 0.015% by weight spinosad. Amdro® usually provides control within 2 to 7 days of application when used as a single mound treatment. The trial was set to run 4 weeks and Amdro®, Clinch® and, Eliminator® were applied at the rate of 2.5 oz of product per mound area (includes mound and 3 foot radius around the mound) as directed by label.

At 7 and 15 days after treatment (DAT), 6 mounds were disturbed and evaluated for fire ant presence and activity. Each mound was checked for presence or absence of fire ant activity and level of fire ant activity (1 = < 10 fire ants or freshly worked soil; 2 = some fire ants, not aggressive; and, 3 = many aggressive fire ants). At 30 DAT all treated mounds were observed for return of activity.

Results

The results (Tables 1 and 2) show the effectiveness of the materials during the evaluation period. All products appeared to control the fire ant 15 DAT (Table 1) but only Amdro® treated mounds showed no fire ant activity 7 DAT. Eliminator® greatly reduce fire ant activity after 7 days while some Clinch® treated mounds still had active brood after the 7 DAT evaluation period. No activity was observed in any of the treated mounds 30 DAT (Table 2).

Conclusion

The results from this limited study indicate that the baits tested can provide relatively fast colony elimination when applied as individual mound treatments, giving an acceptable reduction in fire ant mound activity within 2 weeks after application. Previous studies (Barr et. al.) have shown slower suppression occurs after these products are broadcast-applied. A larger, replicated study is necessary to confirm the results of this demonstration trial.

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Table 1. Results of reduction in mound activity of fire ants after treatment of different fire ant bait products. Montgomery Co., TX, 2000.

Treatment/ ingredient	Rate (oz product per mound)	Number Active Mounds in 6 Mound sample			
		Pretreatment[1]	7 DAT	15 DAT	30 DAT
Amdro® (hydramethylnon)	2.5	6	0	0	0
Clinch® (abamectin)	2.5	6	3 [2]	0	0
Eliminator® (spinosad)	2.5	6	2	0	0
Untreated	NA	6	6	6	6

1. Plots treated on May 23, 2000.
2. Reproductive brood found in 2 of 3 active mounds.

Table 2. Results of reduction in mound activity of fire ants after treatment of different fire ant bait products. Montgomery Co., TX, 2000.

Treatment/ ingredient	Rate (oz product per mound)	Activity Index in 6 Mound sample			
		Pretreatment[1]	7 DAT	15 DAT	30 DAT
Amdro® (hydramethylnon)	2.5	3	0	0	0
Clinch® (abamectin)	2.5	3	0.5	0	0
Eliminator® (spinosad)	2.5	3	0.2	0	0
Untreated	NA	3	3	3	3

1. Plots treated on May 23, 2000.