

Comparison of broadcast treatment vs. spot treatment of Amdro® FireStrike™ for the control of red imported fire ants, *Solenopsis invicta* Buren

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Red imported fire ants, *Solenopsis invicta* Buren, have a major economic impact since they prey on other insects and animals, sting humans and farm animals, and form large mounds of soil that can damage farm machinery. Since fire ant stings are sometimes fatal, people who live in areas where fire ants are common should know how to effectively control fire ant populations. When treating for red imported fire ants, baits are often used as an effective method to control fire ant colonies. Fire ant baits consist of corn grit covered with soybean oil and insecticide. The fire ant worker picks up the bait particle, extracts the toxic oil, and feeds it to the queen and other ants before dying. There are several fire ant baits on the market that range from fast acting baits, such as those containing indoxacarb to slower acting baits, such as those containing insect growth regulators (IGRs). There are also baits with combinations of active ingredients, such as hydramethylnon and an IGR, s-methoprene. The hydramethylnon produces a fairly quick reduction of fire ants within 2 to 4 weeks, while the s-methoprene produces a slow reduction of fire ants that requires 2 to 6 month for control (Merchant and Drees 2006).

Broadcasting fire ant bait or treating individual mounds (spot treatment) are treatment methods often used to treat for fire ants. Broadcasting fire ant bait is the preferred method when treating large areas. Overall there is a slower re-infestation rate by colonies migrating from other, untreated areas when broadcasting fire ant bait (Drees et al. 2002). In this trial, we wanted to evaluate if spot treatment is as effective as broadcast treatment of Amdro® Fire Strike™ (0.250% methoprene and 0.365% hydramethylnon) at controlling red imported fire ants within ¼ acre plots.

Materials and Methods

On June 4, 2008, twelve ¼ acre plots, each measuring 100 X 100 feet were established at the Texas AgriLife Research and Extension Center in Dallas, TX. Twenty foot buffers were established on all sides of the plots. The treatments evaluated in this trial were: 1) spot treatments every 20 feet in a grid pattern with 2 tablespoons (treated 25 spots within each plot) of Amdro® Fire Strike™ for a total of 0.5lbs per plot, 2) broadcast treatment of 0.5 lbs per plot of Amdro® Fire Strike™ over the ¼ acre plot and 3) untreated control plots. Four replicates of each treatment were evaluated. The center of each plot was marked with a piece of rebar around which a 40 foot radius circular subplot was circumscribed for sampling mounds within the 100 by 100 foot square treatment plot. Pre-treatment counts of active fire ant mounds were taken within each plot beginning at 10 am with temperatures at 75° F and winds 5-10 mph. Active mounds were counted within each plot by disturbing suspected mound sites with a stick to determine activity. Mounds were considered active if many (dozens of) worker ants were

observed within 15 seconds. All active fire ant mounds within the plot were counted and recorded. The mound counts were blocked and arrayed from the highest to lowest mean number of mounds. Then treatments were randomly assigned within each replication. The treatments were applied on June 4, 2008 from 12:00-2:00pm with temperatures at 86°F. Broadcast treatments of 0.5 lbs of Amdro® Fire Strike™ fire ant bait were applied using a Scott's® Handy Green II hand-held spreader (US Patent No. 5, 285, 971). The plots were also evaluated at 3, 6, 12 and 24 weeks post treatment. For the evaluation process, the minimal disturbance method was used, where the mounds were disturbed using a stick to determine activity. Mounds were considered active if many (dozens of) worker ants were observed within 15 seconds.

Data were analyzed using SPSS Analysis of Variance (ANOVA) test with means separated using Duncan's Multiple Range Test at $P \leq 0.05$ (SPSS for Windows, Lead Technologies, Version 13.0).

Results and Discussion

After 3, 6, 12 and 24 weeks of treatment, the spot and broadcast treatment of Amdro® Fire Strike™ plots had significantly less active fire ant mounds compared to the untreated control plots (**Table 1**). At 3 and 6 weeks, although not significantly different, there were less active mounds in spot treatment of Amdro® Fire Strike™ plots. However at the 24 week evaluation, the number of active mounds increased numerically within the spot treated plots. This may have been due to re-infestation from neighboring areas.

Spot and broadcast applications of Amdro® Fire Strike™ are not currently recommended on product's label, with only the individual mound treatment directions included. It took more time to apply the grid pattern treatment and it was easier and faster to broadcast Amdro® Fire Strike™ bait.

Table 1. Number of active red imported fire ant mounds found after treating with Amdro® Fire Strike™ at the Texas AgriLife Research and Extension Center, Dallas, TX.

Treatment	Precounts	3 Weeks	6 Weeks	12 Weeks	24 Weeks
Broadcast Amdro® Fire Strike™	12.25a	8.50a	4.00a	2.25a	2.25a
Spot Treatment Amdro® Fire Strike™	12.00a	8.25a	2.75a	2.25a	3.00a
Untreated Control	14.00a	13.25b	12.75b	11.75b	10.25b

^aMeans followed by the same letter within the same column were not significantly different using Analysis of Variance (ANOVA) and means separated using Duncan's Multiple Range Test at $p \leq 0.05$ (SPSS, Windows 11.5).

Literature Cited

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Merchant, Michael and Bart Drees. 2006. The Texas Two-Step Method: Do-it-yourself Fire Ant Control for Homes and Neighborhoods. Tx. Coop. Extension, L-5070.