
Malathion Use on Various Food and Forage Crops in Hawaii

Date: May 25, 2006

To: [Teung Chin](#)

CC: [Thomas Moriarty](#), [Rick Melnicoe](#)

From: [Cathy Tarutani](#)

Subject: Malathion Proposed Application Values

[Attachment 1](#)

[Attachment 2](#)

[Attachment 3](#)

Teung,

Hawaii's comments on EPA's proposed application values for malathion and suggested changes for Table 1 are attached. (The ULV formulation is not an important product in Hawaii.)

We appreciate being allowed some extra time to comment on this issues, which is important to many of our growers.

If you have any questions or concerns, please contact either Mike Kawate (mike@hpirs.stjohn.hawaii.edu, 808/956-6008) or me.

Mahalo,
Cathy

[Cathy Tarutani](#)

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May 25, 2006

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Agricultural Research Service
U.S. Department of Agriculture
4700 River Road, Unit 149
Riverdale, MD 20737-1237

Subject: Comments in response to the "Request to Review and Provide Comments on Proposed Use Rates for Commercial Agricultural Crops for Malathion."

The following comments are being submitted in response to the Request to Review and Provide Comments on Proposed Use Rates for Commercial Agricultural Crops for Malathion." These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use of malathion on various food and forage in Hawai'i.

Dear Teung,

Attached is information about malathion use on various food and forage crops in Hawai'i. For Table 1, where our stakeholders are proposing values other than EPA proposed, we have indicated our stakeholders proposed values and comments in red. Also attached are the answers to your questions for some of the crops concerned.

Malathion is used on a number of crops so it is difficult to characterize every scenario in which it may be used. It is a very inexpensive insecticide that is not an RUP so availability and use are widespread. It is effective on some species of aphids and on caterpillars, which are the main vegetable crop uses for the product in Hawaii. Malathion is of particular importance to **papaya** producers, especially for the control of Stevens leafhopper, white peach scale, and possibly the papaya mealybug.

There is a great deal of concern about the EPA's Proposed Restricted Entry Intervals (REI). Growers of some **vegetable crops**, such as cucurbits, harvest on a daily basis for the duration of the harvest period. For **watercress**, and other crops, extending the REI to 2+ days will make it difficult for workers to get to harvest sites if they have to access them through fields that are still under REI. Since many crops in Hawaii (in particular **vegetables** and **papaya** and **mango**) are constantly being harvested and planted and land, for the most part is limited, there are concerns about major logistical problems associated with having to hand harvest and work around areas that still may be under REI. With sequential plantings being placed side by side a constant awareness and reminder would need to be established so that a worker doesn't, mistakenly, wander in to an area under REI even though it could be right next to an area being harvested. If the proposed REIs are incorporated into malathion product labels, it may be difficult for many farmers to use the product at all and for the **watercress industry** that could be devastating since very few insecticide alternatives exist.

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For **forage grasses and pasture and rangeland**, there is only one product available for the control of the yellow sugarcane aphid (YSA) in Hawai'i at the registrants' supported rate, control is not 100%.

Macadamia nut growers have expressed concern that the proposed maximum of two(s) applications per year could leave them without sufficient tools to deal with an invasion of introduced species.

Malathion is an important chemistry for Hawai'i's **seed corn** industry for the control of earworms in seed corn fields. This is even more critical in Hawai'i where the options of earworm chemistries is very limited. Seed corn producers are concerned with and opposed to the increase from the current 12-hour REI to the proposed 6-day REI for detasseling and the 24-hour REI for other activities.

Comments submitted by:



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Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI* | | | Notes |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Alfalfa | Supported | 1.25 | 2 per cutting | 14 | 0 | 12 hours | 24 hours | | |
| | Average | 1.0 | 1.4 per cutting | - | - | | | | |
| | EPA proposed | 1.25 | 2 per cutting | 14 | 0 | | | | |
| Apricots | Supported | 3.75 | 4 | 7 | 6 | 12 hours | 4 days | | |
| | Average | 1.4 | 1 | - | - | | | | |
| | EPA Proposed | 1.5 | 2 | 7 | 6 | | | | |
| Asparagus | Supported | 1.25 | 9 | 7 | 1 | 12 hours | 24 hours | | OK |
| | Average | 1.25 | 2.1 | 7 | | | | | |
| | EPA proposed | 1.25 | 2 | 7 | 1 | | | | |
| Avocado | Supported | 4.70 | 2 | 30 | 7 | 12 hours | 5 days | | |
| | Average | 4.5 | 1.1 | - | - | | | | |
| | EPA proposed | CA: 4.7 FL: 4.7 | 2 1 | 30 - | 7 7 | | | | |
| Barley | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hours | | |
| | Average | 0.8 | 1 | | | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |

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|-------------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|---|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Beets, garden | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | Average | 2.1 | 1 | | | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |
| Blackberry | Supported | 2.0 | 4 | 7 | 1 | 12 hours | 2 days | | |
| | Average | 2.0 | 1.2 | 7 | - | | | | |
| | EPA Proposed | 2.0 | 4 | 7 | 1 | | | | |
| Boysenberry | Supported | 2.0 | 4 | 7 | 1 | 12 hours | 4 days | | |
| | Average | 1.2 | 3 | 7 | | | | | |
| | EPA proposed | 2.0 | 2 | 7 | 1 | | | | |
| Broccoli | Supported | 1.25 | 5 | 7 | 2 | 12 hours | 3 days | 12 hrs | Doesn't make sense, the REI is longer than the PHI. |
| | Average | 2.0 | 1 | 7 | | | | | |
| | EPA Proposed | 1.25 | 1 | 7 | 2 | | | | |
| Broccoli raab | Supported | 1.25 | 5 | 7 | 2 | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 1 | - | 2 | | | | |
| Broccoli, Chinese | Supported | 1.25 | 5 | 7 | 2 | 12 hours | 3 days | 12 hrs | Doesn't make sense, the REI is longer than the PHI. |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 1 | - | 2 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|------------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Brussels sprouts | Supported | 1.25 | 4 | 7 | 2 | 12 hours | 3 days | | |
| | Average | 1.4 | 1 | 7 | | | | | |
| | EPA Proposed | 1.25 | 1 | - | 2 | | | | |
| Cabbage | Supported | 1.25 | 10 | 7 | 7 | 12 hours | 3 days | 12 hrs | |
| | Average | 1.2 | 1.3 | 7 | | | | | |
| | EPA proposed | 1.25 | 2 | 7 | 7 | | | | |
| Cantaloupe | Supported | 1.0 | 6 | 7 | 1 | 12 hours | 2 days | 12 hrs | |
| | Average | 0.5 | 1 | | 1 | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 1 | | | | |
| Carrots | Supported | 1.25 | 7 | 7 | 7 | 12 hours | 2 days | | |
| | Average | 2.5 | 1.8 | 7 | - | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |
| Cauliflower | Supported | 1.25 | 5 | 7 | 2 | 12 hours | 3 days | 12 hrs | |
| | Average | 1.7 | 1 | - | - | | | | |
| | EPA Proposed | 1.25 | 1 | - | 2 | | | | |
| Celery | Supported | 1.5 | 2 | 7 | ? | 12 hours | 3 days | 12 hrs | |
| | Average | 1.5 | 1.4 | 7 | - | | | | |
| | EPA proposed | 1.5 | 2 | 7 | ? | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------------------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Chayote root | Supported | 1.56 | 2 | 7 | 0 | 12 hours | 3 days | | |
| | Average | 1.56 | 1 | ? | | | | | |
| | EPA proposed | 1.56 | 2 | 7 | 0 | | | | |
| Chayote fruit | Supported | 1.88 | 3 | 7 | 1 | 12 hours | 3 days | | |
| | Average | 1.75 | 2 | 7 | | | | | |
| | EPA proposed | 1.75 | 2 | 7 | 1 | | | | |
| Cherries (sweet) | Supported | 3.75 | 6 | 7 | 3 | 12 hours | 3 days | | |
| | Average | 2.0 | 3.1 | 7 | | | | | |
| | EPA proposed | 1.75 | 4 | 7 | 3 | | | | |
| Cherries (tart) | Supported | 3.75 | 6 | 7 | 3 | 12 hours | 3 days | | |
| | Average | 2.0 | 3.1 | 7 | | | | | |
| | EPA proposed | 1.75 | 4 | 7 | 3 | | | | |
| Chestnut | Supported | 5.0 | 4 | 7 | 2 | 12 hours | 4 days | | Proposed rates derived from other nut crops. |
| | Average | | | | | | | | |
| | EPA proposed | 2.5 | 3 | 7 | 2 | | | | |
| Chinese greens (Chinese cabbage) | Supported | 1.25 | 10 | 7 | 7 | 12 hours | 3 days | 12 hrs | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |

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| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |

| | | | | | | | | | |
|--------|--------------|------|---------------|----|---|----------|----------|--|---|
| Clover | Supported | 1.25 | 2 per cutting | 14 | 0 | 12 hours | 24 hours | | EPA requests information on typical number of cuttings per year, or alternatively typical number of crops per year. |
| | Average | | | 14 | 0 | | | | |
| | EPA Proposed | 1.25 | 2 per cutting | 14 | 0 | | | | |

| | | | | | | | | | |
|----------|--------------|------|----|---|---|----------|--------|---------------|--|
| Collards | Supported | 1.25 | 10 | 7 | 7 | 12 hours | 2 days | 12 hrs | |
| | Average | 1.25 | 6 | 7 | 5 | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |

| | | | | | | | | | |
|-------------|--------------|------|-----|---|---|----------|---|---------------|--|
| Corn, field | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 6 days for detassling and hand harvesting | 12 hrs | This is unacceptable. Detassling is timing critical. Increasing the REI to 6 days will probably eliminate the use of malathion in field corn. |
| | Average | 1 | 1.2 | 3 | 5 | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 7 | | | | |

| | | | | | | | | | |
|-------------|--------------|------|---|---|---|----------|---|---------------|---|
| Corn, sweet | Supported | 1.25 | 5 | 5 | 5 | 12 hours | 6 days for detassling and hand harvesting | 12 hrs | Same as above, especially as relates to hand harvesting. |
| | Average | | | | | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 5 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|--------------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Cucumber | Supported | 1.88 | 3 | 7 | 1 | 12 hours | 3 days | 12 hrs | Doesn't make sense, the REI is longer than the PHI. |
| | Average | 1.1 | 1.4 | 7 | 1 | | | | |
| | EPA Proposed | 1.75 | 2 | 7 | 1 | | | | |
| Dandelion | Supported | | | | | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |
| Dates | Supported | 4.25 | 6 | 7 | ? | 12 hours | 3 days | | <i>Dust Formulation only</i> |
| | Average | 2.5 | 2 | 7 | | | | | |
| | EPA Proposed | 2.75 | 3 | 7 | ? | | | | |
| Dewberry | Supported | 2.0 | 4 | 7 | 1 | 12 hours | 2 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 2.0 | 2 | 7 | 1 | | | | |
| Eggplant | Supported | 3.43 | 5 | 5 | 3 | 12 hours | 3 days | 12 hrs | Doesn't make sense, the REI is longer than the PHI. |
| | | 1.56 | 5 | 5 | 1 | | | | |
| | Average | 1.6 | 1 | 5 | 3 | | | | |
| | EPA Proposed | 1.56 | 4 | 7 | 3 | | | | |
| Eggplant, oriental | Supported | 3.43 | 5 | 5 | 3 | 12 hours | 3 days | 12 hrs | Doesn't make sense, the REI is longer than the PHI. |
| | | 1.56 | 5 | 5 | 1 | | | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.56 | 4 | 7 | 3 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|-------------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Endive (escarole) | Supported | | | | | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |
| Figs | Supported | 2.5 | 3 | 5 | 5 | 12 hours | 3 days | | |
| | Average | 2.0 | 1 | 5 | | | | | |
| | EPA Proposed | 2.0 | 2 | 5 | 5 | | | | |
| Flax | Supported | 0.5 | 1 | N/A | 52 (?) | 12 hours | 12 hours | | EPA requests information on typical Preharvest Interval for flax |
| | Average | 1.0 | 1 | | | | | | |
| | EPA Proposed | 0.5 | 1 | | 52 (?) | | | | |
| Garlic | Supported | 1.56 | 5 | 7 | 3 | 12 hours | 3 days | | |
| | Average | 1.8 | 2.1 | 7 | - | | | | |
| | EPA Proposed | 1.56 | 3 | 7 | 3 | | | | |
| Grain crops | Supported | | | | | | | | EPA requests additional information on types of grain crops treated with malathion, and typical application rates. |
| | Average | | | | | | | | |
| | EPA Proposed | | | | | | | | |

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| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|---|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|---|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Grain elevators | Supported | | | | | | | | EPA requests information on typical application rates and typical application practices. |
| | Average | 0.4 | 1 | | | | | | |
| | EPA Proposed | | | | | | | | |
| Grains, stored (Includes barley, corn, oats, rye and wheat) | Supported | Supported | Loading: 0.624 lbs ai/1000 bushels Storage: 0.312 lbs ai/100 bushels | 3 per storage period | 60 | | | | Dust formulation only EPA requests information on typical application rates and application practices for stored grains. 1 application of the 57 EC is usually made to empty grain bin prior to treatment with dust |
| | Average | | | | | | | | |
| | EPA Proposed | | | | | | | | |
| Grapefruit | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | | Typical rates reported for grapefruit may reflect ULV formulation rates. EPA requests typical application rates (EC, WP formulations) if these are different than what is reported here. |
| | Average | 0.5 | 3.7 | - | - | | | | |
| | EPA Proposed | 0.75 | 3 | 30 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|-----------------------------|-----------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Grapes, raisin, table, wine | Supported | 1.88 | 2 | 14 | 3 | 12 hours | 5 days | | EPA notes that typical rates to grapes is higher than the supported. EPA requests information on potential impact if application rate is lowered to the "supported" values. |
| | Average | 2.2 | 1.4 | 14 | | | | | |
| | EPA Proposed | 1.88 | 2 | 14 | 3 | | | | |
| Grasses, Bermuda, forage | Supported | 1.25 | 1 | - | 0 | 12 hours | 24 hours | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 1 | - | 0 | | | | |
| Guava | Supported | 1.25 | 13 | 3 | 2 | 12 hours | 2 days | | Typical application information is also being generated by Univ. of Hawaii. |
| | Actual--Hawai'i | 0.9375 | 2 | | | | | | |
| | EPA Proposed | | | | 2 | | | | |
| Hay, other | Supported | | | | | 12 hours | 24 hours | | EPA requests additional information on typical application rates on malathion applications to hay. |
| | Average | | | | | | | | |
| | EPA Proposed | | | | | | | | |
| Hops | Supported | 0.63 | 3 | 7 | 10 | 12 hours | 12 hr | | |
| | Average | .9375 | | | | | | | |
| | EPA Proposed | 0.63 | 3 | 7 | 10 | | | | |

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|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|---|
| | | | | | | Current | Current EPA Proposed | Needed | |
| Horseradish | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | Average | 1.25 | 3 | 7 | | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |
| Kale | Supported | 1.25 | 10 | 7 | 7 | 12 hours | 2 days | | |
| | Average | 1.9 | 1.7 | 7 | - | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 2 | | | | |
| Kohlrabi | Supported | 1.25 | 10 | 7 | 7 | 12 hours | 3 days | | |
| | Average | 1.25 | | 7 | 7 | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 7 | | | | |
| Kumquats | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | | EPA requests additional information on typical malathion rates applied to kumquats. |
| | Average | | | | | | | | |
| | EPA Proposed | 0.75 | 2 | 30 | 7 | | | | |

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| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|---------------------|--------|---|
| | | | | | | Current | Current PA Proposed | Needed | |
| Leeks | Supported | 1.56 | 5 | 7 | 3 | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.56 | 2 | 7 | 3 | | | | |
| Lemons | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | | |
| | Average | 1.2 | 1 | 30 | 7 | | | | |
| | EPA Proposed | 0.75 | 2 | 30 | 7 | | | | |
| Lespedeza | Supported | 1.25 | 2 per cutting | 14 | 0 | 12 hours | 24 hours | | EPA requests additional information on the typical number of cuttings per year. |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 2 per cutting | 14 | | | | | |
| Lettuce, head | Supported | 1.88 | 6 | 6 | 14 | 12 hours | 3 days | 12 hrs | |
| | Average | 2.0 | 1.1 | 7 | - | | | | |
| | EPA Proposed | 1.88 | 2 | 6 | 14 | | | | |
| Lettuce, leaf | Supported | 1.88 | 6 | 5 | 14 | 12 hours | 3 days | 12 hrs | |
| | Average | 2.0 | 1.1 | 7 | - | | | | |
| | EPA Proposed | 1.88 | 2 | 5 | 14 | | | | |
| Limes | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | 12 hrs | |
| | Average | 1.4 | 1 | 30 | 7 | | | | |
| | EPA Proposed | 1.4 | 1 | 30 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|---------------------|--------|-------|
| | | | | | | Current | Current PA Proposed | Needed | |

| | | | | | | | | | |
|------------|--------------|-----|---|---|---|----------|----------|--|--|
| Loganberry | Supported | 2.0 | 4 | 7 | 1 | 12 hours | 24 hours | | |
| | Average | 2.0 | 4 | 7 | | | | | |
| | EPA Proposed | 2.0 | 2 | 7 | 1 | | | | |

| | | | | | | | | | |
|---------------|--------------|------|----|---|---|----------|----------|--|--|
| Macadamia nut | Supported | 0.94 | 7 | 7 | 1 | 12 hours | 24 hours | | *Under the current situation two applications of malathion per year is acceptable to Hawaii's macadamia growers. However, the growers expressed concerns 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. |
| | Average | | | | | | | | |
| | EPA Proposed | 0.94 | 2* | 7 | 1 | | | | |

| | | | | | | | | | |
|-------|-----------------|--------|-----|-----|---|----------|--------|----------|---|
| Mango | Supported | 1.25 | 8 | 7 | 1 | 12 hours | 2 days | 24 hours | Typical malathion use information on mango is also being generated by Univ. of Hawaii |
| | Actual--Hawai'i | 0.9375 | 10 | 14 | 1 | | | | |
| | EPA Proposed | tbd | tbd | tbd | 1 | | | | |

| | | | | | | | | | |
|------------------------------|-----------|-----|---|---|---|----------|--------|--------|---------------------------------------|
| Melons: Cantaloupe, water | Supported | 1.0 | 6 | 7 | 1 | 12 hours | 2 days | 12 hrs | Doesn't make sense, the REI is longer |
| | Average | 0.9 | 1 | 7 | 1 | | | | |

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| | | | | | | | | | |
|--------------|--------------|-----|---|---|---|--|--|--|----------------------|
| and honeydew | EPA Proposed | 1.0 | 2 | 7 | 1 | | | | than the PHI. |
|--------------|--------------|-----|---|---|---|--|--|--|----------------------|

| | | | | | | | | | |
|------|--------------|------|---|---|---|----------|--------|---------------|--|
| Mint | Supported | 0.94 | 3 | 7 | 7 | 12 hours | 2 days | 12 hrs | |
| | Average | | | | | | | | |
| | EPA Proposed | 0.94 | 3 | 7 | 7 | | | | |

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |

| | | | | | | | | | |
|-----------|--------------|-----|-----|-----|---|----------|---------|--|--|
| Mushrooms | Supported | 1.7 | 4 | 3 | 1 | 12 hours | (..?..) | | |
| | Average | | | | | | | | |
| | EPA Proposed | tbd | tbd | tbd | 1 | | | | |

| | | | | | | | | | |
|----------------|--------------|------|---|---|---|----------|--------|---------------|--|
| Mustard greens | Supported | 1.25 | 6 | 3 | 7 | 12 hours | 2 days | 12 hrs | |
| | | 2.50 | 3 | 7 | 7 | | | | |
| | Average | 1.25 | 6 | 7 | 5 | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |

| | | | | | | | | | |
|------------|--------------|------|-----|----|---|----------|--------|--|--|
| Nectarines | Supported | 3.75 | 4 | 7 | 7 | 12 hours | 4 days | | EPA notes that typical rates to nectarines is greater than the supported rate. |
| | Average | 9.0 | 1.4 | 14 | 7 | | | | |
| | EPA Proposed | 3.0 | 3 | 7 | 7 | | | | |
| | | | | | | | | | EPA requests information on potential impact if application rate is |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | lowered to the proposed values. |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| Nuts | Supported | 2.5 | 3 | 7 | 7 | 12 hours | 4 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 2.5 | 3 | 7 | 7 | | | | |
| Oats | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hours | | |
| | Average | 1.1 | 1 | | 7 | | | | |
| | EPA Proposed | 1 | 2 | 7 | 7 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Okra | Supported | 1.5 | 6 | 7 | 1 | 12 hours | 24 hour | | EPA proposes to remove aerial application to Okra. Please provide information on the necessity of aerial application for application of malathion to okra. |
| | Average | 1.2 | 4.8 | 7 | - | | | | |
| | EPA Proposed | 1.2 | 5 | 7 | 1 | | | | |
| Onions, bulb | Supported | 1.56 | 6 | 7 | 3 | 12 hours | 3 days | 12 hrs | |
| | Average | 1.2 | 1.5 | 7 | - | | | | |
| | EPA Proposed | 1.56 | 2 | 7 | 3 | | | | |
| Onions, green | Supported | 1.56 | 6 | 7 | 3 | 12 hours | 3 days | 12 hrs | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.56 | 2 | 7 | 3 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | |
|-----------------------|-----------------|--|--|--|--|----------------|-----------------------------|---------------|---|
| Oranges | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | 12 hrs | EPA's average rates may reflect ULV rather than the EC Please provide info. on typical rates (EC, WP formulation) if different from reported values. |
| | Average | 0.6 | 1.2 | 30 | 7 | | | | |
| | EPA Proposed | 0.75 | 2 | 30 | 7 | | | | |
| Papaya | Supported | 1.25 | 13 | 3 | 1 | 12 hours | 2 days | 12 hrs | Typical information from Univ. of Hawaii is being generated. |
| | Actual--Hawai'i | 1.25 | 15 | 3 | 1 | | | | |
| | EPA Proposed | tbd | tbd | tbd | 1 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Parsley | Supported | 1.5 | 2 | 7 | 2 or 7 | 12 hours | 3 days | 12 hrs | EPA request information on typical PHI. PHI reported here reflects PHI for related crops, broccoli, and cabbage/mustard greens respectively. |
| | Average | | | | | | | | |
| | EPA Proposed | 1.5 | 2 | 7 | | | | | |
| Parsnip | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |
| Passion fruit | Supported | 1.25 | 8 | 7 | 3 | 12 hours | 2 days | | Typical application information is also being generated by Univ. of Hawaii. |
| | Average | 0.9375 | | | | | | | |
| | EPA Proposed | tbd | tbd | tbd | 3 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | |
|-----------------------|--------------|--------|-----|--|---|----------|---------|--|---|
| Pasture and rangeland | Supported | 0.9375 | 2 | | 1 | 12 hours | (..?..) | | EPA requests information on typical uses of malathion for “pasture and rangeland” which is other than the APHIS sponsored Grasshopper, Mormon cricket Program |
| | Average | 0.62 | 1.2 | | | | | | |
| | EPA Proposed | 0.62 | 1 | | 1 | | | | |

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |

| | | | | | | | | | |
|---------|--------------|------|-----|----|---|----------|--------|--|--|
| Peaches | Supported | 3.75 | 5 | 11 | 7 | 12 hours | 4 days | | |
| | Average | 3.8 | 2.4 | - | 7 | | | | |
| | EPA Proposed | 3.0 | 3 | 7 | 7 | | | | |

| | | | | | | | | | |
|-------|--------------|------|---|---|---|----------|--------|--|--|
| Pears | Supported | 1.25 | 5 | 7 | 1 | 12 hours | 2 days | | |
| | Average | 1.7 | 2 | 7 | 1 | | | | |
| | EPA Proposed | 1.25 | 2 | 7 | 1 | | | | |

| | | | | | | | | | |
|-------------|--------------|-----|---|---|---|----------|--------|--------|--|
| Peas, green | Supported | 2.5 | 5 | 7 | 3 | 12 hours | 3 days | 12 hrs | |
| | Average | 1.0 | 1 | 7 | 3 | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 3 | | | | |

| | | | | | | | | | |
|-----------------|--------------|-----|---|---|---|----------|--------|--|--|
| Peas, succulent | Supported | 2.5 | 5 | 7 | 3 | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 3 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Pecans | Supported | 2.5 | 3 | 7 | 7 | 12 hours | 3 days | | EPA proposes to remove aerial application to pecan. EPA requests information on the necessity of aerial application for malathion use on pecans. |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|---------------|---|
| | Average | 2.7 | 1.6 | | | | | | |
| | EPA Proposed | 2.5 | 2 | 7 | 7 | | | | |
| Peppers | Supported | 1.56 | 5 | 5 | 3 | 12 hours | 24 hours | 12 hrs | |
| | Average | 1.1 | 1 | 5 | 3 | | | | |
| | EPA Proposed | 1.56 | 2 | 5 | 3 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Pineapple | Supported | 5.0 | 3 | 7 | 7 | 12 hours | 12 hours | | Application values are acceptable to Hawai'i's pineapple growers. |
| | Average | | | | | | | | |
| | EPA Proposed | 2.0 | 3 | 7 | 7 | | | | |
| Potatoes | Supported | 1.56 | 2 | 7 | 0 | 12 hours | 3 days | 12 hrs | |
| | Average | 0.9 | 1 | 7 | 0 | | | | |
| | EPA Proposed | 1.56 | 2 | 7 | 0 | | | | |
| Pumpkins | Supported | 1.0 | 6 | 7 | 1 | 12 hours | 2 days | 12 hrs | |
| | Average | 1.4 | 1.2 | 7 | | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 1 | | | | |
| Radishes | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | 12 hrs | |
| | Average | 1.3 | 1 | | 7 | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Raspberry | Supported | 2.0 | 4 | 7 | 1 | 12 hours | 24 hours | | |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|---|
| | Average | 2.0 | 1.1 | 7 | - | | | | |
| | EPA Proposed | 2.0 | 2 | 7 | 1 | | | | |
| Rice | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hours | | EPA wants all labels to specify a 7 day holding time EPA requests additional information on a 7 day required holding time. |
| | Average | 0.6 | 1 | | 7 | | | | |
| | EPA proposed | 1.25 | 2 | 7 | 7 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Rutabagas | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | Average | | | 7 | 3 | | | | |
| | EPA proposed | 1.25 | 3 | 7 | 7 | | | | |
| Rye | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hour | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.0 | 2 | 7 | 7 | | | | |
| Salsify | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.25 | 3 | 7 | 7 | | | | |
| Shallots | Supported | 1.56 | 5 | 7 | 3 | 12 hours | 3 days | | |
| | Average | | | | | | | | |
| | EPA Proposed | 1.56 | 2 | 7 | 3 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Spinach | Supported | 2.0 | 3 | 7 | 7 | 12 hours | 3 days | 12 hrs | EPA proposes to remove aerial uses EPA requests information on the necessity of aerial application for malathion use on spinach. |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|---------------|--|
| | Average | 1.6 | 1.2 | ? | 7 | | | | |
| | EPA proposed | 2.0 | 2 | 7 | 7 | | | | |
| Squash, summer | Supported | 1.88 | 3 | 7 | 1 | 12 hours | 3 days | 12 hrs | |
| | Average | 2.0 | 1.2 | 7 | 7 | | | | |
| | EPA proposed | 1.75 | 3 | 7 | 1 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Squash, winter | Supported | 1.0 | 6 | 7 | 1 | 12 hours | 2 days | | |
| | Average | 2.0 | 1.2 | 7 | 7 | | | | |
| | EPA proposed | 1.0 | 3 | 7 | 1 | | | | |
| Strawberry | Supported | 2.0 | 6 | 7 | 3 | 12 hours | 12 hours | | EPA proposed to remove aerial application EPA requests information on the necessity of aerial application for malathion use on spinach. |
| | Average | 2.0 | 3.4 | 7 | - | | | | |
| | EPA Proposed | 2.0 | 4 | 7 | 3 | | | | |
| Sweet potatoes | Supported | 1.56 | 2 | 7 | 0 | 12 hours | 3 days | 12 hrs | |
| | Average | | | 7 | | | | | |
| | EPA proposed | 1.56 | 2 | 7 | 0 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | |
|-------------|--------------|-----|---|---|--|----------|--------|---------------|---|
| Swiss chard | Supported | 1.5 | 2 | 7 | | 12 hours | 3 days | 12 hrs | <p>Swiss chard is part of the Leafy Vegetables (except Brassica) group for which data on the representative crop, celery, is missing.</p> <p>EPA requests typical information on PHI.</p> <p>Similar crop, lettuce has a 14 day PHI</p> |
| | Average | | | | | | | | |
| | EPA proposed | 1.5 | 2 | 7 | | | | | |

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |

| | | | | | | | | | |
|----------|--------------|------|---|----|---|----------|--------|--|--|
| Tangelos | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | | <p>This crop is supported by data on oranges therefore the supported use pattern is based on oranges.</p> <p>Additional information on typical application rates is requested as the reported typical rate may reflect ULV application, and not EC, WP applications.</p> |
| | Average | | | | | | | | |
| | EPA proposed | 0.75 | 2 | 30 | 7 | | | | |

| | | | | | | | | | |
|------------|--------------|------|---|----|---|----------|--------|---------------|---|
| Tangerines | Supported | 6.25 | 3 | 30 | 7 | 12 hours | 5 days | 12 hrs | <p>This crop is supported on data for oranges therefore the supported use pattern is based on oranges.</p> <p>Additional information on typical application rates is requested as</p> |
| | Average | | | | | | | | |
| | EPA proposed | 0.75 | 2 | 30 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|---|
| | | | | | | | | | | the reported typical rate may reflect ULV application, and not EC, WP applications. |
|--|--|--|--|--|--|--|--|--|--|---|

| | | | | | | | | | |
|-----------|--------------|------|-----|---|-----|----------|--------|--|---|
| Tomatillo | Supported | 3.43 | 5 | 5 | 3 | 12 hours | 2 days | | This crop is supported by data for tomato |
| | | 1.56 | 5 | 5 | 1 | | | | |
| | Average | 1.2 | 3.3 | ? | | | | | |
| | EPA proposed | 1.56 | 4 | 5 | 3/1 | | | | |

| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
|----------------|--|---|---|-------------------------------------|-------------------------------------|---------|----------------------|--------|-------|
| | | | | | | Current | Current EPA Proposed | Needed | |

| | | | | | | | | | |
|----------|--------------|------|-------|---|---|----------|--------|---------------|---|
| Tomatoes | Supported | 3.43 | 5 | 5 | 3 | 12 hours | 2 days | 12 hrs | EPA proposes to remove aerial application from tomato crop(s). EPA requests information on the necessity of aerial application for use of malathion on tomato crops. |
| | | 1.56 | 5 | 5 | 1 | | | | |
| | Average | 1.2 | 1 – 3 | 5 | 3 | | | | |
| | EPA proposed | 1.56 | 4 | 5 | 1 | | | | |

| | | | | | | | | | |
|---------|--------------|------|---|---|---|----------|--------|--|--|
| Turnips | Supported | 1.25 | 5 | 7 | 7 | 12 hours | 2 days | | |
| | | | | 7 | 7 | | | | |
| | Average | | | 7 | 7 | | | | |
| | EPA proposed | 1.25 | 3 | 7 | 7 | | | | |

| | | | | | | | | | |
|---------|--------------|-----|---|---|---|----------|--------|--|--|
| Walnuts | Supported | 2.5 | 3 | 7 | 7 | 12 hours | 3 days | | |
| | | | | 7 | | | | | |
| | Average | 3.8 | 1 | 7 | | | | | |
| | EPA Proposed | 2.5 | 3 | 7 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| Watercress | Supported | 1.25 | 5 | 3 | 3 | 12 hours | 2 days | 12 hrs | Need up to 8 applications per year. Very few options for this crop. |
|----------------|--------------|---|---|-------------------------------------|-------------------------------------|----------|----------------------|--------|--|
| | Average | | 8 | | | | | | |
| | EPA proposed | 1.25 | 3 | 7 | 3 | | | | |
| Watermelons | Supported | 1.0 | 6 | 7 | 1 | 12 hours | 2 days | 12 hrs | |
| | Average | 1.6 | 1.4 | 7 | 1 | | | | |
| | EPA proposed | 1.0 | 2 | 7 | 1 | | | | |
| Supported Crop | | Maximum Single Application Rate (lb a.i./A) | Maximum Number of Applications per Year | Minimum Application Interval (days) | Minimum Pre-Harvest Interval (days) | REI | | | Notes |
| | | | | | | Current | Current EPA Proposed | Needed | |
| Wheat, spring | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hour | | |
| | Average | 0.7 | 1.0 | 7 | 7 | | | | |
| | EPA proposed | 1.0 | 2 | 7 | 7 | | | | |
| Wheat , winter | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hour | | |
| | Average | 0.7 | 1.0 | 7 | 7 | | | | |
| | EPA proposed | 1.0 | 2 | 7 | 7 | | | | |
| Wild rice | Supported | 1.25 | 3 | 7 | 7 | 12 hours | 24 hour | | EPA proposes all labels to specify a 7 day holding time for rice. EPA requests additional information on a 7 day required holding time. |
| | Average | 0.4 | 1 | | | | | | |
| | EPA proposed | 1.25 | 2 | 7 | 7 | | | | |

Table 1. Malathion: Supported Maximum and Typical Use Patterns Compared to Changes Proposed by EPA for the EC, WP and Dust Formulations (updated April 4, 2006)

| | | | | | | | | | |
|------|--------------|------|---|---|---|----------|--------|---------------|--|
| Yams | Supported | 1.56 | 2 | 7 | 0 | 12 hours | 3 days | 12 hrs | |
| | Average | | | | | | | | |
| | EPA proposed | 1.56 | 2 | 7 | | | | | |

*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?

8

- (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?

18 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.