

Zone Treatments Using A Non-Repellent Insecticide for Control of Nuisance Ants

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EXECUTIVE SUMMARY

Nuisance ants are the number one pest resulting in calls to Professional Pest Management Firms requesting treatment of structures. Traditionally, control of ants has been achieved by full perimeter sprays around a structure. Use of Optigard ZT injected as a foam into voids has been demonstrated to achieve excellent control of ants while using significantly less insecticide than traditional treatment methods.

INTRODUCTION

Nuisance ants, such as Argentine ants are the number one pest resulting in calls to Professional Pest Management firms for treatment of structures. In infested areas, they are often the dominant ant species because of high reproductive capacity, aggressive foraging behavior, and lack of natural enemies in their expanded range. Although they usually nest outdoors, Argentine ants invade homes in search of food, moisture, or warmth. The most common practice for controlling these nuisance pests is to create a chemical barrier around the structure by applying an insecticide to the entire perimeter of the building including the areas around doors, windows, and eaves. This practice results in the application of more insecticide than is practically needed to keep ants out of the structure.

Perimeter Treatment for Control of Nuisance Ants

Traditional treatment for invasive ants is to create a barrier around the structure by spraying a liquid insecticide applying 1 gallon of solution per 1000 ft². For a single story home of 2400 ft², treating the perimeter and around windows and doors and the eaves it would require approximately 3.5 gallons of spray solution. With a product like Syngenta's Demand CS which is applied as a 0.03% solution, approximately 3.5 grams of active ingredient is applied per structure. This application may be applied monthly.

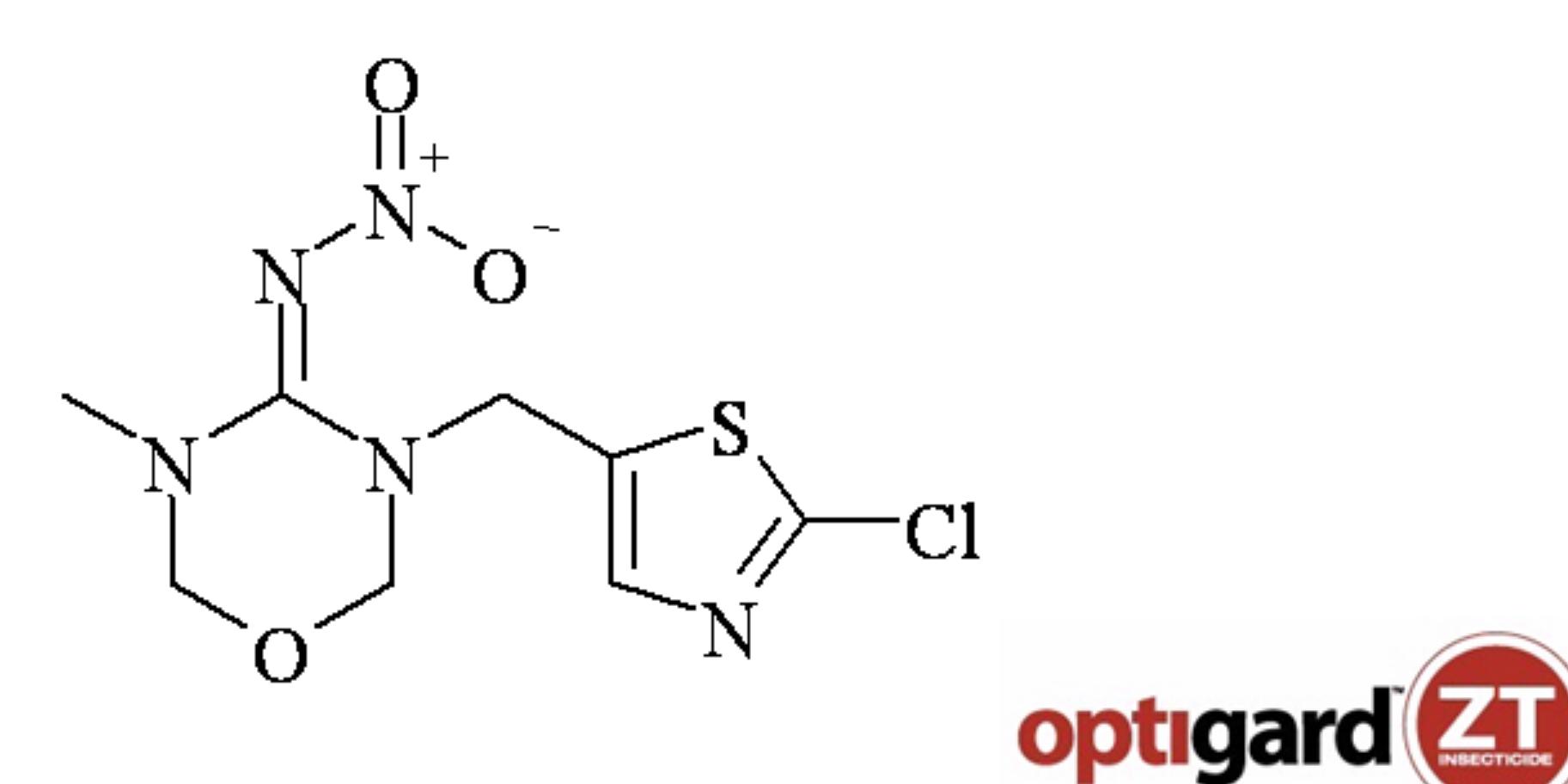


New Non-Repellent Insecticide for Ant Control

Thiamethoxam is a second-generation neonicotinoid insecticide which belongs to the thianicotinyl subclass. Thiamethoxam has been shown to be active against urban pests such as ants, as well as a wide variety of nuisance pests. Thiamethoxam is sold under the brand name OPTIGARD™ ZT which is being developed for control of many insects that occur in and around residential and commercial structures. The designation "ZT" in the OPTIGARD™ name refers to "zone treatment", and reflects the intended use of the product for limited areas or "zones" to control pests in structures. OPTIGARD ZT is formulated as suspension concentrate product and is sold as a pre-measured dose along with a foaming agent. The use of the two products together allows users to apply the product as a foam preparation to void areas of structures. Target application areas include wall voids, around utility penetrations entering structures, voids around doors and windows, and through weep holes in bricks.

CHEMICAL AND PHYSICAL PROPERTIES

Common Name: Thiamethoxam
Code Number: CGA-293343
Chemical Name: 4H-1,3,5-Oxadiazin-4-imine,3-[(2-chloro-5-thiazolyl)methyl]tetrahydro-5-methyl-N-nitro
CAS Registry No.: 153719-23-4
Chemical Structure:



Empirical Formula: C₈H₁₀CIN₅O₃ Molecular Weight: 291.72

Chemical Class: Neonicotinoid

Subclass: Thianicotinyl

Water Solubility (25°C): 4,100 mg/l

OPTIGARD™ ZT SIGNAL WORD: CAUTION

Hazard Indicator	Species	Technical	2SC
Oral LD ₅₀	Rat	1,563 mg/kg	>5,000 mg/kg
Dermal LD ₅₀	Rat	>2,000 mg/kg	>2,000 mg/kg
Inhalation LC ₅₀ (4h)	Rat	3,720 mg/m ³	2,670 mg/m ³
Eye Irritation	Rabbit	Minimally Irritating	Minimally Irritating
Skin Irritation	Rabbit	Non-irritant	Slightly Irritating
Skin Sensitization	Guinea pig	Non-sensitizing	Non-sensitizing

StepWise Program for Nuisance Ant Treatment

Thiamethoxam is an excellent candidate for ant control due to its high level of activity, non repellency, delayed toxicity, and transferability between treated and untreated ants. The LT₅₀ for Argentine ants treated topically with thiamethoxam at 0.06% is 55 minutes. When 60 ants treated topically with thiamethoxam at 0.06% were added to a container with 300 untreated ants mortality among the untreated ants after 7 days was 72% showing good horizontal transfer of the toxicant.

StepWise Method for Controlling Ants With OPTIGARD™ ZT

1) SURVEY THE PROBLEM:

- ✓ Inspect for trailing ants
- ✓ Interview owner about ant activity
- ✓ Follow ant trails into the structure



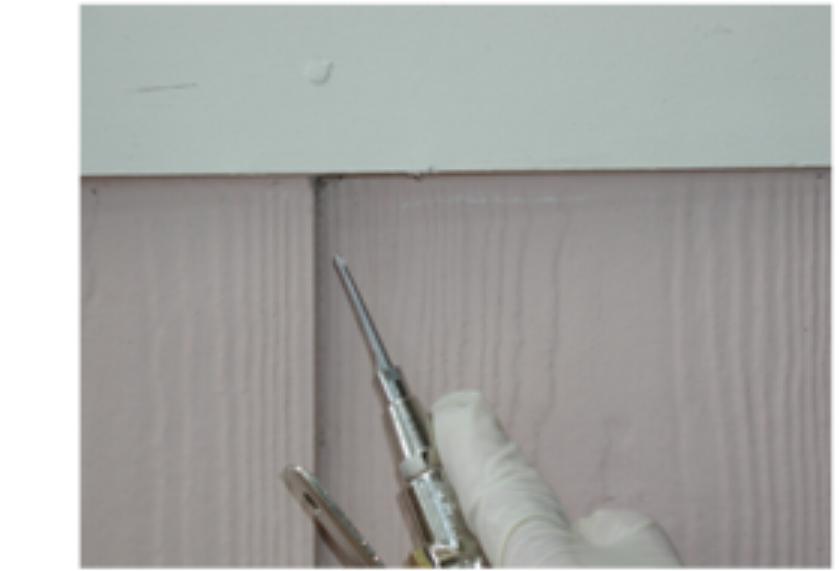
2) EXTERNAL TREATMENT:

- ✓ Apply Optigard ZT foam to entry points
i.e. weep holes, utility penetrations, window or door frames, etc.
- ✓ Treat all likely areas of ant penetration
- ✓ Apply 2 to 4 ounces of foam per area



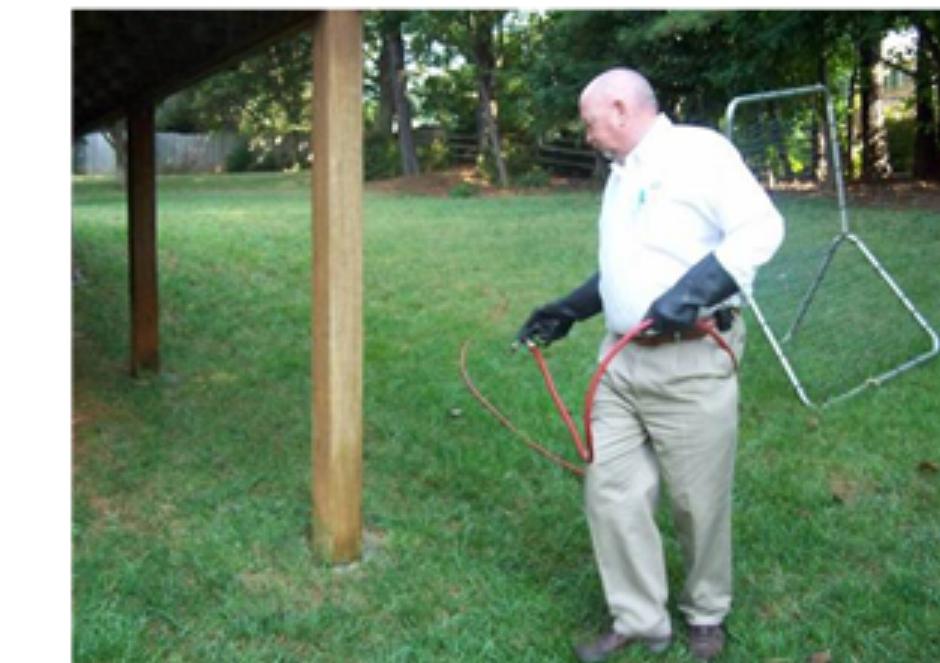
3) INTERNAL TREATMENT:

- ✓ Apply Optigard ZT to indoor access points
i.e. beneath sinks, around plumbing, areas where ants are trailing
- ✓ Apply to gaps beneath cabinets
- ✓ Repeat application on a 6 to 12 month schedule



4) FOCUSED PERIMETER APPLICATIONS:

- ✓ Apply liquid insecticide around windows, doors, other foraging pathways
- ✓ Trim vegetation away from the structure
- ✓ If perimeter application is not practical use an ant bait
apply bait to cracks, crevices, or in bait stations as directed



5) IMPLEMENT MAINTENANCE PROGRAM:

- ✓ Use focused perimeter application on a quarterly basis
- ✓ Apply Optigard ZT quarterly or semiannually
- ✓ No restrictions on the number of applications of Optigard ZT per year
- ✓ Use complimentary tactics
 - 1) Trim vegetation away from the structure
 - 2) Control aphids, scales or other honeydew producing insects in landscape
 - 3) Use baits on exterior to reduce ant populations
 - 4) Seal cracks or gaps in siding, around doors, windows to reduce access points

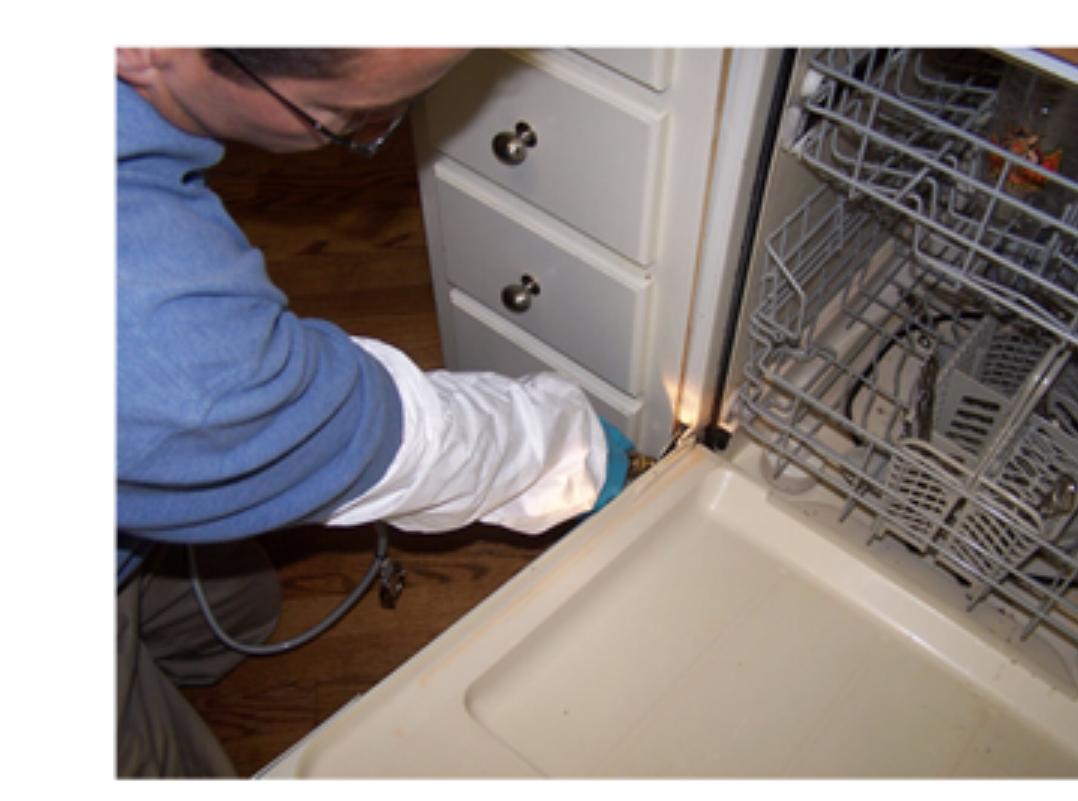
Duluth, GA

- Argentine ants foraging in kitchen and dining area
- Activity focused around dishwasher
- Optigard applied in kitchen and dining area and to exterior
- Perimeter treatment with Demand CS applied
- Homeowner told to expect dead ants in 3 days
- Significant numbers of dead ants 12 hours after treatment
- 3 days after treatment no trailing ants observable



Griffin GA

- Large home with faux stucco finish
- House surrounded with vegetation in contact with exterior
- Perimeter treatment with Termidor per label
- 7 calls in 2 months because of foraging Argentine ants in house
- Approximately 1 gallon of foam applied to exterior and interior
- 6 days after treatment no trailing ants visible on inspection



CONCLUSIONS:

A system for managing Argentine ants invading structures was conceived and tested with the purpose of improving pest control and reducing the quantities of insecticides used. A 5-step program comprised of using the non-repellent insecticide thiamethoxam (Optigard ZT) as a void treatment and the use of a microencapsulated formulation of lambda-cyhalothrin (Demand CS) was tested at two sites in Georgia and found to be effective in controlling ant problems. The quantities of insecticides used were reduced by more than 40% compared with conventional treatments. This program represents a successful application of IPM principles to management of a key urban pest.