

UNIVERSITY OF HAWAII AT MĀNOA

College of Tropical Agriculture and Human Resources

Department of Plant and Environmental Protection Sciences

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Richard Michell
Biological and Economic Analysis Division (7503P)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Ave., NW.
Washington, DC 20460-0001

Subject: **Copper RED Comments on Mangoes and Papayas**

The following comments are being submitted in response to the January 23, 2007 email message notice regarding the use of copper fungicides on mangoes and papayas. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use of copper in Hawai'i.

Papayas

Statement 1: A 48 hour REI would increase risk of disease losses and complicate scheduling of worker activities.

Based on this statement, the following questions were asked:

1] Which disease is likely to cause the claimed losses on papaya, if timely applications of copper cannot be maintained because of a 48- hour REI?

Statement 1 is not entirely correct. The claimed losses will not be due specifically to diseases, although there definitely will be some losses that can be attributed directly to disease. Most of the losses will occur because workers will not be able to harvest the fruits if they have to wait for 48 hours after application before they can reenter fields. Papaya fields have to be harvested weekly, otherwise the fruit get over ripe and rot. Depending on the supply of papayas, the packers or shippers may accept papayas only four days of the week at the most. When papaya production is low, the schedule might be reduced even further.

Rain can further complicate activity scheduling for papaya growers. During rainy periods-- which can be frequent and long in some papaya growing areas--the only time available to growers to spray is whenever there is a break in the rain. However, they would be unable to do so if a harvest day would occur within the 48-hour REI.

2] What are the target pests for copper on papaya? Are there any suitable alternatives for controlling these pests?

Copper is most effective against *Phytophthora palmivora*. Under rainy conditions, it first affects fruits, if not removed from the field, spores will infect the trunks and cause cankers, and

kill the tops. If allowed to continue, spores get to the ground and infect the roots and kill the tree.

Ridomil is registered as a drench for non-bearing trees, and ridomil formulations in combination with mancozeb or copper are registered for foliar applications. For economic reasons, copper in combination with mancozeb is preferred.

Mangoes

Statement 2: Mangoes - in recent years growers have been experiencing abnormal events of multiple flowering periods in a single season, which necessitate more applications per year. .

Based on this statement, the following questions were asked:

1] Are the abnormal multiple flowerings on mangoes expected to continue in future years?

Statement 2 is correct. Fungicides are applied after flowering. Therefore, if there are more than one periods of flowering, more fungicide applications will be necessary. The abnormal conditions have been present for the last three years. Therefore, it is considered likely that the conditions will continue in the future (and may even become the normal situation.)

2] What evidence exists to demonstrate/suggest that 3.2 pounds metallic copper/A application rate are needed rather than the 2.6 pounds metallic copper/A proposed in the RED?

We have no data to provide this evidence. The rate used is at the low end of the label rate for the product selected. (We assume the registrants provided data to support this rate.)

3] What are the target pests for copper on mangoes? Are there any suitable alternatives for controlling these pests?

Copper is used to control anthracnose (*Colletotrichum gloeosporioides*) and powdery mildew (*Oidium mangiferae*) on mangoes.

The only known effective alternative reported is chlorothalonil. Growers already alternate applications of copper and chlorothalonil.

Comments were contributed by extension staff of the College of Tropical Agriculture and Human Resources at the University of Hawai'i, and a representative mango grower.

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