Efficacy of the red imported fire ant, *Solenopsis invicta* Buren (Hymenoperta: Formicidae), using fire ant baits and contact insecticides

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The red imported fire ant, *Solenopsis invicta* Buren, is one the most irritating landscape pests in Texas. Since their sting can cause serious medical problems, controlling fire ants is a high priority. Broadcasting fire ant baits and contact insecticides have been proven to be effective against fire ants (Drees et al. 2002). There are several fire ant baits on the market that range from fast acting baits, such as those containing indoxacarb or metaflumizone, to slower acting baits, such as those containing insect growth regulators (IGRs). One of the faster acting baits on the market contains indoxacarb. Once ingested, indoxacarb acts as a sodium channel blocker that causes rapid cessation of feeding and death within 24-72 hours (Barr 2002). Another fast acting bait containing metaflumizone, targets the insect's sodium channel to cause paralysis. In contrast, contact insecticides, such as those containing fipronil, are non-repellant insecticides that provide season long control. Contact insecticides provide a nice alternative to traditional fire ant baits that must be applied at least two times a year in order to prevent reinvasion.

This trial was conducted to evaluate the efficacy and residual control of fire ant populations with broadcast applications of Spectricide Once N Done!™ Fire Ant Killer (0.016% indoxacarb), Siesta (0.063% metaflumizone) fire ant bait, and TopChoice (0.0143% fipronil) contact insecticide.

Methods and Materials

This demonstration was conducted within a 3 acre sports field at T Bar M Tennis Ranch in New Braunfels, TX (Figure 1). Four plots each measuring 97 feet by 210 feet were established on March 20, 2008. The total area of each plot was 20,370 square feet or 0.47 acres. Pre-counts of active fire ant mounds were taken within each plot beginning at 8:30am with temperatures at 75° and winds 5-10mph (Figure 2). Red imported fire ant 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 plots were counted and recorded. Treatments were randomly assigned to each plot. The treatments included:

1. Untreated control (CK) received no treatment
2. Spectricide Once N Done!™ Fire Ant Killer (0.016% indoxacarb)
3. Siesta™ (0.063% metaflumizone)
4. TopChoice (0.0143% fipronil)

Broadcast treatments were applied beginning at 10:00 am using a Spyker Model 88-221 push spreader. Ten pounds of Spectricide Once N Done!™ Fire Ant Killer, one pound of Siesta™ and forty pounds of TopChoice was applied within the respective plots. The first rain occurred on March 23, 2008.

Evaluation of mound activity was conducted prior to application and at 1 week, 2 weeks, 4 weeks, 6 weeks, 8 weeks and 24 weeks post treatment. For the evaluation process, red imported fire ant mounds were counted within each plot by disturbing suspected mound sites with a stick to determine activity, as described above.

Results and Conclusions

Data obtained from this demonstration are presented in Table 1. At 1, 2 and 4 week evaluations, the Siesta™, Once N Done!™ and TopChoice™ treated plots decreased in the number of active mounds. At the 6 week evaluation, the Siesta™, Once N Done!™ and TopChoice™ treated plots increased in the number of active mounds. Then at 8 weeks, the Siesta™, Once N Done!™ and TopChoice™ treated plots decreased in the number of active mounds. At the 24 week evaluation, all of the plots showed an increase in the number of active fire ant mounds possibly due to rains in August and September.

Although a rain occurred three days after treatment, the spring and summer of 2008 in Comal County area were very dry. There was less than 10.97 inches of rain from March to the middle of September (http://www.weather.gov). The lack of rain caused the ant colonies to nest deeper in the soil, making finding active mounds difficult throughout the study.

This study showed that the treatments, Siesta™, Once N Done!™ and TopChoice™ began to reduce the number of active fire ant mounds within one week with a single broadcast application. However between 8 and 24 weeks, activity began to increase in all the treated plots. One possibility may be the Siesta™ and Once N Done!™ fire ant baits caused the fire ant workers to be killed very quickly as to prevent the workers from sharing the chemical to the queen and rest of the colony. In addition, since fipronil must have contact with the insect in order to kill it, colonies from untreated adjacent areas could have entered the treated areas and remained active. Future studies need to be conducted.

Figure 1. Infested 3 acre sports field with red imported fire ant mounds found at T Bar M Tennis Ranch, Comal Co., TX prior to initiation of treatment.

Figure 2. Active mound within the 3 acre sports field at T Bar M Tennis Ranch, New Braunfels, Comal Co, TX.

Table 1. Number of red imported fire ant mounds before and following treatment at T Bar M Tennis Ranch in New Braunfels, Comal Co., TX, initiated on March 20, 2008 and concluded on September 12, 2008.

Treatment	Pre-treatment	1 Week	2 Weeks	4 Weeks	6 Weeks	8 Weeks	24 Weeks
Once N Done!™	25	7	0	1	3	0	9
Siesta™	16	1	0	1	2	2	26
TopChoice™	18	8	1	2	5	0	9
Untreated Control	27	14	5	9	8	4	19

Literature Cited

Barr, CL. 2002.Indoxacarb Bait Effect on Mound Activity and Foraging of Red Imported Fire Ants, Yoakum Airport, Fall 2002. Result Demonstration Handbook. Tx. Ag. Ext. Serv. Bryan, TX. http://fireant.tamu.edu

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