

UNIVERSITY OF HAWAII AT MĀNOA

College of Tropical Agriculture and Human Resources

Department of Plant and Environmental Protection Sciences

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Environmental Protection Agency
1200 Pennsylvania Ave., NW.
Washington, DC 20460-0001

Subject: Docket ID Number **EPA-HQ-OPP-2005-0558**
Comments in Response to the Coppers Reregistration Eligibility Decision; Notice of Availability

The following comments are being submitted in response to the August 9, 2006 *Federal Register* notice regarding EPA's Reregistration Eligibility Decision for the copper-containing pesticides. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use of copper pesticides on food and ornamental crops Hawai'i.

In Hawai'i, copper pesticides are used in the production of many crops. There has been much concern expressed by and on the behalf of the growers of a variety of crops about the lengthening of the restricted entry interval (REI) to 48 hours. In particular, a 48-hour REI will affect growers of **bananas, papayas, vegetable and ornamental crops**. Growers of **papayas** also have concerns about the maximum annual application rate. **Mango** growers have concerns about maximum single application and annual application rates. Growers of **macadamia nuts** apply copper pesticides very infrequently, but would require a higher maximum single application rate in the situations where application of pesticides are needed.

Copper pesticides are extremely important fungicide for many fruits and vegetables grown in Hawaii. They are especially critical as a tank mix with other fungicides where a synergy is created which results in much better disease control than when either fungicide is used alone. Copper products are also used as parts of rotational schemes.

Bananas

The 48-hour REI will hurt Hawai'i's industry very much, probably resulting in at least one day lost per week for farm operations. Harvesting, in particular, will be adversely affected; the entire banana crop does not all mature at once, but all over the field at different rates.

Copper is applied to bananas by bunch sprays which are directed at the bunches from close range. A single application of copper is applied to young banana bunches. Most bananas bunches are "bagged" (i.e., covered with polyethylene sleeves) to manage fruit diseases. Growers who use copper, bag the bunches immediately after the bunch spray application of the copper product pesticide. The bunch application rate is 0.875 gm Cu²⁺ (2.5 gm Kocide 2000) per bunch. This is based on 545 bunches per acre. Not all bunches are sprayed at the same time.

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Papayas

The single most important use for the copper pesticides in Hawai'i is for **papaya** production.

Papaya is a crop which is in year-round production. The papaya crop is also vulnerable to pest pressures year-round. Collectively, fruit rots are major pests for papaya production and their control presents major challenges for growers.

The 48-hour REI would likely have a negative impact on growers, particularly during rainy weather. The 48-hour REI would increase risk of disease development and greatly complicate scheduling worker activities. Copper applications can only be done when it is not raining. Papayas have to be harvested at least once a week. Otherwise, they get too ripe and rot in storage. So, rain or shine, growers must harvest. However, fields are harvested only on certain days to accommodate post harvest treatment schedules. Depending on the packer/shipper and on the supply of fruit, they may accept papayas for treatment only 4 days of the week at the most. When production is low, there may be fewer days that papayas will be accepted. With a 48-hour REI it is very possible that there would be only one day a week available for copper application. This is especially true for growers who harvest twice a week. If the dry day occurred on the day before a harvest day, growers would have to refrain from spraying and risk increased rates of diseases.

Therefore, a problem scenario would be that the growers cannot apply copper because of rain and the obligation to comply with a 48-hour REI, but can harvest the following day. There are no data to estimate the industry's losses in such circumstances, but an expert guessed that growers may lose about 20% of that week's production. Where the average yield is 800 lbs/acre, $800 \text{ lbs/acre} \times 0.20 = 160 \text{ lbs/acre}$ @ $\$0.30/\text{lb} = \$48/\text{acre}$. If 1200 acres are being harvested the result is a loss of \$57,600 for that week by the industry.

Mangoes

Mango growers have recently been experiencing the abnormal events of multiple flowerings in a single year. Multiple flowerings require more applications of copper fungicides to protect each crop. Under such conditions, disease control requires a **maximum single application rate of 3.2 lb Cu²⁺ per acre** and a **maximum annual application rate of 48 lb Cu²⁺ per acre**.

Macadamia Nuts

Hawaii's **macadamia nut** growers are not currently using any copper products, but the conditions when use of copper pesticides is necessary could easily arise. In wet production areas, there have been devastating *Phytophthora* outbreaks. Growers in these areas would require the availability of copper pesticides if their situation becomes serious. Growers suggest that the maximum **rate per application be increased to 3.5 lb per acre** with a 7-day PHI and that the maximum annual use remain at 9.44 lb per acre. This would give growers flexibility to adjust use rates per application according to tree (canopy) size.

Vegetable Crops

In Hawai'i, copper is important to the production of many vegetable crops. Growers often do not have alternative controls, especially for bacterial diseases. Crops such as fruiting vegetables and cucurbits are

harvested frequently, even daily, once harvesting begins. Workers often must access fields via treated areas not just for harvesting, but for other activities, such as pruning and trimming. A 48-hour REI would cause great difficulties in activity scheduling.

Ornamentals

The 48-hour REI would be a hardship for some of Hawai'i's ornamental growers. Many growers have a poinsettia crop intermixed with other ornamentals. Opportunities to apply copper would be limited to periods where the workers were not in the fields pulling plants for market, weeding, checking irrigation systems, etc. Generally, the recommendation is to apply copper-based fungicides after periods of rainfall and high humidity. The two types of time periods do not necessarily coincide, so a 24-hour REI is much easier from a management and disease control standpoint. A 48-hour REI may take copper based fungicides out of the rotations of many growers.

Some ornamental growers, however, do not have alternatives. The nursery industry experiences bacterial related rot of *Dracaenas* and bacterial leaf/stem spot on some palms species, especially fishtail palms. The copper based fungicides are the only recommended treatment for these bacterial problems. In Hawai'i's tropical environment, these bacterial problems could be very devastating if there were no chemical control products available.

Contributors to this set of comments include Extension agents and specialists of the College of Tropical Agriculture and Human Resources, the Hawai'i Farm Bureau Federation, growers and other representatives of Hawai'i's papaya, banana, macadamia nut and mango industries and a chemical vendor.

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