

UNIVERSITY OF HAWAII AT MĀNOA

College of Tropical Agriculture and Human Resources

Department of Plant and Environmental Protection Sciences

March 30, 2006

Stephanie Plummer
Special Review and Reregistration Division (7508C)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave., NW.
Washington, DC 20460-0001

Subject: **Carbofuran (Furadan) Information Request**

The following comments are being submitted in response to the February 22, 2006 email message from Wilfred Burr regarding niche uses for carbofuran. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use of carbofuran for **banana** production in Hawai'i.

As of December 31, 2005, the last carbofuran product (Furadan 5%G) for use in **bananas** is no longer licensed for sale in Hawai'i.

However, growers feel that there is a niche where the chemical is necessary for crop production: for control of the banana root borer *only at planting*. Planting only occurs at most once a year and may occur as infrequently as once in five years. One grower estimates that new plantings represent only 8% of land in banana production.

For postplant nematode control, carbofuran use in banana is an emergency type treatment. In many cases moderate nematode infections are most likely simply ignored and left untreated by the grower. Root-knot and burrowing nematodes can be controlled using other preplant cultural practices

Comments submitted by:



Mike Kawate
Pesticide Registration Specialist
Voice: 808-956-6008
mike@hpirs.stjohn.hawaii.edu



Cathy Tarutani
Educational Specialist
Voice: 808-956-2004
cathy@hpirs.stjohn.hawaii.edu

3050 Maile Way, Gilmore Hall 310, Honolulu, Hawai'i 96822

Telephone: (808) 956-7076, Facsimile: (808) 956-2428, E-mail: peps@ctahr.hawaii.edu, Web: www2.ctahr.hawaii.edu

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Carbofuran (Furadan) Information Request

March 31, 2006

Crop: Bananas

Formulation: Furadan 5%G

- (1) In what region (state/county, etc.) of the US does the use occur?

Hawai'i.

- (2) What pests are driving the low usage of carbofuran? Do they occur yearly or sporadically?

Banana root borer. (Banana weevil [*Cosmopolites sordidus*])

This pest is the primary driver of use of carbofuran. It is present year-round, however young banana plants are the most at risk because tunneling by the weevil can kill the plants at this stage. *Treatment for this pest occurs only at planting.* Planting may occur from once a year to once in five years.

Root-knot nematode (*Meloidogyne* sp.) and

Burrowing nematode (*Radopholus similis*)

It is in rare, dire, emergency type instances when our growers will apply postplant nematode control.

- (3) What are the details of the typical usage pattern (e.g., number of applications per season, use rate per application, application equipment, acres treated, time of application in the season?)

Banana root borer control

Material is put only in the planting hole at time of planting during the dry season (May – September). Planting may occur from once a year to once in five years.

Application is made by hand at recommended rates per labeling.

Nematode control

It is in rare, dire, emergency type instances when our growers will apply postplant nematode control. When needed for nematode control, carbofuran will be applied either twice a year or more appropriately after harvest as a new shoot is forming. The highest labeled rate will be used because carbofuran is not among the most efficacious nematicides.

- (4) What worker activities typically occur during and after carbofuran applications?

Banana root borer control

After the carbofuran application is made, the sucker is put in the planting hole and dirt is placed around the plant with a shovel.

An herbicide application is made at one month later.

Few other operations would occur after carbofuran application. Irrigation would need to be applied and may or may not involve workers at the site of application.

Nematode control

Few operations would occur after carbofuran application. Irrigation would need to be applied and may or may not involve workers at the site of application.

- (5) What available alternatives, if any, could replace carbofuran? For this question please consider alternative costs, effectiveness, residual activity, resistance issues, impacts on beneficial insects/mites, etc.

Banana root borer control

Ethoprop (Mocap 15%G) labeling includes banana root borer, however, the labels will require engineering controls which may not be accessible to most growers. And, many of the growers are not certified to purchase and apply restricted use pesticides. There are also concerns about the effectiveness of ethoprop for banana root borer control.

Cultural practices are utilized by growers to control this pest:

- Field sanitation
- Hot water treatment of corms
- Baiting/trapping by laying freshly cut corm on ground
- Tissue culture to produce clean plants
- Cover banana plant wound with soil after pruning or harvesting
- Plant "keiki" (offshoots from a mother plant) deep to minimize root exposure
- Maintain healthy, vigorous plants

Nematode control

Carbofuran use in banana is an emergency type treatment. In many cases moderate nematode infections are most likely simply ignored and left untreated by the grower. Root-knot and burrowing nematodes can be controlled using other preplant cultural practices

Without a carbofuran alternative, our banana growers would be faced with almost no choice to control severe postplant nematode problems. The options for postplant nematode control in banana are **very limited**. Carbofuran and DiTera[®] are the only choices which have documented efficacy. Other products offered for control have either demonstrated no efficacy in replicated trials or have not been evaluated in replicated trials.

Ethoprop is more effective for nematode control than carbofuran, however, the labels will require engineering controls which may not be accessible to most growers.

Fenamiphos is even more effective than ethoprop, but is being cancelled.

Comments submitted by:

Dr. Michael Kawate
voice: 808/956-6008
e-mail: mike@hpirs.stjohn.hawaii.edu

Cathy Tarutani
voice: 808/956-2004
e-mail: cathy@hpirs.stjohn.hawaii.edu

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