

**Date:** May 22, 2006

**To:** [Jill Bloom](#), [Phil Phillips](#)

**Cc:** [Rick Melnicoe](#), [Wilfred Burr](#)

**From:** [Beth Grafton-Cardwell](#)

**Subject:** RE: Metaldehyde; looking for information on performance of alternative methods of snail/slug control in CA

Jill: At the bottom of this message I have included the UC IPM web site information on snail control in California citrus.

My comments relate to California commercial citrus:

**Biological Control:**

Decollate snails are a commonly used biological control agent of brown garden snails in citrus. They are most useful in situations where there is a fair amount of leaf matter on the ground (Medium aged orchards without berms). It takes 3-5 years to establish the decollates and see a significant reduction in brown garden snails. I am not sure what percentage of the growers are using decollates, however, they are common in the San Joaquin Valley.

**Chemicals:**

Copper bands and copper sulfate. The slurry method is used more than the bands, because it is cheaper and easier to apply. Copper is used less often than the decollates or metaldehyde. The banding must be accompanied by skirt pruning to keep the snails from using branches as methods to gain access to the tree. A single painting of the trunk can last several years.

Metaldehyde is a common snail bait method. The younger trees receive fewer treatments than the mature trees because snails do better in moist, shady conditions. Young trees do not provide enough shade. The tables below show the metaldehyde usage for the San Joaquin Valley California citrus (Kern, Tulare, Fresno, Madera counties).

Iron phosphate is used infrequently, probably because it is less effective than metaldehyde, but it is also less toxic to animals.

Azinphosmethyl is only used on the foliage if the grower is trying to remove snails from the foliage of the trees.

metaldehyde

Year	SumOfAreaTreated	SumOfNumApps	SumOfLbsChemUsed
1993			
1994	3982.20	169	1178.88
1995	9548.79	387	3834.55
1996	8350.05	272	3074.38
1997	4326.00	145	1717.53
1998	7135.51	272	2043.67
1999	5855.60	214	1913.24
2000	13395.00	412	6055.74
2001	10806.89	320	3997.62
2002	9482.00	275	4019.90
2003	25338.86	757	9072.40
2004	18566.71	595	7153.03

iron phosphate

Year	SumOfAreaTreated	SumOfNumApps	SumOfLbsChemUsed
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998	40	2	10.00
1999	0	0	0.00
2000	0	0	0.00
2001	0	0	0.00
2002	353	9	91.40
2003	77	1	6.25
2004	60	4	1.25

**Dangers of ingestion by animals:**

The problems with ingestion of metaldehyde by animals are much greater in residential areas than in citrus orchards. In my discussions with a veterinarian, he could not recall an incident with an animal poisoned from an orchard treated with metaldehyde, but could cite numerous instances of backyard poisonings. For backyard situations, there are alternative liquid formulations of metaldehyde that are less attractive than pellets.

UCIPM Citrus Guidelines

<http://www.ipm.ucdavis.edu/PMG/r107500111.html>

**A. RUMINA DECOLLATA# 0**

(Decollate Snail)

RANGE OF ACTIVITY: Narrow (brown garden snail)

PERSISTENCE: Long (permanent), unless treated with snail baits

COMMENTS: May take several seasons to obtain control. These snails may be released only in the following California counties: Fresno, Kern, Imperial, Los Angeles, Madera, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Tulare, and Ventura.

**B. COPPER BANDS# 0**

RANGE OF ACTIVITY: Narrow (brown garden snail only)

PERSISTENCE: Long

COMMENTS: Use with skirt pruning. Affix a copper foil band around the tree trunk at a height of 1–2 feet above the ground. It is essential that the copper foil be affixed to the tree trunk with about an 8-inch overlap so it will slip and allow for trunk growth.

**C. COPPER SULFATE# Label rates 1 day**

RANGE OF ACTIVITY: Narrow (trunk climbers)

PERSISTENCE: Long

COMMENTS: Tree trunks can be banded with a slurry of basic copper sulfate with a small quantity of boiled linseed oil added as a sticker. Paint or spray it on the tree trunks in about a 4-inch-wide band.

D. METALDEHYDE

(Deadline) Pellet 20–40 lb/acre 12 hours

RANGE OF ACTIVITY: Narrow (pest and beneficial snails)

PERSISTENCE: Intermediate

COMMENTS: For use on all varieties. Use higher rate for heavy infestation.

E. IRON PHOSPHATE

(Sluggo) G Label rates 0

RANGE OF ACTIVITY: Narrow (pest and beneficial snails)

PERSISTENCE: Intermediate

COMMENTS: Apply using standard fertilizer granular spreader. If ground is dry, wet it before applying bait. Reapply as bait is consumed or at least every 2 weeks. Check with CCOF to determine if this product is acceptable for use on organically certified produce.

F. AZINPHOSMETHYL\*

(Guthion) 2L 0.75 qt/100 gal 30

RANGE OF ACTIVITY: Broad (insects and beneficial mites)

PERSISTENCE: Long

COMMENTS: For use on all varieties. Use only as an emergency treatment if brown garden snails have moved into the tree. Apply in 200 gal/acre for mature trees, less for smaller trees, to skirt, trunk, and ground litter only. Do not apply during bloom or exceed 2 applications/year.

[Beth Grafton-Cardwell](#)

IPM Specialist and Research Entomologist

Kearney Ag Center

9240 S. Riverbend Ave.

Parlier, CA 93648

office: 559-646-6591

fax: 559-646-6593

---

From: Bloom.Jill@epamail.epa.gov [mailto:Bloom.Jill@epamail.epa.gov]

Sent: Thursday, May 11, 2006 11:19 AM

To: Grafton-Cardwell, Beth; Phillips, Phil

Cc: rsmelnicoe@ucdavis.edu; wburr@ars.usda.gov

Subject: Metaldehyde; looking for information on performance of alternative methods of snail/slug control in CA

Dear Drs. Grafton-Cardwell and Phillips,

I am the Chemical Review Manager for Metaldehyde with EPA's Office of Pesticide Programs (OPP). Rick Melnicoe of the Western IPM Center referred me to you as researchers who have looked into relative efficacy of slug/snail pesticides or other aspects of slug/snail control. As part of its reregistration effort, OPP has conducted risk assessments for metaldehyde and found excess risk associated with wildlife exposures and incidents associated with ingestion by domestic animals (primarily dogs). The Program is evaluating the benefits associated with metaldehyde use for the supported use sites, and then must consider both the risks and benefits in determining whether or not the uses of metaldehyde should be reregistered, or if reregistered, what risk mitigation measures are needed to bring risks and benefits into balance.

I am hoping that you might be able to add to our understanding of the efficacy of alternative methods of control for slugs and snails in California so our reregistration decisions reduce the risks and minimize the impact to users, growers, and consumers.

For reference, you can find preliminary versions of the risk assessments on the website [www.regulations.gov](http://www.regulations.gov). You can access the assessments and related documents in this way:

Go to [www.regulations.gov](http://www.regulations.gov)

Select "Advanced Search" then "Docket Search"

At Docket Id, enter OPP-2005-0231 and submit (the search may take a while, then)

Click on the underlined docket id and you will get the list of documents for the docket.

The documents are attached mainly as .pdf files

Rick and my contacts at the other Regional IPM Centers have put together a very useful data set on the use of metaldehyde and alternatives (chemical and cultural) in the Regions and States. I'd like to dig a little deeper into what is known about the performance of the alternative controls, particularly copper bands on citrus, and cultural controls and iron phosphate on any site, especially strawberries, ornamentals, and turf. Information on the effectiveness of reduced rates of metaldehyde is also relevant. Would either or both of you have any insights to share on these and related subjects? I also have a question regarding the use of metaldehyde on turf that maybe you can help me with: Is the use on turf intended to protect turf, or to create a barrier to snails and slugs reaching more desirable feeding grounds, such as in plantings of ornamentals?

For further reference, I am attaching a list of supported use sites and parameters.

We'll be formulating our proposed mitigation plan in the next two weeks, and any information you can provide in that time frame would be most appreciated. Thanks so much for your time.

Jill Bloom, Review Manager  
US Environmental Protection Agency  
Office of Pesticide Programs  
Special Review and Reregistration Division  
703-308-8019  
fax: 703-308-8041