

# Granovsky Associates, Inc.

IPM Training > 80 Videos Service G.A.I. LOGO R & D Consulting International



*Solving the Maze of Pest Problems*  
Since 1984

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*Knowing & Controlling  
Pest Ants*




**Board Certified Urban and Industrial Entomologist**



**www.granovsky.com**

## Chemical Available in Canada vs. U.S.A. vs. Mexico

- **NAFTA** should make things "more equal" .... but **Canada only seems to PULL chemicals which EPA finds offensive**. VERY FEW of the pesticides available in the **U.S.** and **Mexico** are available in Canada !

### TEN Ant Bait Active Ingredients in Commercial Baits, NAFTA Trade Zone

Product, a.i.	Canada	Mexico	U.S.
■ Abamectin	+	+	+
■ Boric Acid	+	+	+
■ Chlorpyrifos	-	+	+
■ Diazinon	-	+	+
■ Fipronil	-	+	+
■ Hydramethylnon	+	+	+
■ Indoxycarb	-	-	+
■ Methoprene	-	-	+
■ Sulfuramid	-	+	+
■ Thiamethoxam	-	-	+

### Common Ant a.i. Used in Texas

IN	OUT	B/S	Active	Company
■ +	■ +	■ +/+	<b>Fipronil</b>	Bayer
■ +	■ +	■ +/-	<b>Hydramethylnon</b>	Bayer
■ +	■ +	■ -/+	<b>Imidicloprid</b>	Bayer
■ +	■ +	■ +/+	Indoxycarb	DuPont
■ +	■ -	■ +/-	<b>Boric Acid</b>	Many firms
■ +	■ +	■ +/+	Averectin B1	Whitmire
■ -	■ +	■ +/-	<b>Pyriproxyfen</b>	Valent USA
■ +	■ +	■ +/-	S-Methoprene	Wellmark Inter.
■ -	■ +	■ +/-	<b>Spinosad</b>	Dow
■ +	■ -	■ +/-	Sulfuramid	FMC & Whitmire
■ +	■ +	■ +/+	<b>Thiamethoxam</b>	Syngenta

The **Ant Management** business is **larger than the termite** market in U.S.A.

Knowing your "stuff" takes **time and training**.

Over **760 species** of ants are found **in the U.S.A.**, but not even **20** of these are pests inside Texas structures

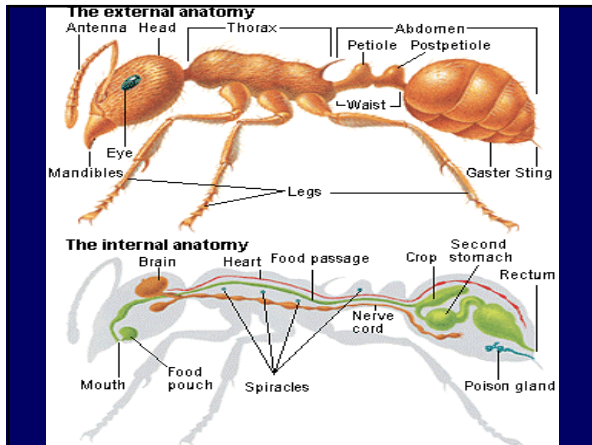
## Opportunities with ants . . .



Although indoor use of **BAITS** is a primary control method for many ant species, there are also very good reasons for using **chemical sprays** in outdoor areas to keep ants from entering structures.

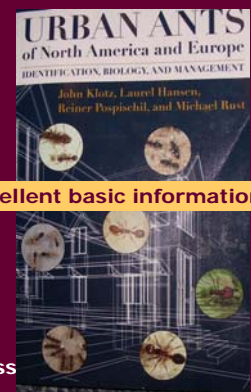
## Seven Questions about Ants:

- What is their **role in nature** ?
- What types of **food** do they eat ?
- Where are **nests** usually located ?
- Why do they **enter structures** ?
- How many ants are in a **colony** ?
- How are **colonies organized** ?
- Can I guarantee ant management ?



**Good Ant Taxonomy book for use in U.S. and Canada**

2008 Cornell Univ. Press  
196 pages (paperback)



Excellent basic information

### A. Argentine Ants *Linepithema humile*

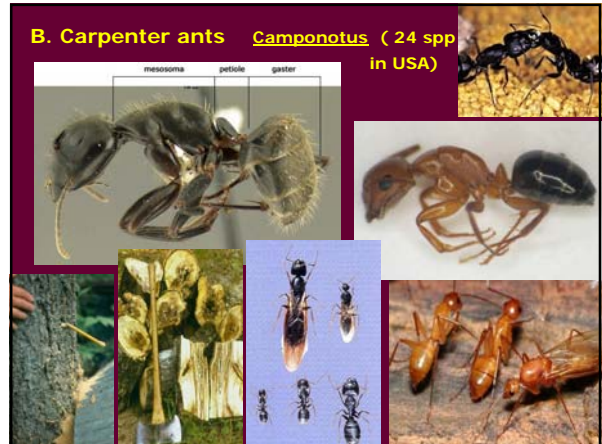
2.2 – 2.6 mm long  
12 segment & NO club  
Do NOT sting  
Sweet feeders  
About 85% of ant calls in San Diego



Distilled water	4 pints
Granulated sugar	4 lbs
Strained honey	12 oz
Benzoate of soda	3 grams
Tartaric acid	7 grams
Sodium arsenate	8 grams

Barber & Cross 1916

### B. Carpenter ants *Camponotus* (24 spp in USA)



**C. Crazy Ant (black)**  
Paratrechina




**FAST** moving workers  
2.3 – 2.9 mm  
Invasive, "Tramp" ant  
Nest indoors in potted plants, sewers and wall voids  
Easily move colonies  
Omnivorous  
Baits & long lasting residuals

**D. New HOUSTON AREA Ant**  
NOT-Paratrechina



*Nylanderia near pubens*  
Tommy Rasberry, PMP  
1<sup>st</sup> to Encounter it !






**E. Ghost ants**  
Tapinoma melanocephalum

1.3 - 1.5 mm  
100 – 1,000  
High humidity  
Plants  
Luggage  
Bait well  
Exterior trts.


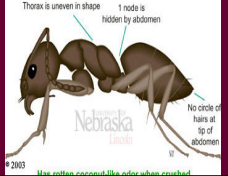



Common ant worldwide

**F. Odorous house ants** Tapinoma sessile



2.4 – 3.3 mm

2,000 – 10,000 / col

Thorax is uneven in shape 1 node is hidden by abdomen  
No circle of hairs at tip of abdomen

**G. Acrobat Ants**  
Crematogaster spp.

11 Segmented antenna,  
3 Segmented club,  
A pair of spines on propodeum,  
A Heart-Shaped gaster,  
NEST in dead, rotting wood that may be above ground.  
Exterior residual treatments

Bait well, but also use exterior sprays with a long-lasting residual !






**H. Big Headed Ants**  
Pheidole spp.

Worker Majors or Soldier

Dimorphic = 2 sizes

2 – 2.8 mm minors  
3.5 – 4.5 mm majors

2 seg. Petiole,  
12 seg. Antanna,  
3 seg Club,  
Nest in soil, may invade  
Exterior treatments around base of structure is + + +








Feed on seeds,  
dead animals,  
Jelly or sweets,  
Peanut butter,  
Pet foods



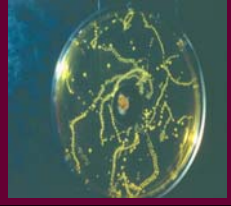


**I. Little black ants** *Monomorium minimum*

1.5 – 2.0 mm long

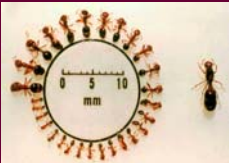
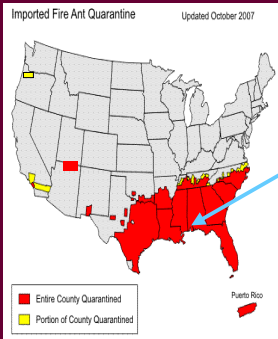



Native of North America  
Polygynous  
Nest in soil, under objects and  
in decaying wood  
Feed on honeydew and insects  
Baits + EXTERIOR residual sprays

**J. Pharaoh Ants**  
*Monomorium pharaonis*

**K. Red Imported Fire Ant**  
*Solenopsis invicta*

Imported Fire Ant Quarantine Updated October 2007

Highly Polymorphic, 1.6 – 5 mm in length  
Introduced into U.S. at  
Mobile, AL 1933 – 1945  
>200,000 ants / nest  
Polygyne colonies common  
Polydomous (multi-nests)  
Omnivorous & opportunistic  
TX 2 step method is +++

**K. Red Imported Fire Ant** *Solenopsis invicta*








Timing & Persistence, important **MANAGEMENT** aspects !






**L. Many Other Ant Species in Texas**

There are **MANY OTHER** species of ants in Texas and those that have been presented here are just a few of the **MORE COMMON** species which are encountered in urban areas of the state.

**Atta texana** **Pogonomyrmex** **Tetramorium** **Sol. molesta**



**Biology: You tell me !**

**A. Daily Activities of Ants**

**B. Client's Common Complaints**

**C. Typical Controls Used**

**Dr. Ted's Ant Game = Colony Organization & Activities**

###	%%	%% %
___	___	Egg 8.57
___	___	Young Larva 11.43
___	___	Old Larva 11.43
___	___	Pupa of a Worker 14.29
___	___	Pupa of a Sexual 5.71
___	___	Young Worker 25.71
___	___	Old Worker 11.43
___	___	Young Queen 2.86
___	___	Old Queen 5.71
___	___	Males 2.86

**51.43** (sum of Old Larva, Pupa of a Worker, Young Worker, Old Worker)

**48.57** (sum of Young Queen, Old Queen, Males)

% from A.D.Peacock, et.al 1955

- Food Reserves
- Moisture / Water Reserves
- Nurseries
- Trash
- Defense
- BOOK Example or Analogy

**What IPM Tactics are Used ?**

1. Education
2. Inspection & ID
3. Exclusion
4. Cooperation
5. Trapping
6. Sanitation
7. Mechanical Ctrl.
8. Physical Ctrl.
9. Professionals
10. Chemicals
11. Quality Assurance
12. Documentation

## Carpenter Ant Biology - Colonies

- **Social Insects**... Do you understand what this really means ?
- **ALL ants DO NOT leave colony**
- **Exo-Thermic and seasonal activities**
- **Eat a wide variety of food**
- **Mature colony takes**  
3 to 6 years & 2,000 to > 60,000 ants or more (species dependent)

## Carpenter Ants Biology - Food

- **Insects** . . . Use dead crickets as part of your survey !
- **Fruit**
- **Meat** . . . survey with 'bits' of meat
- **Fat & Grease**
- **Sweets** . . . Use a 20 - 40% solution of selected sugars to detect activity
- **Honeydew** . . . Look for them "tending" aphids on plants

## Carpenter Ant Biology - Surveys

- **Dead crickets**
- **Honey and water mixtures**
- **Cane Molasses**
- **Jelly**. . . (Mint works very well)
- **Peanut butter**
- **Potato chips**
- **Tuna**
- **Wiener slices**

## Carpenter Ant Management

Requires a solid combination of non-chemical and chemical techniques.

### Common steps utilized:

1. Learn ALL you can – know your enemy !
2. Interview client, esp. little kids
3. Site plan development is a MUST
4. Inspection = species I.D., trails, nest sites, conducive conditions, moisture issues, etc.
4. Corrective NON-Chemical actions
5. Chemical applications = trails, nests, exteriors
6. Documentation (include a good site plan)
7. Quality Assurance / Follow-up

## Basic ANT Management

**Interview client** esp. little kids

**Site Plan Development** is a MUST !

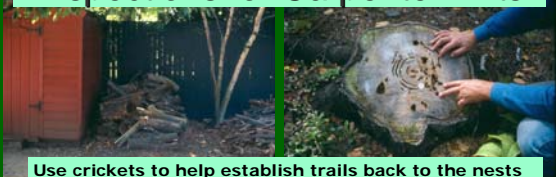
## Basic ANT Management

**Inspection =**  
species (24 *Camponotus* in USA),  
trails,  
nest sites,  
piles of frass,  
conductive conditions,  
moisture issues,  
food sources,  
etc.

### Corrective NON-Chemical actions

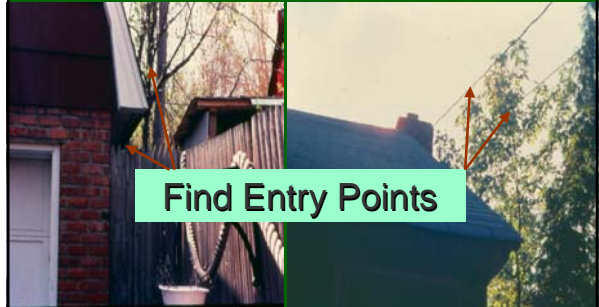


### Inspections for Carpenter Ants



Use crickets to help establish trails back to the nests

### Corrective NON-Chemical actions



### Find Entry Points

Client Cooperation is usually needed to help manage / correct this aspect !

### Corrective NON-Chemical actions



Repairs to Eliminate Moisture Problems

### Corrective NON-Chemical actions



### Relocate fire wood

### Corrective NON-Chemical actions



Remove / treat stumps & infested vegetation



### Chemical applications



### Chemicals INTO nest

Logically, the KEY is to effectively find the nest so it can be treated.

**Trails, Nests, & Exteriors**

## Chemical BARRIERS



Spray area if O.P. or Pyrethroids are used

**NOT** a job for a hand-held sprayer !

Spray area if **Termidor** or other slow acting material

An **OK** job for a hand-held Sprayer... or a backpack !

Inspection is a **KEY** component of work to find the parent and satellite colonies.

Night inspections are **VERY** helpful. Usually a large number of ants emerge at sundown and will disappear into nest at sunrise.

Use diluted honey, sugary milk (fructose) and Chopped insects (crickets or mealworms) to Help establish foraging trails and ID nests.

Direct NEST treatments and exterior sprays with a long-lasting product !

## Consider

- Value to client
- Removal of conducive conditions
- Elimination of water sources
- Yearly activity cycles
- Variations in ant diet
- Barrier materials
- Pre-Bait to establish trails
- Conventional insecticides

## Common Ant a.i. Used in Texas

IN	OUT	B/S	Active	Company
+	+	+/+	Fipronil	Bayer
+	+	+/-	Hydramethylnon	Bayer
+	+	-/+	Imidicloprid	Bayer
+	+	+/+	Indoxacarb	DuPont
+	-	+/-	Boric Acid	Many firms
+	+	+/+	Averectin B1	Whitmire
-	+	+/-	Pyriproxyfen	Valent USA
+	+	+/-	S-Methoprene	Wellmark Inter.
-	+	+/-	Spinosad	Dow
+	-	+/-	Sulfuramid	FMC & Whitmire
+	+	+/+	Thiamethoxam	Syngenta

How Ms. Pharaoh Ant looked in her make-up mirror this morning !



## Pharaoh Ant Biology - Colony

In 1889, Bellevoye reported trapping and counting 1,362,463 P.A. from a home over 2 years:

Caste	Number Counted	% % %
Workers	1,360,000	99.82
Queens, NO wings	1,809	0.13
with wings	94	0.01
Males	560	0.04
	1,362,463	

## Pharaoh Ant Biology - Colony

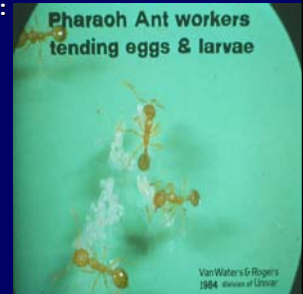
1955... A.D.Peacock, et.al reported trapping various P.A. colonies:

Caste / Stage	# in Smallest	# in Largest
Queens	8	110
Males	0 ← Note →	2
Workers	150	2,000
Eggs	80	600
Pre-Adults	180	2,060
SUM =	418	4,772
% Adults	37.8	44.3
% Immature	62.2 ← Note →	55.7

## Pharaoh Ant Biology - Colony

1955... A.D.Peacock, et.al reported that very FEW P.A. are needed to start new colonies:

- A. 100 Workers + 103 Eggs
- B. 150 Workers + 130 Pre-Adults
- C. 21 Workers  
1 Queen +  
1 Male Pupa



## The impact of some ant sprays



One colony with 36 queens now becomes THREE colonies... each with their own queens, workers and immatures.

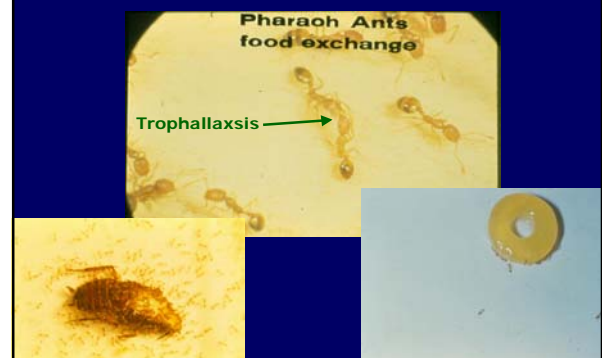
## Baits vs. Spraying for Ants

Control Method	Colony Elimination
Aerosols	Possible, if into nest
Dusts	Possible, if into nest
Sprays	Not usual... <u>depends</u> !
<b>Baits</b>	Possible, 7 – 120 days
Biological = B.t.	Yes, in lab = 21 -22 wks
" Methoprene	Yes, 20 – 40 weeks

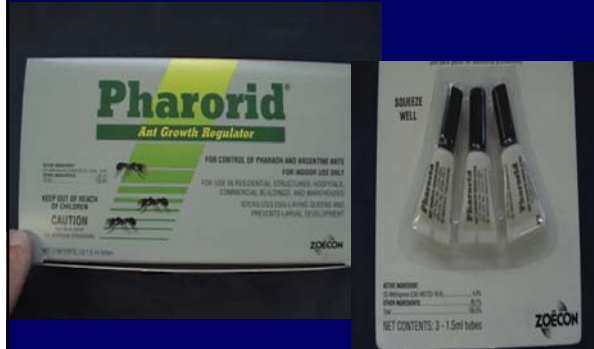
## Correct Bait Use

- What is a bait ?
- Types of baits
- Tips on use
- Precautions
- Avoid Problems

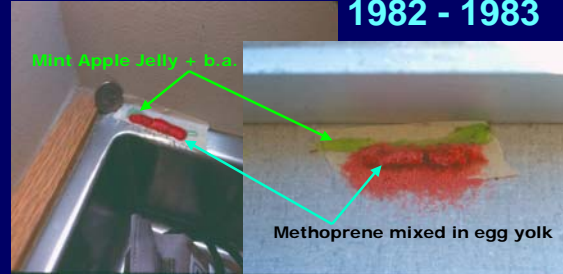
## Pharaoh Ant Biology – Feeding



## Methoprene, a slow active product



## M.A.J. + Methoprene Mixture 1982 - 1983

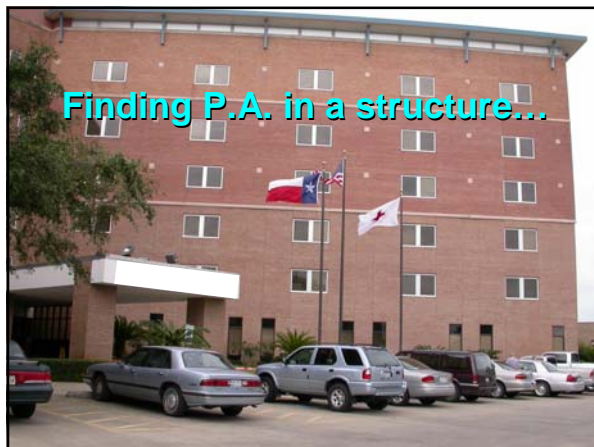


Both photos are from a hospital client in Texas, which year to date has provided about \$ 516,000.00 to my firm, about \$ 1,720.00 per month for nearly 25 years.

## Finding an acceptable sugar bait



## Finding P.A. in a structure...



## GAI Ant Mgmt. at Hospital X

This Texas hospital was surveyed with 1,167 bait stations which allowed counting of 7,558 pharaoh ants. Based on known feeding rates, this indicated that over 340,000 ants were in the walls of this hospital.

Day	1	28	57	91	118	150	182	211
Ants	7,558	1,882	43	6*	0	0	0	0
Ave. # / station	41.1	22.7	6.1	~*	0	0	0	0

\*All of these ants were at just one station.

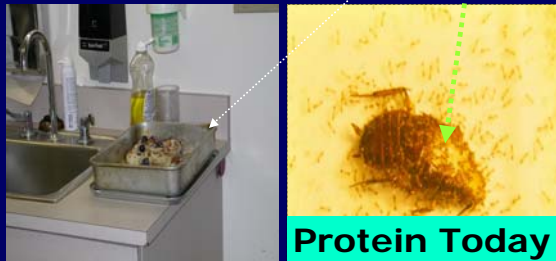
New products now allows control in about 40 days.

### Competing food for ant colonies always seems to be around and can cause control failures !




**Sweets Today**

### Competing Food



**Protein Today**

### Competing Food



**Oh, what is this and is it any good ?**

### Problems with Ant Control



Technicians often have MANY problems with ants and LOTS of excuses are given for lack of control !

### Seven Problems with Ant Management

1. The ant type is unknown. Only 4 types of ants are known by many "PMP's"!
2. The colony is located on another property which is NOT being treated by your firm.
3. Ants frequently change food preferences between COH > - < Protein and NO single bait will ALWAYS provide results !!
4. There is little FAITH in ant baits or their correct use !

### Seven Problems with Ant Management

5. Ants can, almost always, find fresher food which is more interesting than the food contained in commercial baits.
6. Less foraging occurs from new colonies ("división" or a neptual pair) and this results in less control.
7. Service staff believe they know more about the ants in their area than they actually know.

