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## Malathion Risk Mitigation -- Hawaii Response

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Tom,

Some clarification, please.

Attached is the Table 1 which I submitted and I believe served as the source for the Hawaii requests in the table you sent me earlier today (Tuesday, October 24).

1. We did not submit any comments about brussels sprouts or broccoli raab. May I conclude these are in the table as Hawaii requests in error?
2. We did request a 12-hours REI for broccoli and Chinese broccoli. Your table indicates 24 hours. May I conclude these are typos? If not, do you want us to address these two sites in terms of a 24-hour REI?

In addition to the crops in your table, we requested a 12-hour REI for:

cantaloupe;  
celery;  
eggplant;  
oriental eggplant;  
lettuce, head;  
lettuce leaf;  
limes\*;  
melons;  
mint;  
onions, bulb;  
onions, green;  
oranges\*;  
papaya;  
parsley;  
peas, green;  
peppers;  
potatoes;  
pumpkins;  
radishes;  
summer squash;  
sweet potatoes;  
tangerines\*;  
tomatoes;  
watercress;  
watermelons;  
yams.

\*I don't think we will continue our request for 12-hour REIs citrus crops.

In addition to the crops in your table, we requested a 24-hour REI for:  
mango; pasture & rangeland.

3. Do you anticipate that we will be asked to address the requested REI's in the above two lists?

Thank you,  
Cathy

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On 24 Oct 2006 at 17:31, Moriarty.Thomas@epamail.epa.gov wrote:

Thank you again for your help on all this material Cathy.

(1) Pasture/Rangeland: number of applications per year and Pregrazing Interval (PGI) and Preharvest Interval (PHI) EPA would like to have additional information about why Hawaii has requested 8 applications for Pasture/rangeland (specific pest pressure, timing, impacts from pest pressure, etc.) Hawaii, and perhaps other growers have identified a need to have a 0-day Pregrazing Interval (PGI) for Pasture/rangeland, and along these lines, have inquired whether a 1-day PHI is equalivant to a 1-day PGI....EPA is looking into this.

(2) Pineapple: number of applications vs. total pounds applied per year. If EPA specified a yearly maximum of 5 lb ai/A for pineapple, would this meet the needs of the pineapple growers?

(3) Restricted Entry Interval (REI) for several crops I've attached a table that summarizes these crops and the application parameter associated with each.

(4) Other sites for the following sites, Hawaii has requested an increase in the number of applications. However, EPA cannot increase the number of applications since for these sites, as it has already set the values equal to the maximum supported values (i.e., the values supported with field trial data). Macadamia nut Bermuda grass Watercress Papaya

Call me with any questions, and we'll hopefully move through these issues quickly, thanks again Cathy.

Tom Moriarty  
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The Western IPM Center is headquartered in the UC Agriculture and Natural Resources Building at 2801 Second Street, Davis, CA 95618.

*Comments on Proposed Label Changes for Commercial Agricultural Crops for Malathion:  
Hawaii*

**Crop: Watercress**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the “EPA Proposed” Maximum Single Application Rate support your stakeholders’ malathion needs?

Yes.

**Maximum Number of Applications per Year**

- 1) Does the “EPA Proposed” Maximum Number or Applications per Year support your stakeholders’ malathion needs?

No.

- 2) If there are instances where the “EPA Proposed” Maximum Number of Applications per Year does not support their malathion needs then:

- (i) What is the maximum number of applications that are needed for this crop?

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- (ii) Why do growers need more applications than EPA proposes?

There are very few chemical control products for this crop.

- (iii) How often do growers need more applications than EPA proposes?

Annually.

**Minimum Application Interval (days)**

- 1) Does the “EPA Proposed” Minimum Application Interval support your stakeholders’ malathion needs?

Yes.

**EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders’ typical cultural practices for this crop?

Yes.

- (ii) How or why does the “Current EPA Proposed” REI interfere with the practices for this crop?

Harvesters could not travel through field to get to plots that need to be harvested.

- (iii) What is an acceptable REI for this crop?

12 hours.

**Crop: Cucumber**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the "EPA Proposed" Maximum Single Application Rate support your stakeholders' malathion needs?

Yes.

**Maximum Number of Applications per Year**

- 1) Does the "EPA Proposed" Maximum Number or Applications per Year support your stakeholders' malathion needs?

Yes.

**Minimum Application Interval (days)**

- 1) Does the "EPA Proposed" Minimum Application Interval support your stakeholders' malathion needs?

Yes.

**EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders' typical cultural practices for this crop?

Yes.

- (ii) How or why does the "Current EPA Proposed" REI interfere with the practices for this crop?

Workers are in the field on a daily basis performing activities such as harvesting and weeding.

- (iii) What is an acceptable REI for this crop?

12 hours.

**Crop: Papaya**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the "EPA Proposed" Maximum Single Application Rate support your stakeholders' malathion needs?

N/A

- 2) If there are instances where the "EPA Proposed" Maximum Single Application Rate does not support their malathion needs then:

- (i) What are the application rates that are needed for this crop?

1.25 lb ai/A

- (ii) Why do growers need an application rate other than that which EPA proposes?

N/A

- (iii) How often do growers need application rates other than that being proposed by EPA?

N/A

**Maximum Number of Applications per Year**

- 1) Does the "EPA Proposed" Maximum Number of Applications per Year support your stakeholders' malathion needs?

N/A

- 2) If there are instances where the "EPA Proposed" Maximum Number of Applications per Year does not support their malathion needs then:

- (i) What is the maximum number of applications that are needed for this crop?

15

- (ii) Why do growers need 15 applications per year?

Many applications are needed because of the insect pest problems in papaya, especially, Stevens leafhopper, white peach scale, and possibly the papaya mealybug. White peach scale is a relatively recent introduction which is currently found only on the islands of Hawaii (where 92% of papaya production is located) and Kauai. White peach scale is a serious post-harvest pest and can result in rejection of export shipments if found.

- (iii) How often do growers need more applications than EPA proposes?

The number of applications needed is dependent on pest pressures and environmental conditions.

**Minimum Application Interval (days)**

- 1) Does the “EPA Proposed” Minimum Application Interval support your stakeholders’ malathion needs?

N/A

- 2) If there are instances where the “EPA Proposed” Minimum Application Interval does not support your stakeholders’ malathion needs then:

- (i) What is the Minimum Application Interval that is needed for this crop (in days)?

3 days

- (ii) Why do growers need a Minimum Application Interval of three (3) days?

There are events where populations of pests (leafhoppers) explode and growers will need to return to the field to achieve control. This would occur for two or three applications.

More commonly, for leafhoppers or white peach scale control, growers will spray at one- to two-week intervals for two or three applications. They will not spray for another month or two. Then, they will spray once per month.

Few alternatives exist for these pests on papaya.

- (iii) How often do growers need the requested minimum application interval?

N/A

**EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders’ typical cultural practices for this crop?

Yes.

- (ii) How or why does the “Current EPA Proposed” REI interfere with the practices for this crop?

Growers need to get back into the field as soon as possible, often the next day to weed, fertilize, trim, rogue, re-plant, reapply pesticides (when pest pressures require application prior to their next scheduled spray). Rain can also interfere with these activities and may necessitate workers returning to the field shortly after malathion application.

- (iii) What is an acceptable REI for this crop?

12 hours.

**Crop: Macadamia Nuts**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the "EPA Proposed" Maximum Single Application Rate support your stakeholders' malathion needs?

Yes.

**Maximum Number of Applications per Year**

- 1) Does the "EPA Proposed" Maximum Number of Applications per Year support your stakeholders' malathion needs?

Yes, *but only under current conditions*. The growers expressed concern about their lack of ability to control any new economic pests which may be introduced. If such an introduction should occur, there would be the need for a product such as malathion for immediate control/eradication of the new pest

- 2) If there are instances where the "EPA Proposed" Maximum Number of Applications per Year does not support their malathion needs then:
  - (i) What is the maximum number of applications that are needed for this crop?
  - (ii) Why do growers need more applications than EPA proposes?

Malathion is an effective tool and can be a good deterrent to a newly introduced insect pest. And it is highly probable that multiple treatments with malathion may be necessary to eradicate these new pests if they are found in mature orchards with full tree canopies where thorough coverage is required.

Hawaii's ecosystem and agricultural crops are vulnerable to introductions of invasive species. While not all introduced species become established or become agricultural pests, a risk assessment study at the Kahului Airport intercepted 125 insect species not previously known in Hawaii for a sampling period of 130 days, for an average of almost one insect species per day. Most of the agriculturally important pests of Hawai'i are introduced species.

The *Pest Management Strategic Plan for Macadamia Nut Production in Hawaii* has identified seven insect pest groups which are economically or potentially economically important to macadamia nut production in Hawai'i. However, in South Africa, the world's third largest producer of macadamia nuts, there are some 60 insect and two mite species identified which are known to attack macadamia trees and fruit. Of these, stink bugs are the most important and in addition to the green stinkbug, *Nezara viridula* (L.) which is also a serious problem in Hawai'i, there are more than 30 other stinkbug species attack the flowers and developing nuts. In Australia, more than 150 that damage macadamia have been reported.

An emerging and possibly critical new pest in Hawai'i is the macadamia felted coccid (*Eriococcus ironsidei*/Williams) (Hemiptera: Eriococcidae). This insect was first collected from macadamia trees in the South Kona area in March 2005 and later was positively identified. Some areas became heavily

infested with this scale. This insect is originally from Australia, where it can become a severe problem on macadamia nut trees.

Malathion was not the main tool to manage this recently introduced pest. However, the concern of the macadamia nut growers for options in the event of an introduction of a potentially seriously damaging insect pest is not unfounded.

- (iii) How often do growers need more applications than EPA proposes?

Unpredictable.

**Minimum Application Interval (days)**

- 3) Does the "EPA Proposed" Minimum Application Interval support your stakeholders' malathion needs?

Yes.

**EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders' typical cultural practices for this crop?

No.

**Crop: Seed Corn**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the "EPA Proposed" Maximum Single Application Rate support your stakeholders' malathion needs?

Yes.

**Maximum Number of Applications per Year**

- 1) Does the "EPA Proposed" Maximum Number or Applications per Year support your stakeholders' malathion needs?

Yes.

**Minimum Application Interval (days)**

- 1) Does the "EPA Proposed" Minimum Application Interval support your stakeholders' malathion needs?

Yes.

**EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders' typical cultural practices for this crop?

Yes.

- (ii) How or why does the "Current EPA Proposed" REI interfere with the practices for this crop?

The industry in Hawai'i is concerned with and **opposed** to the 6 day restricted entry interval for detasseling and the 24 hour REI for all other activities (instead of the current 12 hour REI).

Malathion is used almost exclusively at time of pollination in corn nurseries and top cross/foundation seed production fields. Malathion helps control earworms that attack corn ears through the silk. It is at the time of silking when malathion is sprayed to control this pest. In top cross/foundation fields the female plants need to be detasseled before the same female plant silks emerge (thus assuring cross pollination and hybrid seed production). Detasseling requires several trips over several days through the same field in order to assure purity of the F1 seed produced from the cross pollination. A six day interval would not allow anyone into the field to complete the task of detasseling.

The industry is also **opposed** to the EPA suggested 24 hour REI for all other activities in seed corn fields from the standpoint that 1 full pollination day would be lost in the 24 hour cycle. Anyone who has pollinated corn nurseries understands that pollination windows are narrow and that to be locked out of an actively pollinating field for 24 hours hurts opportunities to make the desired hand pollinations. Twelve hour REI's are manageable from the standpoint that nurseries can be sprayed late in the afternoon and re entered the following morning, still within legal limits of the REI.

(iii) What is an acceptable REI for this crop?

12 hours.

**Crop: Grasses, Bermuda, forage, Pasture and Rangeland**

**Maximum Single Application Rate (1b a.i./A)**

- 1) Does the "EPA Proposed" Maximum Single Application Rate support your stakeholders' malathion needs?

NO, there is no consistency for the maximum single application rate. For example, the value for grasses, bermuda and forage is 1.25 lb. ai/A and the maximum value for pasture and rangelands, which consist of grasses and forage is 0.62 .b ai/A. The maximum single application rate should be made consistent at 1.25 lb. ai/A for all categories as they are similar.

- 2) If there are instances where the "EPA Proposed" Maximum Single Application Rate does not support their malathion needs then:

- (i) What are the application rates that are needed for this crop?

The proposed rate for pasture and rangelands (minimum rate of 0.62 lb ai/A) is below the rate supported by the registrants' and should remain in the range of 0.9375 to 1.25 lb ai/A to provide adequate control of the yellow sugarcane aphid (*Sipha flava*, Forbes) in Hawai'i.

- (ii) Why do growers need an application rate other than that which EPA proposes?

There is only one product formulation available for the control of the yellow sugarcane aphid (YSA) in Hawai'i and at the registrants' supported rate, control is not 100%. The lower rate proposed by EPA has not been tested or proven to be effective in the field, thus should not be lowered until evaluated.

- (iii) How often do growers need application rates other than that being proposed by EPA?

The YSA population dynamics are variable and dependant upon temperature, moisture and growing condition of the pasture and rangeland ecosystem. Generally there are two population spikes, in late Spring – early Summer period and late Fall - early Winter periods, requiring multiple applications per paddock per year.

**Maximum Number of Applications per Year**

- 1) Does the "EPA Proposed" Maximum Number of Applications per Year support your stakeholders' malathion needs?

NO, due to YSA population dynamics as stated in 2(iii), above, multiple applications are required to control spread of the insects during the periods when the insect populations are rapidly expanding.

- 2) If there are instances where the "EPA Proposed" Maximum Number of Applications per Year does not support their malathion needs then:

- (i) What is the maximum number of applications that are needed for this crop?  
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- (ii) Why do growers need more applications than EPA proposes?

The YSA population dynamics is variable and dependant upon temperature, moisture and growing condition of the pasture and rangeland ecosystem. The YSA population in Hawaii can be maintained year round due to mild climatic conditions in the sub-tropical environment. Generally there are two population spikes, in late Spring – early Summer period and late Fall - early Winter period, requiring multiple applications per paddock per year. A minimum of two applications and a maximum of four applications per paddock per year are recommended.

- (iii) How often do growers need more applications than EPA proposes?

This is uncertain as the conditions for YSA is dependant upon climatic conditions, which has been highly variable and inconsistent of the past two decades. The option to allow more than one application per year for crop protection during infestations should be considered.

#### **Minimum Application Interval (days)**

- 1) Does the “EPA Proposed” Minimum Application Interval support your stakeholders’ malathion needs?

There are no “EPA Proposed” Minimum Application Intervals in Table 1.

- 2) If there are instances where the “EPA Proposed” Minimum Application Interval does not support your stakeholders’ malathion needs then:

- (i) What is the Minimum Application Interval that is needed for this crop (in days)?

1 day

Most of the control is done by spot treatment and not the entire pasture area. In pastoral systems, normally there are multiple paddocks which breaks up the whole pasture/grazing area and the animals are rotated to each paddock. The re-treatment interval could be zero days, as long as there were no cattle in the paddock at the time of treatment.

#### **EPA Proposed Restricted Entry Interval (REI)**

- (i) Does the *Current* EPA Proposed REI interfere with your stakeholders’ typical cultural practices for this crop?

The current REI for **grasses, Bermuda and forage** does **not** interfere with typical cultural practices.

The current REI for **pasture and rangelands** is in question. We request that the REI be the same interval as for grasses, Bermuda and forage crops; 24 hours REI.

- (ii) How or why does the “Current EPA Proposed” REI interfere with the practices for this crop?
- (iii) What is an acceptable REI for this crop?  
The acceptable REI for pasture and rangelands should be 24 hours.

### **Other Comments**

Malathion has been an important tool for the control of the yellow sugarcane aphid (*Sipha flava*, Forbes) in Hawaiian pastures and rangelands, since the discovery of the insect in the state in 1989. The only formulation available for control of YSA in pastures and rangelands in Hawaii is Clean Crop Malathion 57 EC. At current rates of 0.9375 to 1.25 lb ai/A, malathion provides moderate control of YSA. Multiple applications per paddock per year may be required due to the multiple spikes per year observed in the YSA population dynamics.