

## Malathion Risk Mitigation -- Hawaii Additional Response

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Tom,

The pineapple growers have indicated that the application parameters you suggested are acceptable. These are: annual maximum application rate of 5 lb a.i./A; a maximum of three (3) applications per year and a 24-hour REI.

For the other crops in the table, in general, the activity which workers need to get back into the field is irrigation system monitoring. This is particularly true for cabbage, broccoli and cauliflower. However, for the most part all of the listed crops (except cucumber) are overhead irrigated which means there is a need to get back in the field as quickly as possible to ensure that their systems are working properly. Workers must monitor, among other things, to make sure they are not leaking, thus flooding the crops and wasting water as well as moving the applied malathion off site. In order to address this issue, growers can live with the 24-hour REI, but the 2 day REI would make it difficult to monitor their irrigation systems.

Seed corn issues are address in the [attachment](#).

A concern expressed by the seed and vegetable producers is difficulty in local licensing some new chemistries in the state. For example, Actara (Thiamethoxam), a non-RUP in other states, has been consistently denied access to Hawaii, unless the products can be made available only with RUP status. This would be an effective insecticide for control of aphids, whiteflies, thrips, and plant/leafhoppers of various crops. This product has a Caution signal word with low mammalian toxicity (especially critical for handlers), a 12 hour REI, and narrow target specificity. This product is a potential replacement for malathion for some growers.

Unfortunately, in a short time frame, we are unable to address the specific issues and needs of most of the crops listed. Moreover, there is a large vegetable grower whose operation is probably the most likely to be impacted. However, their field staff and managers are not very skilled in using computers and our resource person for this farm has had prior commitments and been unable to communicate with them.

Although the time frame was short and the magnitude and breadth of this inquiry made it impossible to us to adequately determine and communicate the needs of our growers, we appreciate your efforts to understand their situation.

If you have further questions or concerns, please do not hesitate to contact either Mike Kawate (mike@hpirs.stjohn.hawaii.edu, 808/956-6008) or me.

Thank you,  
Cathy

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On 27 Oct 2006 at 16:35, Moriarty.Thomas@epamail.epa.gov wrote:

Cathy...

I've updated the table based on your last email and made a few changes. you can see that there still remains about 13-15 sites where Hawaii needs a shorter REI, let work on these.

tom m

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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.

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**Re: Re-registration of Malathion by the EPA and the HCIA opposition points.**

Cathy,

Once again thank you for your vigilance by keeping The Hawaii Crop Improvement Association (HCIA) abreast of the EPA re-registration notices. The HCIA position on Malathion is that this is an important chemistry for the control of earworms in seed corn fields. This is even more apparent in Hawaii where the choice of earworm chemistries is tightly restricted. The 1 lb rate / acre, two total applications per crop, 5 day reuse interval and the 5 day harvest interval suggested by the EPA all fall within Hawaii seed industry use patterns.

The area we are concerned with and **opposed** to is the 3 day re-entry interval for detasseling and the 24 hour re-entry interval (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 3-day interval would not allow anyone into the field to complete the task of detasseling, thus rendering it useless in terms of a systematic method to controlling Corn Earworms.

The HCIA is also **opposed** to the EPA suggested 24 hour re-entry interval in seed corn fields from the standpoint that 1 full pollination day would be lost in the 24 hour cycle. Anyone who's 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.

**In an effort to increase understanding I am submitting the following responses to the questions the EPA has posed.**

## **1. Why is a 12 hour REI needed for Seed Corn ?**

The seed corn industry in Hawaii is based on continuous nursery/field operations. In other words we grow corn in the State 12 months of the year; hence there is no winter fallow period in which insect pest population cycles can be controlled. Serious pests include Brown Plant hoppers (*Perigrinus maydis*) that transmit MMV (Maize Mosaic Virus), Thrips (*Frankliniella* spp.) that can transmit CLN (Corn Lethal Necrosis), Beet army worms (that can devastate a field if left unchecked and Corn earworms (*Helicoverpa zea*) that attack the developing ear. The first 3 insect pests are generally a problem in the early stages of corn growth where a 24 hour REI is not consequential. The Corn earworm though is a different story. Its behavior is to attack seed that is developing on the ear. The Hawaii seed industry produces a lot of seed in what is called Cross fields and also in Top-cross fields. Cross fields are large fields (often greater than 1 acre); these fields consist of a single male genotype that pollinates a single female genotype. Seed produced from this mating design produce F1 hybrids. Top-cross fields are used to produce many different F1 hybrids that go on for further testing. These fields have a single male genotype that is used to pollinate many different female genotypes. Because Top-cross fields have so many different females in them they have a wide range of dates in which the Female tassel can appear.

Needless to say, it is imperative to de-tassel the female prior to the tassel producing pollen in order to assure no self –contamination. In order to do this crews of people are sent into the fields to either mechanically or hand pull the tassels (often it can be both). This is not a one day operation; rather several trips are required to assure a uniform detasseled field, especially in the Top-Cross fields where the wide range of females could stretch detasselling out for more than 1 week. Since corn will pollinate itself and since the window of pollination can be stretched out over 3-7 days (depending on the tassel characteristics) it is necessary to enter the fields every day to detassel in order to avoid self-pollination (which renders the seed useless for further study or development).

Because the Hawaii Dept of Agriculture has clamped down on the registration of the newer insecticides that have been recently developed, the seed industry is left with few options to control Corn Earworms. Chemistries that have Carbamate or Organo-Phosphate backgrounds are pretty much what we have left in our arsenal to control these pests. In addition, the few other types of chemistries available (Pyrethroid-based, Spinosad etc.) should be used in a rotation strategy so resistance does not build up in the target pest. Malathion therefore helps with controlling the pest while at the same allowing the seed companies to rotate to the few other effective chemistries we have available to us at this time in Hawaii.

## **2. If the growers do need a shorter REI would they consider a lower application rate for the crop ?**

No, the industry would not consider a lower application rate of Malathion to control earworms based on the discussion in Question 1 in which resistance to Malathion is a very real concern (lower doses of chemistries often do not entirely kill the target pest

population leaving behind resistant types that breed and produce progeny with the resistance). What the industry would agree to however, is a single application of Malathion to flowering corn (the other application could be applied to corn in the earlier vegetative stages of growth). If the Seed industry would be allowed a single application at flowering and a 12 hour REI we would forgo using further application of this chemistry. This compromise will provide the industry with an alternative chemistry that can be used to kill corn earworms while reducing the risk of resistance build up.

**3. Other comments:** Because the seed industry is limited in the variety of insecticides it can use in Hawaii (this limitation is not felt in mainland North America), the few remaining pesticides we can use need to be used judiciously. A well conceived spray program that includes a single application of Malathion while still allowing crews to enter the field and remove tassels (12 hr REI) is a compromise the Hawaii Seed Industry can agree with.

Thanks Cathy,

Sincerely,

Michael Austin