

**Comparison of Two Commercial Bait Formulations of the Active Ingredient
Pyriproxyfen for Red Imported Fire Ant Control
Coulter Field, Brazos Co., Texas - 1999-2000**

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In 1999, two formulations of the active ingredient pyriproxyfen, an insect growth regulator (IGR), became widely available as red imported fire ant (*Solenopsis invicta* Buren) bait. Both are conventionally-formulated baits (soybean oil carrier/attractant on defatted corn cob grit) that differ only in their content of active ingredient, label application rate and oil percentage. The Valent Corporation introduced the product Distance[®], which contains **0.5%** pyriproxyfen and is applied at a rate of 1 - 1 ½ lbs. per acre (43,560 ft²) when broadcast, as are most other fire ant bait products. Distance is marketed primarily to the pest control industry, but there are no label restrictions on use by the general public. The second product is Spectracide[®] Fire Ant Bait (referred to here as “Spectracide”, for brevity) manufactured by the Spectrum Group, Division of United Industries Corporation. It is part of the popular Spectracide line of pesticides marketed through many retail outlets to the general public. This product contains only **0.05%** pyriproxyfen (listed as “pyridine” on the label) and is applied at one pound per 4,400 ft², or about 10 times as much per acre as Distance.

Though 0.5% pyriproxyfen has been tested for a number of years as a broadcast fire ant bait with good results, no field efficacy data from Texas trials could be found for the reduced percentage contained in Spectracide. Given that the product rapidly attained a prominent place on many retail store shelves, there was considerable concern over two factors regarding its use. The first is that the reduced rate had not been tested, to our knowledge, so the question of “does it work” could not be answered. The second is that the one pound per 4,400 square foot rate is inconsistent with all the other conventionally-formulated bait products on the market which could easily result in under-application by consumers.

Therefore, this test was undertaken to compare the efficacy of Spectracide to that of Distance at full label rate for both products. Additionally, a reduced rate of 3 lbs Spectracide/acre was tested. This rate was chosen using the reasoning that most baits, even though labeled at 1 - 1 ½ lbs/acre, are over-applied by homeowners because of failure to calibrate and/or equipment limitations.

Materials and Methods

The test site was located at Coulter Field, Brazos Co., Texas. Soil at the site was a sandy loam with moderately dense native grass vegetation. The plots were mowed using a Toro 72" commercial mower immediately before test initiation and prior to each evaluation, if necessary. Plots consisted of 75' x 75' squares (1/8 acre) with 15 foot untreated buffers. Plot size was designed to replicate a typical urban/suburban yard. Entire plots were both treated and evaluated. All evaluations were conducted using the minimal disturbance technique to assess fire ant mound activity. Pre-counts were conducted 13 May 1999. Mound numbers were arrayed from highest to lowest, divided into three equal groups (replications) and treatments assigned so that the total

number of mounds for each treatment was as equal as possible. Baits were applied the morning of 14 May 1999 using a Cyclone Model 1C1 hand-held seeder. Weather was 80-85EF, partly cloudy with a moderate breeze. The soil was moist with easily visible mounds and actively foraging ants. Treatments included: Spectracide fire ant Bait at 10 lbs/acre and 3 lbs/acre, Distance at 1.5 lbs/acre and an untreated control. All treatments were replicated three times. Post-treatment evaluations were conducted on 21 May, 7 June, and 13 July 1999 and 11 January 2000.

Results

Mean number of active mounds per 1/8 acre plot (3 replications)

Treatment	pre-count	1 week	3 weeks	8 weeks	35 weeks
Untreated	32.7 a	21.3 ab	15.3 a	12.0 a	8.3 a
Distance	30.7 a	23.3 a	10.0 ab	2.7 b	1.3 b
Spect, high	30.7 a	15.7 ab	3.0 bc	0.3 b	1.0 b
Spect, low	30.7 a	12.7 b	2.3 c	1.0 b	1.3 b
F	9.92	9.72	11.44	9.58	9.64
P	0.0073	0.0077	0.0050	0.0079	0.0078
R ²	0.8921	0.8901	0.9051	0.8887	0.8893

Data analyzed using SAS analysis of variance procedure with means separated using Tukey's studentized range test. Means in the same column followed by different letters are significantly different ($P < 0.05$)

Discussion

Results of this trial indicate that Spectracide Fire Ant Bait significantly ($P < 0.05$) reduced active fire ant mound numbers, compared to untreated plots, within eight weeks at both rates. All the baits had statistically similar performance at and after eight weeks. Both Spectracide rates performed similarly and substantially faster than Distance at one and three weeks post-treatment. Pyriproxyfen-based baits have eliminated mounds faster than other IGR-based baits (such as fenoxycarb and s-methoprene) in other tests we and others have conducted over the years. Pyriproxyfen is an insect growth regulator (IGR) with no known adult ant toxicity, therefore, there is no apparent reason for the faster mound elimination seen with Spectracide compared to Distance or with Distance compared to other IGR's.

The Spectracide product was extremely oily which made it somewhat difficult to apply. The bait tended to cake and not flow smoothly in the spreader. This could be a problem for homeowners since the typical homeowner-type spreader has very poor agitation and bait flow under even the best conditions. Other than this minor problem, Spectracide Fire Ant Bait was very effective even when applied at less than one-third the label rate.