

# Environmentally Sustainable Insect Control

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*AntPro* in Wine Grapes

## Environmentally Sustainable Control of Crop Damaging Insects

-  
A Profit-Improving, Cost-Savings Solution  
to Avoid  
Spraying of Toxic Chemicals

AltaVista  
**Babel Fish**  
To translate this page,  
click a flag!



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*AntPro* in Citrus

### ***KM Mission***

**To promote “A Whole-Farm Approach to Managing Pests” (1).**

**To assist growers** in their strategies and practices for eliminating crop-damaging insects using sustainable, profit-improvement methods.

**To act as a catalyst** to reduce the growers' need for the repetitive, expensive spraying of chemicals that destroy beneficial insects and organic nutrients in the soil, and otherwise damage our environment.

**To promote growers' ecological processes**, such as nitrogen fixation, nutrient mineralization from organic matter and beneficial insect populations.

(1) See bulletin from Sustainable Agriculture Network:

<http://www.sare.org/publications/farmpest/farmpest.pdf>

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*AntPro* in Table Grapes

### KM History

Since 2001, KM has successfully marketed the *AntPro System* in the urban market through the Internet, ACE Hardware stores & Professional Pest Control Operators in Florida and condominium groups, individual homeowners, U.S. Army Corp of Engineers, national parks, University of California Berkeley's grounds maintenance department and other public organizations.

During the years 2004 - 2006, KM, with the assistance of the University of California Riverside and a few organic growers, demonstrated the successful use of the *AntPro* dispenser and Gourmet Ant Bait (1% boric acid solution) in control of the Argentine ant that protects the scale, mealy bugs, aphids, psyllids and other crop-damaging homoptera in order to harvest their honeydew. This Argentine ant and several other similar acting ants are a large and serious global problem.

**KM History (cont'd page 4 ) ([click here](#))**

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*AntPro* in Strawberries

### KM History (cont'd)

In 2005, both the *AntPro* dispenser and Gourmet bait were certified as Organic Compliant meeting NOP Standards and the requirements of the US Department of Agriculture.

In 2006, based on the several UCR studies and the endorsement of the growers involved, the State of California issued a Special Local Need Registration allowing Gourmet to be used by growers of organically grown fruit and nuts, only.

In April 2008, the EPA approved Gourmet for use for general agricultural use and in November California so registered its use.

Now, the *AntPro System* is available to help solve ant and homoptera control problems for all California fruit and nut growers.

Visit **KM's web site link** to the urban insect control environment and a further description of the **AntPro® System**: [www.kmantpro.com](http://www.kmantpro.com)

KM History (page 3) ([click here](#))

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Portion of shield cut away to show *AntPro* dispenser feeding

### KM Message

The *KM AntPro* Insect Control System will assist you in reducing your crop damage and losses and increasing your business profits (1).

If you have Argentine ants or other similar invasive ants, together with scale, mealy bugs, aphids, psyllids or other homoptera on your property, *AntPro* will eliminate the ants that are protecting and farming these crop-damaging insects for their honeydew. Once the ants are removed, the ladybugs and other beneficial insects provide nature's own control.

The *AntPro* System reduces the on-going need for broad-spectrum insecticides that contaminate your crops and our environment. In the process, these toxic chemicals kill the beneficial insects that control the homoptera and destroy the bacteria and other organisms in your soil thus requiring more fertilizer to replace this loss. Even the pollinating honey bees are placed at risk by the use of these chemicals.

(1) Contact us for full deployment strategy and details as to how the *AntPro* System will significantly increase your business profit.

**KM Message (cont'd page 6) ([click here](#)).**

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Argentine Ant Farming and Protecting Scale

### KM Message (cont'd)

At first sight, it might appear that spraying of pesticides might be eliminating the ant problem, but in fact, it is increasing it. Only a small fraction of the ant colony is assigned the task of foraging for food, and those are the ants killed, including many non-targeted life forms with toxic chemicals. The death of these foragers causes the balance of the colony to go into stress and repopulate at an even greater rate.

The *AntPro System* with .5 to 1.% boric active ingredient allows recruited foragers to repeatedly return to feed the queens and colony without detection; and thus within the first few weeks has consistently destroyed existing ant colonies. *AntPro* does not harm or interfere with the beneficial "predator" insects and can remain in place unattended in a sentinel monitoring mode for up to six months.

As a bonus, your support and application of this environmentally sustainable approach can generate increased support from government and public sectors, providing increased leverage for obtaining water-use and farm bill money allocation and participation in many other related initiatives.

**KM Message (page 5) ([click here](#)).**

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### Ant-Homopteran Mutualism

## The Problem

In the past, ever increasing ant populations in crops were treated as a separate and additional control problem.

In reality, Argentine and other ants spread, protect and farm scale, mealy bugs, aphids, psyllids and other crop damaging insects to harvest their honeydew.

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University of California • Agriculture and Natural Resources  
**UC IPM Online**  
STATEWIDE INTEGRATED PEST MANAGEMENT PROGRAM

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How to Manage Pests  
Home & garden  
Agriculture  
Weather data & products  
Degree-days  
Interactive tools & models

Educational Resources  
Publications & more  
Workshops and events  
PCA exam helper  
Pesticide use and safety

Research and IPM  
Grants programs  
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**In the News**

May 17, 2006  
**Ants take the bait for less toxic solution**

Organic citrus growers can use low-toxic ant control measures to rid their groves of pesky Argentine ants, according to a study funded by the UC Exotic/Invasive Pests and Diseases Research Program (UC EDRP). After one week of using baits, ants were reduced by about 50 percent and after two weeks, by about 70 percent.

In their study, Les Greenberg, entomology specialist, John Klotz, University of California Cooperative Extension urban entomologist, and Michael Rust, entomologist, all from UC Riverside, demonstrated a reduction in Argentine ants in an organic citrus grove using ant bait stations containing liquid toxicants.



**Less toxic bait stations help to rid citrus groves of Argentine ants.**  
Photo by Les Greenberg

"We used a commercially available liquid bait with a borate toxicant to reduce season-long ant population densities," says Greenberg. "Our results indicate that small amounts of relatively non-toxic insecticides, delivered in a sugar-bait, can reduce ants."

### The Solution

Liquid bait with 1% borate toxicant reduces Argentine ants numbers by 70% in 2 weeks & 80% after 4 weeks.

University of California – Riverside - Dr Mike Rust, Dr John Klotz, Les Greenberg

**The Solution (cont'd page 9) ([click here](#))**

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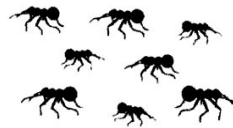
### Less Can Be Better

#### KM AntPro System - Provides Total Colony Elimination

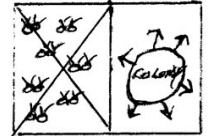
##### Competitive Systems Using Quick-Acting, High-Toxicity Pesticides



Broadcast delivery of high-toxicity pesticides



Foraging ants feeding



Foraging ants dying alarms colony which moves & expands

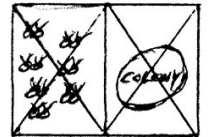
##### AntPro® Dispenser Using Slower-Acting, Low-Toxicity Bait



Container storage of 1% or less boric acid solution



Foraging ants accessing bait held inside AntPro dispenser



Foraging ants feed colony - total colony elimination

##### AntPro® System Eliminates Total Ant Colony Does Not Poison Our Environment

### The Solution (cont'd)

Cartoon drawing describes how less is better with ant control.

The spraying of pesticides does not eliminate the ant problem; it increases the problem. Only a fraction (approx. 15%) of the ant colony is assigned the task of foraging for food, and those are the ants killed by the toxic chemicals. The death of these foragers causes the balance of the colony to go into stress and repopulate.

The *AntPro System* with its 1% or less boric acid solution allows the foragers to repeatedly return to feed the queen and the balance of the colony without detection; and thus within a few months eliminate the entire ant problem.

The Solution (cont'd page 10) ([click here](#)).

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UC Statewide IPM Project  
© 2000 Regents, University of California

Ladybug attacking scale

## **The Solution (cont'd)**

Once the ants are removed, the ladybugs and other beneficial insects provide nature's own control.

*AntPro* does not interfere with the beneficial insects so after the ants are eliminated, it remains as a sentinel to prevent a re-infestation.

**The Solution (page 8) ([click here](#)).**

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### Ant Baiting with 1% Boric Acid

### ***KM AntPro Advantages***

- Uses only low toxic, environmentally sound bait ingredients that are designed to destroy the queen and the total ant colony and not just foraging ants that represent a small percentage of the colony and are easily replaced if killed.
- Bait is stored within dispenser reservoir and pool where insects feed, so bait is not exposed or broadcast over wide areas.
- Target insects have 360 degree access to feeding pool (have observed estimated 100 imported fire ants feeding at one time).
- *AntPro* System provides around the clock, season-long control and monitoring, and not limited to one or two broadcast spray treatments that are dissipated by the sun and rain.
- Using target-specific attractant and bait with dispenser access limited to ants and other small insects. Lady bugs and other beneficials including pollinating bees can be present without being exposed to harm.
- Dispenser made of polypropylene plastic with UV protection added for an extended operating life.

Visit our urban insect control website for additional information:

[www.kmantpro.com](http://www.kmantpro.com)

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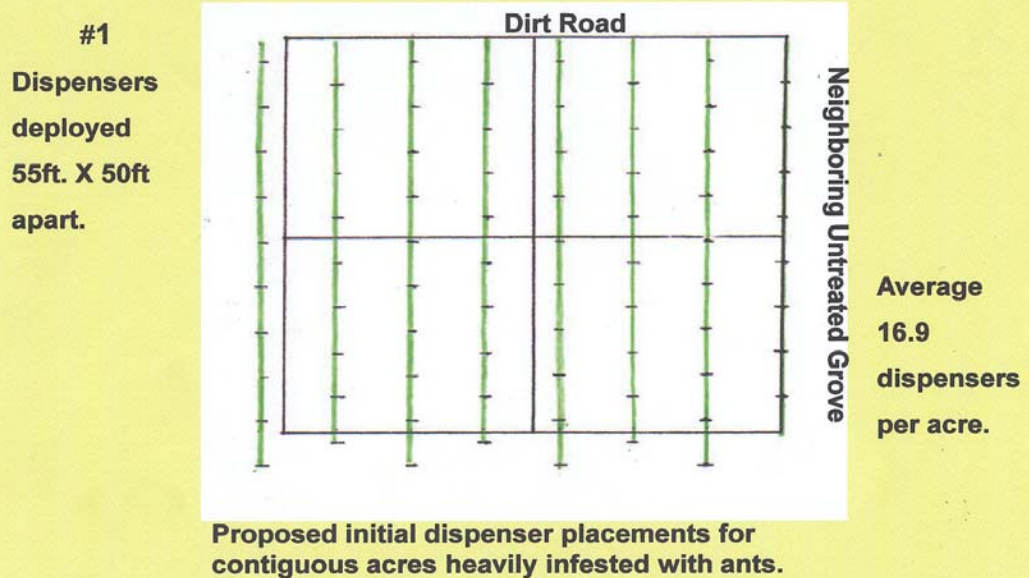
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### Applied Argentine Bait & Monitoring Methodology!



### Deployment Strategy

The number of *AntPro* dispensers required per acre varies based on type of crop, degree of insect infestation in targeted and contiguous acreage and several other factors.

Dispenser deployment is best planned by completing a Crop Survey ([click here](#)) and a studied assessment of the relevant factors. The above diagram outlines an initial requirement averaging 16.9 dispensers per acre.

Deployment Strategy (cont'd page 13) ([click here](#)).

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Napa Valley Wine Grapes



Pauma Valley Citrus

### Deployment Strategy (cont'd)

As the ant population is reduced and the ladybugs and other beneficial insects return to an area, the number of dispensers employed can be reduced and moved to another problem location.

This redeployment of dispensers is shown in the above Napa Valley plan. The field to left was the initial targeted area, and now shows this reduction. The field on the right is the present focus.

*AntPro* does not interfere with the beneficial insects so as the ants are eliminated, it remains as a sentinel to prevent a re-infestation.

Deployment Strategy (page 12) ([click here](#)).

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### KM Agrico's Grower's Guide To Ant & Crop Insect Control



#### Overview

The **KM AntPro®** dispenser, together with a low-toxicity liquid ant bait, provides the key components for a specific, bio-rational methodology employed for the purpose of first controlling, then eliminating and finally functioning as a stand alone 24/7 monitoring **sentinel system** against re-infestation by offensive ants.

### Growers' Guide

To read complete Growers' Guide, PDF file ([click here](#)).

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### KM System Financial Justification

The *KM AntPro* will assist you in reducing your crop damage and losses and increasing your business profits.

The *AntPro System* operates to reduce your crop damage and losses by removing ants that protect the mealy bug, scale, aphids, psyllids and other crop damaging insects. Once the ants are removed, the ladybugs and other beneficial insects return to control these problem insects.

Therefore as a first step, it is most important to define and quantify this problem by recognizing the several factors relating to these ants and problem insects that are contributing to your current crop damage and crop losses. Is there sooty mold on the fruit; direct insect damage to blossoms, fruit, foliage & roots, ants interfering with pollinating bees, etc.?

Also, with spraying of insecticides, recognize the time and expense necessary for their repeated use and for the additional fertilizer to replace organic nutrients in soil destroyed by these chemicals. Is the loss of water holding capacity of organic matter in soil requiring more irrigation & mulching?

Obviously, potential savings and related production costs vary between each grower's kind of crop & insect problem, degree of infestation and other environmental problems. A financial justification needs to be tailored to your conditions, and that is part of our on-site or satellite-based insect control plan.

For crop survey form ([click here](#)).

See Example of Profit Improvement Potential (page 16) ([click here](#))

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### Example of Profit Improvement Potential

A business computer model developed for California Fruit & Nut Growers shows how a reduction in crop damage and loss increase profits.

For example, a 10% increase in sales revenue over an existing \$7,000 per acre due to greater crop output and/ or better quality product can produce a dramatic improvement in profit.

Assuming cultural, fixed costs of \$2,000 (29%) and harvest costs of 47%, grower has a profit contribution ratio of 53% (100% - 47%), a break-even point of \$3,800 and a resulting profit of \$1,710. That is, any \$1.00 increase in revenue over \$3,800, produces \$.53 of additional profit or \$371 per acre, a 22% increase (\$371/ \$1,710) in this example.

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The power of this profit multiplier is demonstrated for pecans by a recent ARS study:

**"Organic Pecans: Another Option for Growers"** was published in the **November/December 2008** issue of *Agricultural Research* magazine. New ARS studies in Weslaco, Texas, are showing that it may be possible for growers to boost their revenue further by growing pecans organically.

"Contrary to conventional growers' expectations, the ARS organically treated test site outyielded the Geberts' conventionally managed, chemically fertilized orchard in each of 5 years. The best ARS treatment surpassed the Gebert control by 18 pounds per tree - 44.10 pounds compared to 25.85 pounds - in 2005 and by 12 pounds per tree - 45.09 pounds compared to 33.39 pounds - in 2007. Because pecans are an alternate-bearing tree, both orchards' yields were very low in 2004 and 2006" (71% increase in 2005 & 35% in 2007).

To see entire article link to:

<http://www.ars.usda.gov/is/AR/archive/nov08/pecans1108.htm>

**Financial Justification (page 15) ([click here](#))**

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### KM System Environmental Justification

It is easy to understand from reading the EPA required label for each broad-spectrum insecticide spray that their use contaminates your crops and our food supply and environmental, and kill the beneficial insects that control the homoptera. Also, these chemicals destroy the bacteria and other organisms in your soil thus requiring more fertilizer to replace this loss. It places our children, pets, honey bees and all living beings at risk. Their use is discussed and approved in terms of an assumed risk/ reward, but not being free of these concerns.

Use low-toxicity, organically approved 1% boric acid bait and beneficial insects as the catalyst in adopting environmentally sustainable insect control and "A Whole-Farm Approach to Managing Pests".

Your adoption can generate increased awareness by the government, other growers and the public that there are more bio-friendly and profitable methods of insect control, and in this process provide increased leverage for obtaining water-use and farm bill money allocation and participation in many other related initiatives.

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## Let Us Assist You

*KM Agrico LLC*  
Environmentally Sustainable Insect Control

### Insect Control Survey

Upon your request, we will produce a free on-site or satellite-based insect control plan for the deployment of our system and the strategy for its use; together with an outline of its cost reducing/profit improvement potential. To obtain Ken's recommendations, complete this survey and send it to our address below. (Please fill out site-specific surveys for crops at independent geographical locations.)

Survey by Grower:

Business Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone #: \_\_\_\_\_ Email: \_\_\_\_\_

Crop (s): \_\_\_\_\_ Acreage: \_\_\_\_\_ (organic) \_\_\_\_\_ (conventional)

Insect Problem:

Homoptera: Scale \_\_ Mealybugs \_\_ Aphids \_\_ Psyllids \_\_ Other \_\_\_\_\_

Ants: Argentine ant \_\_ Other \_\_

Comments: \_\_\_\_\_

Estimated Percentage Crop Loss: \_\_\_\_\_

Other Comments: \_\_\_\_\_

Send Survey to:

Ken Kupfer  
P.O Box 967  
Nokomis, FL 34274  
[kikufer@comcast.net](mailto:kikufer@comcast.net)

Tel: (941) 445-4252  
Fax: (941) 445-4253

KM Survey Form - 20209

For full-page survey form ([click here](#)).

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### Testimonials

"Your bait & bait stations have been the answer for us in our organic orange groves."

[Matt Witman](#), Witman Ranch

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"The University of California Department of Entomology performed their 2005 Argentine ant liquid baiting research at my organic citrus grove in Fallbrook, CA. They used AntPro Dispensers with Gourmet Liquid Ant Bait with excellent results."

**Rich Hart**, Rainbow Valley Farms

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"Until a few months ago, these ants, in large quantities, were crawling up the outside of the house; spreading out within its inside structure; and dropping from the recessed lighting fixtures, wall switch plates and other openings." "My wife and I felt completely harassed by them and helpless in finding a solution."

"My wife and I have our home back and are most grateful to Ken and his Ant Pro system."

[Fred J. Santana](#), Entomologist Sarasota, Florida

**To read complete letter click on growers name.**

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### News

In April 2008, the EPA approved Gourmet for use for general agricultural use and in November California so registered its use.

Now, the *AntPro* system is available to help solve ant and homoptera control problems for all California fruit and nut growers.

### Links

Studies validating 1% boric acid liquid bait:

[http://www.ars.usda.gov/sp2UserFiles/Place/66151015/publications/Klotz\\_and\\_Williams-1996\(M-3020\).pdf](http://www.ars.usda.gov/sp2UserFiles/Place/66151015/publications/Klotz_and_Williams-1996(M-3020).pdf)

[http://www.bioone.org/doi/full/10.1653/0015-4040\(2006\)89%5B469:LBBFCO%5D2.0.CO%3B2](http://www.bioone.org/doi/full/10.1653/0015-4040(2006)89%5B469:LBBFCO%5D2.0.CO%3B2)

<http://cat.inist.fr/?aModele=afficheN&cpsidt=1614561>

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**A-1 Irrigation & Hardware**  
28511 Cole Grade Road  
Valley Center, CA 92082  
(760) 749-1213

**Agro Tech**  
20780 Geyserville Avenue  
Geyserville, CA 95441  
707-433-7035

**L & M Fertilizer Inc.**  
1043 East Mission Rd.  
Fallbrook, CA 92028,  
(760) 728-1400

28690 Las Haciendas.  
Temecula, CA 92590  
(951) 676-2990

**Fallbrook Fertilizer,  
Feed & Farm Supply**  
215 West Fallbrook Street  
Fallbrook, CA 92028  
760 728-5101

**Fruit Growers Supply**  
3631 Center Street  
Riverside, CA 92501  
(951) 369-9741

960 W. Telegraph Hill  
Santa Paula, CA 93060  
(805) 933-2723

934 W. Scranton Ave  
Porterville, CA 93257  
(559) 781-4050

674 E. Meyer  
Exeter, CA 93221  
(559) 592-6550

131 Road 204  
Woodlake, CA 93286  
(559) 564-3525

46031 Road 124  
Orange Cove, CA 93646  
(559) 626-4629

4136 E. U.S. Hwy 80  
Yuma, AZ 85365  
(928) 726-0250

**Grangetto's**  
189 S. Rancho Santa Fe Rd.  
Encinitas, CA 92024  
**(760) 944-5777**

**Farm & Garden Supply**  
1105 W. Mission Avenue  
Escondido, CA 92025  
(760) 745-4671

530 E. Alvarado St.  
Fallbrook, CA 92028  
(760) 728-6127

29219 Juba Road  
Valley Center, CA 92082  
(760) 749-1828

**Purity Products Co.**  
1411 Grove St  
Healdsburg, CA 95448  
(707) 433-3582

4 Maxwell Ct.  
Santa Rosa, CA 95401  
(707) 546-2585

**Napa Valley AG Supply**  
(a Wilbur Ellis Store)  
975 Vintage Avenue  
St. Helena, CA 94574  
707-963-3495

**Rincon\_Vitova Insectaeies**  
108 Orchard Drive  
Ventura, CA 03001  
(800) 248-2847

**Wilbur Ellis Stores**  
4710 Hwy 111  
Brawley CA 92227  
Phone: (760) 351-1259

52300 Enterprise Way  
Coachella, CA 92236  
Phone: (760) 398-0180

510<sup>th</sup> & Main Street  
Colusa, CA 95932  
Phone: (530) 458-5831

**Wilbur Ellis Stores (cont'd)**  
1850 N. First Street  
Dixon CA 95620  
Phone: (707) 678-2358

782 W. Washington Road  
El Nido, CA 95317  
Phone: (209) 722-1160

4707 Twin Cities Road  
Elk Grove CA 95758  
Phone: (916) 776-2113

2903 S. Cedar Ave.  
P.O. Box 1286  
Fresno CA 93715  
Phone: (559) 442-1220

8168 County Road 33  
Glenn, CA 95943  
Phone: (530) 891-6094

160 Grant Ave.  
Healdsburg CA 95448  
Phone: (707) 473-4410

12550 South Colorado Ave  
Helm, CA 93627  
Phone: (559) 866-5667

1601 Shelton Drive  
Hollister, CA 95023  
Phone: (831) 637-3772

6800 E. Whitmore Avenue  
Hughson, CA 95326  
Phone: (209) 883-4026

999 Bitterwater  
King City, CA 93930  
Phone: (831) 385-5951

13771 South Prescott Road  
Manteca, CA 95336  
Phone: (209) 982-5400

2275 E. Locust Court  
Ontario CA 91761-7666  
Phone: (909) 930-5440

**CA Distributors**  
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[Contact Us](#)

Wilbur Ellis Stores (cont'd)

975 Vintage Ave.  
St. Helena CA 94574  
Phone: (707) 963-3495

841 West Elkhorn Blvd  
Rio Linda CA 95673  
Phone: (916) 991-4451

2400 Del Paso Road  
Suite 140  
Sacramento CA 95834  
Phone: (916) 928-4550

1505 Abbott St  
P.O. Box 3650  
Salinas CA 93912  
Phone: (831) 422-1505

925 Golds Ave.  
P.O. Box 939  
Shafter, CA 93263  
Phone: (661) 746-6344

Camphora Gloria Road  
Soledad CA  
Phone: (831) 678-2612

PO Box 1303  
6504 County Road 57  
Willows CA 95988  
Phone: (530) 934-3223

1785 E. Beamer  
Woodland CA 95776  
Phone: (530) 662-4182

900 N. George Washington  
Yuba City CA 95993  
Phone: (530) 673-0921

2651 E 14th Street  
Yuma, AZ 85364  
Phone: (520) 344-1926

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## Environmentally Sustainable Insect Control

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## Contact Us

**KM Agrico LLC**

P.O. Box 967 Nokomis, FL 34274

[Kjkupfer@comcast.net](mailto:Kjkupfer@comcast.net)

Tel: 941-445-4252

Fax: 941-445-4253

Made in the USA

U.S. Patent 6,467,216

“Other U.S. and foreign patents apply”

For crop survey form ([click here](#)).

## Environmentally Sustainable Insect Control

### Testimonials

#### Witman Ranch Inc.

Hi Ken,

I want to thank you for working with us to help solve our ant problems. I had grown so tired of the continued broadcast application of baits and chemicals to try and control our various ant species. For years I had looked for a way to control the ants in our organic groves as they were becoming a critical problem.

Your bait and bait stations has been the answer for us in our organic orange groves. Once we understood how the ants behave and how to place the stations it became easy to maintain the bait in the grove. Within a couple of months we were seeing immediate results. We have now lowered the number of bait stations to just a few per acre and have begun to place the bait stations in our conventionally farmed citrus blocks. This is a good system that will ultimately save us money and solve our ongoing ant problem.

Thanks again for your continuing help and best of luck marketing your product.

Matt Witman, President  
Witman Ranch Inc.

**Note:** Matt owns and operates a 1,000-acre ranch located in Escondido, California, and in 2005, Matt purchased and tested the **AntPro**® in a 40-acre plot in which he grows organic oranges. Now, in addition to his organic groves, Matt has elected to begin treating his conventional crops with **AntPro**, discontinuing the application of pesticides.

Return to Testimonial Summary ([click here](#))

**Testimonials**



**RAINBOW  
VALLEY ORCHARDS**

5115 5<sup>th</sup> Street  
Rainbow, CA 92028  
Ph: (760) 728-2905 x113 Fax: (760) 723-9869  
E-mail: rhart@rvoorganic.com

California Department of Pesticide Regulations  
1001 I Street  
P. O. Box 4015  
Sacramento, CA 95512-4015

To Whom It May Concern:

I am writing this letter to request your speedy approval of Gourmet Liquid Ant Bait for use in organic agricultural crops.

The University of California Department of Entomology performed their 2005 Argentine ant liquid baiting research at my organic citrus grove in Fallbrook, CA. They used AntPro Dispensers with Gourmet Liquid Ant Bait with excellent results.

Before I could provide my property for use in their research, both Gourmet Liquid Ant Bait and the AntPro Bait Dispensing System was certified as NOP, USDA crop compliant for use in organic agriculture.

The harsh reality is that we need these tools as soon as possible, to control the ever-increasing numbers of Argentine ants which are directly and indirectly destroying our crops.

Your attention to this important matter will be greatly appreciated.

Best Regards,

Rich Hart  
President

**Return to Testimonial Summary ([click here](#))**

## Environmentally Sustainable Insect Control

### Testimonials

June 21, 2002

Subject: White-footed Ants

To whom it may concern:

Recently, I have been using a liquid ant bait delivery system that has produced very effective results in controlling white-footed ants that had invaded our property and home.

Until a few months ago, these ants, in large quantities, were crawling up the outside of the house; spreading out within its inside structure; and dropping from the recessed lighting fixtures, wall switch plates and other such openings. My wife and I felt completely harassed by them and helpless in finding a solution. I tried several 'quick kill' and baiting insecticides without success until Ken Kupfer of KM Ant Pro installed his low-toxic, liquid bait delivery system. With its weather-sheltered, continuous feed ability, the Ant Pro dispensers, loaded with liquid ant bait, remained unattended and without servicing for approximately eight weeks, and during that period, this system removed the white-footed problem and is now providing a barrier to any new infestation.

My wife and I have our home back and are most grateful to Ken and his Ant Pro system.

Sincerely,

Fred J. Santana  
Entomologist  
Sarasota, Florida

Return to Testimonial Summary ([click here](#))

**KM Agrico LLC**  
**Environmentally Sustainable Insect Control**

**Insect Control Survey**

Upon your request, we will produce a free on-site or satellite-based insect control plan for the deployment of our system and the strategy for its use; together with an outline of its cost reducing/profit improvement potential. To obtain Ken's recommendations, complete this survey and send it to our address below. (Please fill out site-specific surveys for crops at independent geographical locations.)

Survey by Grower:

Business Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone #: \_\_\_\_\_ Email: \_\_\_\_\_

Crop (s): \_\_\_\_\_ Acreage: \_\_\_\_\_ (organic) \_\_\_\_\_ (conventional)

Insect Problem:

Homoptera: Scale \_\_ Mealybugs \_\_ Aphids \_\_ Psyllids \_\_ Other \_\_\_\_\_

Ants: Argentine ant \_\_ Other \_\_

Comments: \_\_\_\_\_

Estimated Percentage Crop Loss: \_\_\_\_\_

Other Comments: \_\_\_\_\_

Send Survey to:

Ken Kupfer  
P.O Box 967  
Nokomis, FL 34274  
[kjkufer@comcast.net](mailto:kjkufer@comcast.net)

Tel: (941) 445-4252  
Fax: (941) 445-4253

KM Survey Form - 20209

**To return to "Let Us Help" ([click here](#))**

# *KM Agrico's* **Grower's Guide To Ant & Crop Insect Control**



## **Overview**

The **KM AntPro®** dispenser, together with a low-toxicity liquid ant bait, provides the key components for a specific, bio-rational methodology employed for the purpose of first controlling, then eliminating and finally functioning as a stand alone 24/7 monitoring **sentinel system** against re-infestation by offensive ants.

Of the estimated 8,800 to 12,000 ant species inhabiting the planet just a very small group of them cause problems for human kind. The industrial age rapidly extended commerce around the globe providing many of these ant species the opportunity to spread, originally by cargo ships and most recently air travel. In many instances they have thrived, establishing new populations wherever the environment has been conducive to colonize. This small group of very successful ants share worldwide common group name “Tramp ants” depending on just how bad they can be, whether in terms of health and commerce they are listed as invasive ants. Although some of these ants share the same opportunistic bad traits, there are differences that allow them to become the dominant specie in a given environment. The Argentine ant “*Linepithema humile*” is without a doubt the most successful invasive tramp ant worldwide and the primary focus of this control guide. The treatment strategy for many tramp and native ants in many cases is the same, or similar. Currently we are finding what are considered to be native formica ants in direct competition with Argentine ants occupying areas within the same crops in Southern California.



Argentine ants following recruitment pheromone trail from right to left are carrying honeydew in their fully extended crops back to their nest. Each ant is carrying enough liquid to feed as many as 12 colony members including queens.

Argentine ants may appear as only a nuisance infestation in crops where they are present in significant numbers, but it is their collective uniqueness acting as a super organism that constitutes the problem. They farm, protect and spread piercing, sucking insects “*Homoptera*” that cause crop damage, reduce yield and are vectors of an ever growing variety of diseases.

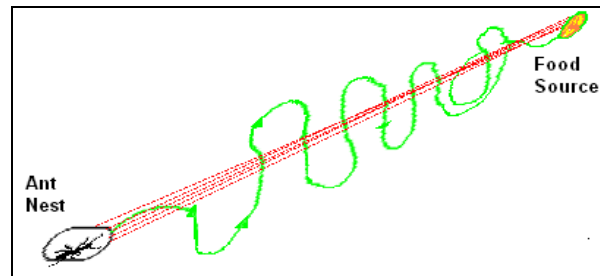
**AntPro** uses low-toxicity, liquid ant bait as a replacement for the continuous, year after year, spraying of expensive and soil-damaging insecticides as a means to eliminate ants that are enabling the crop damaging disease-carrying insects. Once the ants are removed, the homoptera are exposed to nature’s control; that is, the beneficial predator insects (ladybugs, parasitic wasps etc.)

## Background

In the mid 1990’s USDA researchers (Klotz and Moss 1996, Klotz et al. 1997) “**The delayed activity of boric acid promotes a thorough distribution of the active ingredient within the nest, leading to death of the entire colony.**” discovered that boric acid when greatly reduced, down to 1% and even less (recent research studies as low as 0.5%) of the total consumable bait volume was an effective tool for eliminating ants. It has been well documented probably for centuries that boron kills insects, but researchers found that in strengths above the 1% level the compound would either kill the foraging ants (only 15% of colony) too quickly, not allowing them to carry the toxicant back to their queens and other colony members, or simply act as a repellent making them ill too soon. Before the introduction of **AntPro’s** weather-sheltered insect activated dispenser, baits would also degrade and become inedible. Like other animals including humans, stress inducing events cause an automatic acceleration in ant populations. Colonies expand rapidly, divide and in greater numbers; the continued application of conventional insecticides and broadcast baits has had, and is having this same stress induced \*budding of the colony.

## Delivery and Bait Preservation System

**AntPro's** patented air restricted reservoir is capable of preserving **Gourmet® Liquid Ant Bait** (1% boric acid solution) for several months before it begins to degrade to the point ants no longer find it attractive. Foraging ants activate the dispenser's liquid surface tension stress ducts providing liquid bait flow from the air-restricted reservoir into the feeding pool. The ants have 360-degree access to the pool capable of feeding in excess of 100 Argentine ant foragers, simultaneously. The foragers share bait samples with other foragers they encounter accelerating the recruitment process as they establish pheromone



Green, represents a scout ant's search path for food; red, represents the recruitment trail.

trails while carrying the bait in their crops, (the ant's second storage stomach) back to the colony where they feed the queens and several colony members the attractive toxicant. Foragers feed the colony's population by *trophallaxis* (exchanging food through regurgitation).

Depending on the distances covered, they can make up to several trips to the colony feeding an average of 9 ants per visit before succumbing to the bait's toxicant.



Argentine ants farming mealybugs on citrus leaf.

## Argentine Ant Field Strategy

The differences that make Argentine ants so successful competing against other ant families makes them even more receptive to the dispensing system's unique 24/7 continuous long term bait feeding delivery on their demand.

**The following Argentine ant traits are important considerations in planning your strategy:**

1. \*Budding of the colony, that is, Argentine ants have **traveling queens** with accompanying workers that forage and establish new nest locations, thus expanding their population.
2. They will randomly forage as far as 200 feet establishing pheromone trails to food sites. **Please note:** During a recent 2006 study UCR researcher Les Greenberg, PhD. recorded Argentine ants foraging and bait recruitment over a distance of 300 feet traveling irrigation lines from untreated control plots to AntPro® dispenser baited test plots.
3. Follow the water; Argentine ants are always foraging in greater numbers near and around water sources.
4. You will rarely find them feeding in brightly lit and full direct sunlight areas.
5. They care and maintain mealybugs underground within the roots of grape vines and some citrus.

### **Agricultural ant management baiting program:**

**Spring/Fall deployment.** The ant population increases rapidly during these two seasons. Square acres heavily infested with Argentine ants should initially have approximately 11 to 16 dispensers installed; each dispenser placed approximately 55 x 66 feet apart.

**Fall/Winter deployment:** In coastal and warmer areas baiting active ant infestations is showing results prior to spring increase of insect populations.



The AntPro Sentinel insect bait delivery system is successfully controlling Argentine ants and numerous other carbohydrate and protein feeding insects.

**Ants are present only when they have purpose:** Argentine ants and other ant species are present in citrus, grapes, nuts and many other crops for one purpose - food. These ants are farming and protecting crop damaging scale, aphids, mealybugs, whitefly, psyllids and other piercing, sucking and chewing insects to harvest their honeydew. As the ant population declines, less interior dispensers will be needed. The remaining dispensers require less bait and perform as sentinels monitoring against ant re-infestation. Beneficial insects will return and

prosper feeding on the damaging insects in numbers eventually sufficient to balance the groves ecosystem. **It may be prudent for some growers to consider hurrying the process by introducing commercially available predator insects.**

When the ant populations within the interior of the treated crop areas have been greatly reduced or decimated, perimeter control is the most **important next step**. Other than some ants being transported into areas as stowaways, the Argentine ant is grounded without nuptial flight reproduction capability. Having bait stations deployed providing a perimeter defense will limit traveling queens from returning with thousands of accompanying workers, to re-infest the previously cleared areas. The number of dispensers with bait deployed on interior acreage can also be greatly reduced.

### Working Together

Our intention is to work closely with you, the end user, to assist with your **AntPro** system planning and deployment strategy. Call us, at no charge, for help in assessing your system needs and our developing a satellite-based deployment for your property. We will do our best to work with you to reach your goals; increased profits for your business, together with healthier, more bountiful crops and environment.

Sincerely,



Ken Kupfer

**KM Agrico LLC**

Ofc. 941-445-4252

Fax. 941-445-4253

P.O. Box 967

Nokomis, FL 34274

**\*pheromones:** Chemicals released by an organism to communicate. Ants use pheromones to create marked trails to found food sources for other ants to follow and enhance. They release alarm pheromones to warn of danger. Pheromones provide numerous instructions and have a specific and unique signature identifying each colony's members.

**\*budding:** Groups of worker ants usually carrying larvae, including one or more queens leave a colony to begin a new one. Argentine ant queens are much more sophisticated than most other ant species. They have numerous young females called traveling queens. These reproductive females randomly forage for food before establishing their new nests. This trait offers more female reproductive ants, or traveling queens a better chance of survival and nest placement.

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