

**RAPID LABORATORY EVALUATION OF
SELECTED "HOME REMEDIES"
FOR CONTROL OF THE RED IMPORTED FIRE ANT**

Dr. Bastiaan M. Drees, Extension Entomologist
Charles L. Barr, Research Assistant

A tremendous number of "home remedies" have been developed by people to control the red imported fire ant (RIFA), *Solenopsis invicta* Buren. Many of these methods have attained almost mythical properties as stories of their effectiveness have spread. Some of the "remedies" are based on sound biological principles, while others are based on some apparent logic without a sound biological basis. Still other "remedies" are based on apparent perceived "control" where in actuality displacement (colony movement) has occurred. This demonstration was conducted to quickly screen a number of reported home remedies using laboratory colonies.

Materials and Methods

RIFA colonies were collected in soil from the field in 5 gallon buckets which had inner surfaces liberally dusted with talcum powder (the ants are unable to climb up talcum powder-dusted vertical surfaces). In the laboratory, ants were extracted by dripping water into the buckets very slowly, allowing the ants and brood (larval and pupal stages of ant development) to move up and finally float. They were moved into plastic sweater boxes which were coated on the inner surfaces with Floun® which acts in a similar manner as talcum powder. Large petri dishes were prepared with a Castone® (plaster-like) bottom and 4 holes (5mm diameter) melted into the tops and covered with a paper towel. These dishes were placed in the sweater boxes to serve as brood chambers and the queens, brood and nurse ants readily moved into these structures. Colonies were maintained on a standardized laboratory diet (daily meals of 2 mealworms, honey-water, distilled water and artificial diet made of hamburger meat and other substances).

The following is a list of compounds and their supposed, or in some cases, documented, method of action that were tested in this screening experiment:

<u>Method</u>	<u>Mode of Action</u>
Chalk	Apparently abrades and dehydrates
Diatomaceous earth	Abrades and dehydrates
Gypsum	Apparently abrades or clogs
Plaster of paris	Apparently abrades and clogs
Tide® detergent	Unknown; perhaps removes wax layer of exoskeleton resulting in dehydration
Grits	Supposedly eaten by ants where it imbides and "explodes"
Flour	Possibly similar to grits
Orange peels	Insecticidal action of limonene in peels

Colonies were treated by adding a large quantity of the treatment material in individual colony boxes. There was enough material of each type to basically cover the bottom of the colony boxes. The ants had to pass through it at some point to get to water and food. These tests were intended only as a screening process. Because of space limitations, no replications of treatments were included. Treated colonies were maintained for 6 weeks. The estimated number of ants and the presence of brood was documented weekly.

Results and Discussion

Results of this screen are presented in **Table 1**. Few treatments provided reduction of worker numbers or brood. Numerous dead ants were observed in association with some treatments (diatomaceous earth, flour) with no apparent affect on the colony as a whole. The plaster of Paris treated colony declined by the fifth week both in worker numbers and brood. By week 6 the colony had expired. Similarly, Tide® detergent caused colony death by week 6.

This method of evaluation has the advantage of rapidly determining if a given method produces ant mortality. In the field, ants in a treated mound often disappear, but determination of whether the ant elimination resulted from direct mortality or colony emigration is more difficult. Conversely, this technique does not provide data on repellent or irritant properties of substances tested because of colony confinement. In addition, this method allows for the evaluation of materials in the laboratory which may not be desirable when applied to the environment. Many petroleum products, acids and strongly alkaline materials are considered potential pollutants of soil and groundwater. Results of this screen do not constitute a recommendation for their use by the Texas Agricultural Extension Service or the Texas Agricultural Experiment Station.

Table 1. Colony status (+ = presence of brood, ++ = relatively more brood number = approximate number of ants X 1000) following treatment with various "home remedies" for control of the red imported fire ant (6 September through 16 October, 1989).

Treatment	WEEK					
	1	2	3	4	5	6
Untreated	++,15+	++,15	++,15+	++,15+	++,15	++,15
Chalk	++,15+	++,15+	++,15	++,15+	++,15	++,<15
Diatomaceous earth	++,20	++,20	++,20	++,20	++,20	++,20
Gypsum	++,30	++,30	++,25	+,25	+,25+	+,25+
Plaster of Paris	++,15	++,15	++,15	++,10	-,<1	dead
Tide® detergent	++,30	++,30	++,25	+,20	Queen Death	
Grits	++,20	++,20	++,20	++,20	++,20	++,<20
Flour	+,20	+,20	+,15	++,20	++,20	++,20
Orange peel slices	++,20+	++,20+	++,20	++,20	++,20	++,20