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RED IMPORTED FIRE ANT CONTROL USING INDIVIDUAL MOUND TREATMENT PRODUCTS

Over 66 products are registered for the control of red imported fire ants. Although these products are all formulations of just over one dozen different active ingredients, there is a great deal of misunderstanding on the part of the general public as to what to expect in terms of product performance. In a continuing effort to document the efficacy of available products and obtain data needed to calculate the per-mound cost of control in terms of monetary input, required labor and time, result demonstrations were conducted in 1986 comparing "newer" products to more "standard" products used to control individual red imported fire ant mounds.

MATERIALS AND METHODS

One result demonstration was conducted on the Lagow Ranch in Chambers Co. using the following materials in accordance with instructions provided on the products' labels:

<u>Product- Common name of insecticide</u>	<u>Amount applied per mound</u>
Affirm ^R - abamectin or avermectin	5 tbsp
Amdro ^R - amidinohydrazone or hydramethylnon	5 tbsp
Cessco ^R Injectable - chlorpyrifos	see below*
Cotton's Fire and Insecticide - petroleum distillates	90 ml 12 - 18 sec
Enforcer - tetramethrin	3 tbsp
Logic TM - fenoxycarb	2 tsp
Orthene ^R 75S - acephate	

All products were applied 17 April, 1986, to 30 large fire ant mounds except for Enforcer, which was only applied to 20 mounds. An additional untreated 30 mounds were monitored from which to compare treatments. All mounds were marked with colored flags during the treatment and monitoring period. Mounds treated with products expected to control ants more rapidly were monitored 1 hr, 5 and 15 days following treatment, while those treated with slow-acting bait-formulated products applied around mounds were monitored at 2 and 19 weeks after treatment. These two groups of products were analyzed separately.

A second result demonstration was conducted in a similar manner on the McInnis pasture in Port Arthur, Jefferson Co. Treatments applied in accordance to label instructions (except for Oftanol) are listed below:

<u>Product- Common name of insecticide</u>	<u>Amount applied per mound</u>
Amdro ^R - amidinohydrazone or hydramethylnon	5 tbsp
Knox Out ^R - diazinon (microencapsulated)	1 fl oz/ gal
Oftanol ^R - isofenphos	1 ml/ 3gal water/ 9 sq ft
Orthene ^R 75S - acephate	2 tsp
Orthene ^R 75S - acephate	1/5 oz/ 1 gal water
Turcam ^R - bendiocarb	see below**

In this result demonstration 20 large mounds were treated, 16 April, 1986, with each product and 20 mounds were treated with 1 gal of water only. Mounds were inspected 3, 7 and 14 days following treatment.

Mounds treated with each product, water or monitored as untreated controls were divided into subsets containing 5 mounds each. The percent active mounds from each of these groups (6 in Chambers Co., except for Enforcer, and 4 in Jefferson Co., considered as replications) were subjected to analysis of variance using the Least Significant Difference test at the 5 percent level of probability for each evaluation date.

RESULTS AND DISCUSSION

The following observations were made during these result demonstration efforts:

Orthene 75S has extremely offensive odor and is difficult to apply as a dust to mounds in windy conditions.

Cessco Injectable* containing chlorpyrifos in a 1 1/2 lb aerosol can treated 15 large mounds.

Cotton's Fire Ant Insecticide treated 17 large mounds per gallons using a 1 1/2 gal pressurized sprayer with special Cotton's Fire Ant Probe applicator. The probe easily bent and clogged with mud. Blue colored liquid had petroleum smell. Grass around treated mounds was not harmed.

Enforcer retails for \$7.99 per 1 lb can plus \$1.49 plastic applicator rod and treats 7 large mounds.

Turcam produces an extremely quick kill of worker ants within the first few minutes after application. However, the product foams during mixing.

Oftanol** was applied at much less (1/9th) than the label rate, being sprinkled on to a 9 by 9 ft area (81 sq ft or 9 ft square) rather than a 3 by 3 ft area as specified on the label (9 sq ft or 3 ft square). Thus, lack of control with this product was expected.

Results of the Chambers Co. result demonstration (Tables 1 and 2) indicate that

chlorpyrifos and acephate formulated insecticides were the most effective at the 5 and 15 day observation periods. Cotton's Fire Ant Insecticide began reducing fire ant mound immediately, as did chlorpyrifos aerosol, and later produced percent control statistically similar to the two numerically better products. Tetramethrin, although expected to produce an immediate initial reduction of mound activity, did not effect mounds until 5 and 15 day post treatment evaluation dates. Furthermore, percent control was only about half as high as that produced by better products. Amdro produced no effect, leading demonstrators to suspect that the product used was old, rancid and unattractive to the ants. However, activity from the other two bait-formulated products, the insect growth regulators Logic and Affirm, was not determined to be statistically different from that produced by Amdro treatment (Table 3). Untreated control mounds were not monitored during the 19 week post-treatment evaluation. Therefore, percent control could not be calculated.

In the Jefferson Co. result demonstration, Knox Out and Turcam produced 100 percent control within 3 days and maintained total control through the duration of the monitoring period (Table 3). Orthene produced better results when applied as an individual mound drench than as a dust treatment. In fact, although the dust treatment of large mounds produced great reductions in worker ant activity, workers could be found active around the edges of mounds for 14 days. The large mounds treated were difficult to cover entirely with 2 tsp of dust, the maximum labeled rate. Oftanol produced no control at 3 and 14 days post-treatment because it was not applied correctly. Amdro produced no control, perhaps because the material used was old (2 years) and spoiled. Of interest is that the 1 gal water poured on "untreated" control mounds resulted in a 36 percent reduction in active mounds.

Table 1. Efficacy of individual red imported fire ant mound control products applied April 17, 1986, Chambers Co., Tx.

	<u>Mean No. Live Mounds out of 5 (percent control in parentheses)^{1/}</u>		
	1 hr. post treatment	5 day post treatment	15 day post <u>treatment</u>
Untreated check	4.7abc	3.7a	3.2a
acephate (Orthene ^R 75S)	4.7abcd (0)	0.2c (95)	0.3bc (91)
amidinohydrazone (Amdro ^R)	4.8a (0)	4.5a (0)	4.0a (0)
chlorpyrifos (Cessco ^R Injectable)	4.0abcde (15)	0.3c (92)	0.2c (94)
petroleum distillates (Cotton's ^R Fire Ant Insecticide)	3.5e (26)	1.2bc (68)	0.5bc (84)
tetramethrin (The Enforcer ^R)	4.8ab (0)	2.0b (46)	1.5b (53)
LSD Value (5% level)	0.894	1.067	1.168

^{1/} Means in columns followed by different letters are statistically difference according to the Least Significant Difference Test at the 0.05 level of probability.

Table 2. Efficacy of selected individual red imported fire ant mound treatment products applied April 16, 1986 in Jefferson Co., Texas.

	<u>Mean No. Live Mounds out of 4¹ (percent control in parentheses)</u>		
	<u>3 day post treatment</u>	<u>7 day post treatment</u>	<u>14 days post treatment</u>
Untreated Checks	3.2ab	3.2a	2.8abc
acephate drench (Orthene ^R 75S)	0.8d (75)	0.8cd (75)	1.6d (43)
acephate dust (Orthene ^R 75S)	2.2c (31)	1.6bc (50)	2.8ab (0)
amidinohydrazone (Amdro ^R)	4.0a (0)	4.0 (0)	3.8a (0)
bendiocarb (Turcam ^R)	0.0d (100)	0.0d (100)	0.0e (100)
diazinon (Knox Out ^R)	0.0d (100)	0.0d (100)	0.0e (100)
isofenphos (Oftanol 2L)	3.6ab (0)	2.0b (29)	2.8abc (0)
LSD Value (5% level)	0.715	1.039	1.037

^{1/} Means followed by different letters are statistically difference according to the Least Significant Difference Test at the 0.05 level of probability.

Table 3. Efficacy of slow acting red imported fire ant insecticide bait-formulated products applied April 17, 1986, Chambers Co., Tx.

	<u>Mean. No. Live mounds of 5^{1/}</u>	
	<u>2 week post treatment</u>	<u>19 weeks post treatment</u>
amidinohydrazone (Amdro ^R)	4.2a	1.8a
avermectin (Affirm ^R)	4.4a	1.4a
fenoxy carb (Logic ^R)	3.8a	1.2a

LSD Value (5% level)	1.541	1.945
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^{1/} Means in columns followed by different letters are statistically difference according to the Least Significant Difference Test at the 0.05 level of probability.