

Evaluation of Garden-Ville Soil Conditioner as a Potential Mound Drench Treatment for Red Imported Fire Ants

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Garden-Ville Soil Conditioner (Garden-Ville Fertilizer Company, 7561 E. Evans Rd., San Antonio, TX 78266; 210/651-6115) contains compost tea, black strap molasses and humic acid fermented together to create a liquid compost. Then, cold pressed orange oil is added to enhance the soil conditioning effects. This formulation is considered to be an “organic” product containing naturally occurring ingredients. In sandy soils, the product is applied at a rate of 4 oz. per gallon of water. In heavy dark soils, 6 oz per gallon of water are used. This formulation has been observed to kill red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae) colonies. In 1997, a similar formulation was marketed in some parts of Texas as the product, Fire Ant Control. The product’s label is transcribed below:

Garden-Ville Fertilizer Company
Organic Specialists Since 1957
Liquid Compost
Fire Ant Control
All Natural, Earth Friendly

DIRECTIONS FOR USE:

Keep out of reach of children. Store at room temperature.

SHAKE WELL before using. Mix 4 to 6 oz. per gallon of water. Break a small hole through the crust in the center of the ant mound and pour mix in until the whole underground ant cavity is flooded, then quickly drench the ants on top and the surrounding area. Because of the numerous queens in mounds and large numbers of worker ants out foraging, large mounds may need the second treatment. The killing process is a slow but sure, smothering, dissolving, biological action.

Garden-Ville FIRE ANT CONTROL will control most all chewing and sucking insects. Use lower rates for soft bodied insects and the higher rate for hard skinned insects. Works best when insect is totally covered with the mix. This product is also a good soil conditioner. Note; 2 tablespoons = 1 oz. liquid.

INGREDIENTS: Liquid compost 70 percent, Orange oil 30 percent.

32 fl. oz. or 1 US quart

DISTRIBUTED BY GARDEN-VILLE FERTILIZER CO.

7561 E. EVANS RD. SAN ANTONIO, TX. 78266 (210) 651-6115

These products are not currently registered as insecticides by the Environmental Protection Agency. This trial was conducted to develop efficacy (effectiveness) data documenting the product's performance when as applied as directed. It was evaluated against sets of red imported fire ant mounds that received either one gallon of water, only (untreated control), or Organic Plus® Pyrethrins/Diatomaceous Earth Insecticide (CAUTION) containing pyrethrins (0.2%), diatomaceous earth (90%) and piperonyl butoxide (1.1%) produced by Organic Resources, Inc. at a rate of 4 Tbsp./gal./mound. The trial was monitored for 27 days.

Materials and Methods

This trial was conducted on the campus of Texas A&M University Campus (between Buildings 107 and 108; Research Park Freeway and Discovery Rd.). Twelve plots, variable in size but each containing 10 marked imported fire ant mounds, were established, Nov. 12, 1999. Plots were arrayed by area, blocked by size category (large plots block, two medium sized plots blocks and small plots block) into four replicates and individual ant mound treatments were assigned randomly within each block:

<u>Plot</u>	<u>Dimensions</u>	<u>Area (square yards = paces)</u>	<u>Assigned treatment</u>
Rep1 7	60.5x16.5	998.3	check
11	13x67	871	Garden-Ville
8	51.5x14.5	746.8	Organic Plus
Rep2 3	17.5x38	665	Organic Plus
4	44x15	660	Garden-Ville
1	27x23	621	check
Rep3 10	36x15.5	558	Organic Plus
9	13.5x41	553.5	Garden-Ville
12	17.5x29	507.5	check
Rep4 2	20.5x20	410	Garden-Ville
6	14.5x28	406	Organic Plus
5	16.5x17.5	288.8	check

Total area: check - 2,416.15 sq. yds.; Garden-Ville - 2,494.5; Organic Plus - 2,375.8

Red imported fire ant mounds were marked with field flags to establish and treat plots, and were marked with paint so that flags could be removed after treatment to allow for mowing operations to continue. This is a sprinkler-irrigated turfgrass area, allowing ant mounds to form despite dry summer and fall weather conditions. Although much of campus is treated with fenoxycarb bait (Award®) in the spring and late summer, this area was evidently not treated as was evident by imported fire ant mounds being numerous in this localized area and colonies were found to contain worker larvae (brood).

Treatments included: 1) Garden-Ville Soil Conditioner - 1 gal diluted product per mounds; 2) Organic Plus Pyrethrins/Diatomaceous Earth Insecticide - 4 Tbsp./ gal water/mound; and 3) untreated check - 1 gal water/mound.

Plots were be monitored 1, 2, 8, 16 and 27 days (Nov. 14, 15, 21, 29, Dec. 30, 1999) following treatment for activity in marked mounds, and ant mounds were counted in entire plot

areas 16 and 27 days following treatment. Results were analyzed using Analysis of Variance (ANOVA) at $P \leq 0.05$ for both active ant mound assessment data, with means separated using Tukey's Studentized Range test by Dr. Charles L. Barr, Extension Program Specialist, Fire Ant Project.

Results and Discussion

This trial was conducted rather late in the year since extreme hot, dry conditions during the summer months prevented red imported fire ant mounds from being plentiful near the surface. In this trial, most of the plots were located in an area receiving sprinkler irrigation. However, in some of these irrigated plots, possibly because of the watering regime, thick turfgrass in these sites or merely because of the time of year, the fire ant colonies were easily disturbed and moved to new locations. In some plots receiving the water drench, only, treatments, many of the drenched mounds became inactive (Table 1). In those plots receiving less water, fewer colonies moved from originally treated locations. Before the Nov. 29 (16 day) post-treatment evaluation, the site received heavy rains resulting in mounds being freshly built up and readily visible by the next evaluation date. Consequently, the untreated check (water drench only) plots were found to contain many "new" ant mounds; significantly more so than did plots receiving chemical treatments. These were, presumably, many of the same colonies originally drenched with water which had moved to new locations to construct mounds. The total number of mounds in these plots actually increased to an average of 13.1. Regardless, in this trial percent control values for chemically treated plots were calculated relative to the number of active mounds in the water-drench only plots for each post-evaluation date (within the columns in Table 1).

Both chemical ant mound drench treatments performed similarly in this trial, significantly reducing the number of red imported fire ants in treated plots for the duration of the 27 day monitoring period. The maximum level of control achieved by the Garden-Ville Soil Conditioner drench was 92.3 percent, two days after application. Thereafter, the number of active treated ant mounds per plot gradually increased, but 76.4 percent were still inactive after 27 days of treatment. The Organic Plus ant mound drench eliminated ant activity in treated mounds more slowly, reaching maximum suppression of ant activity in treated mounds (90.9 percent control) by the end of the trial. Neither treatment caused more colonies to occur in treated plots than were found in the water only (untreated control) treated plots.

In conclusion, Garden-Ville Soil Conditioner, applied as an individual red imported fire ant drench significantly reduced ant activity in treated mounds relative to a water drenched only treatment (untreated check), and performed the statistically same as a "standard" insecticide product currently registered by the Environmental Protection Agency.

Acknowledgment

The author is grateful for permission to conduct this trial on the Texas A&M University Campus with approval from the Landscape Maintenance Department, Tom Drew, Superintendent. This trial was conducted with funding support provided by Malcolm Beck for Garden-Ville.

Table 1. Number of active red imported fire ant mounds of ten (four replications) prior to and periodically following treatment, Nov. 13, 1999, using selected insecticidal products, Brazos Co., Texas.

Average no. active fire ant mounds/10 treated mounds
(Percent control relative to check plots in parentheses)

Treatment	1 day	2 day	8 day	16 day	16 day sats.*	16 day total*	27 day	27 day sats.*	27 day total*
Untreated	7.3 a	6.5 a	5.0 a	6.3 a	6.8 a	13.1 a	5.5 a	2.3 a	7.8 a
Garden-Ville	1.0 b (86.3%)	0.5 b (92.3%)	0.5 b (90.0%)	1.0 a (84.1%)	4.5 b	5.5 b (58.0%)	1.3 b (76.4%)	2.3 a	3.6 b (53.8%)
Organic Plus	2.3 b (68.5%)	1.8 b (72.3%)	0.5 b (90.0%)	0.8 a (87.3%)	3.8 b	4.6 b (64.9%)	0.5 b (90.9%)	0.8 a	1.3 b (83.3%)
<i>F</i>	28.4	24.46	13.50	11.87	6.88	16.19	9.79	3.37	7.37
<i>P</i>	0.0009	0.0013	0.0066	0.0087	0.0280	0.0038	0.0129	0.1042	0.0242
Mean sig. diff.	2.6816	2.7774	3.0682	3.911	0.5822	5.0103	3.4703	2.0454	5.2772

Means in columns followed by the same letter are not significantly different using Analysis of Variance (ANOVA) and Tukey's Studentized Range test at $P \leq 0.05$ (SAS).

* sats = satellite or unmarked mounds found within plot; tot = active marked + sat mounds