# A SIMPLE, NON-TOXIC HOME REMEDY AGAINST FIRE ANTS[1]

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## ABSTRACT

Three gallons of hot water (about 90 C) poured slowly on each of 14 fire ant mounds produced excellent to complete kill in 8 of 14 cases, moderate kill in 3/14, poor kill in 2/14 and no kill in one. Colonies similarly treated with three gallons of cold water were normal. We therefore suggest the use of hot water as a simple, humble but effective treatment against fire ants around the home. Its advantages are instantaneous effect, ease of application and absence of residual toxicants.

Key Words: *Solenopsis*, hot water, ant control

## INTRODUCTION

Fire ants (*Solenopsis invicta* Buren) present a nuisance to many residents of the Southeast (Lofgren *et al.* 1975) and to those few who are hypersensitive to fire ant stings, they may even be a health hazard (Rhoades *et al.* 1975). The recent banning of the pesticides mirex and chlordane by the Environmental Protection Agency has removed from the market the two most commonly used insecticides against fire ants. A variant formulation of mirex, ferrimicide, has also been recently withdrawn. As a result, a common complaint has been that the homeowner, among others, is presently without any weapons in his arsenal against fire ants. In this report we wish to present a method of killing fire ants which is as humble as it is effective – hot water.

## MATERIALS AND METHODS

The study site was a large pasture on Southwood Farm, near Tallahassee, Florida. Fire ant mounds were numerous and mostly quite large, probably considerably larger than the average domestic colony. The experiment was carried out on April 12, 1979 under partly cloudy skies at about 23 C. Water was heated to a temperature of about 90 C (190 F) in a 30 gallon pot on a propane-fueled mullet-frier. The water was applied to 14 mounds by slowly pouring 3 gallons on each, taking care to collapse as much of the mound structure as possible. If the mound surface was hard and crusted, this was first broken. The water usually drained very rapidly into the deep tunnels. Spot

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checks of soil temperature in the nest were made by thrusting a thermometer into the wet soil.

Controls consisted of 14 mounds similarly treated with 3 gallons of cold water.

All mounds were checked two days later. Survival was estimated by noting the amount of mound rebuilding, the approximate number of live workers, the presence and amount of live brood and the presence and size of heaps of dead ants.

## RESULTS

From the data in Table 1, it is apparent that hot water is very effective in killing fire ant colonies. Eight of the 14 colonies treated with hot water showed good to complete kill (3-4), three showed moderate kill, two showed poor kill and one showed apparently no kill. Mean kill index was 2.5. By contrast, treatment with cold water resulted in undetectable kill and apparently normal colonies. Rather unexpectedly, there was no apparent relationship between kill and colony size. Perhaps the location of ants at the time of treatment contributed more to the variance in kill than did colony size. This may also apply to the apparent lack of relationship of kill to soil temperatures. These ranged from 30-45 C to 60-75 C, but were mostly between 40 and 60 C.

The presence of ant graveyards (dead piles created from corpses carried out by survivors) near the nest bore a complex relationship to kill. When kill was low, such dead piles were moderate. With substantial kills, but well short of most of the colony, dead piles became very large, but as kill included most of the workers, the dead piles once again became moderate, probably as a result of the dwindling worker-force to carry out the dead. When kill was complete, there were no dead piles and dead brood and workers could be seen in the same positions the water had washed them to upon treatment.

Our treatments were carried out on a moderate day when many of the ants were near the surface. Location of the ants within the mound almost certainly must affect the kill rate. Our reasoning is that treatment would be most effective when the ants are near the surface. This condition is most likely to be met on sunny cool (but not cold) days when the sun warms the mound surface. However, we have not specifically tested this factor.

## DISCUSSION

We offer this simple, cheap, low-technology remedy for the home-owner seeking relief from fire ants. All that is required is hot water out of a tap, a bucket and a modest ability to pour water. We do not pretend to present a novel idea – many people have used hot water to kill ants – but we have tested the method in a systematic way and shown its effectiveness. Among its advantages are the ready availability and cheapness of hot water in most households, the unlikelihood of its being banned, its instantaneous effectiveness and its lack of residual toxicant. Poisons such as mirex (Stringer *et al.* 1964) and chlordane are usually rather slow-acting, often cause survivors to

Table 1. – Mortality of fire ant colonies treated with 3 gallons of hot water (experimentals), or 3 gallons of cold water (controls). The kill estimates are as follows: 0 = no kill, colony normal; 1 = some kill, but considerably less than ½; 2 = substantial fraction (½ to ¾) of colony killed; 3 = most of colony killed, probably 80 to 95%; 4 = almost all to all killed, less than a hundred to zero survivors.

| Treatment group | Colony Number | Mound Diameter | Approx. No of fire ant workers | Amount of rebuilding | Brood Surviving | Dead Piles | Kill estimate |
|---|---|---|---|---|---|---|---|
| Hot water (experimental) | 1 | 63 cm | 100's | + | – | + | 3 |
| | 3 | 37 | 100's | + | + | + | 3 |
| | 5 | 28 | 100+ | + | – | + | 3 |
| | 7 | 71 | almost normal | +++ | +++ | ++ | 1 |
| | 9 | 43 | 100's | + | – | + | 3 |
| | 11 | 60 | approx. 1000 | ++ | – | ++++ | 2 |
| | 13 | 31 | 100's | + | + | + | 3 |
| | 15 | 37 | approx. 100 | – | – | + | 4 |
| | 17 | 52 | 0 | – | – | – | 4 |
| | 19 | 40 | approx. 1000 | + | + | + | 2 |
| | 21 | 34 | normal | ++++ | +++ | – | 0 |
| | 25 | 31 | approx. 1000 | + | + | + | 2 |
| | 27 | 38 | less than 100 | – | – | – | 4 |
| | 29 | 44 | more than 1000 | ++ | ++ | ++++ | 1 |
| | | | | | | | $\bar{x}$= 2.5 |
| Cold water (controls) | 14 colonies in all | similar to experimental group | normal | complete | normal | rare | 0 |

move and, of course, present a toxic hazard to the users and other animals in the environment. Ants treated with hot water seem seldom to move the colony, so any that survive can be retreated after several days to achieve complete kill.

Hot water is certainly not a practical treatment for large areas such as in agriculture, but for the average homeowner, it is a safer, more available and more effective remedy than pesticides. We hope that entomologists advising the public on domestic fire ant control will recommend this method for its obvious advantages.

## LITERATURE CITED

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