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Subject: **Docket ID Number EPA-HQ-OPP-2018-0141-0001**
Comments in Response to NMFS Biological Opinion Issued under the
Endangered Species Act: Chlorpyrifos, Diazinon and Malathion

The following comments are being submitted in response to the March 23, 2018 Federal Register notice seeking for public comments in response to the National Marine Fisheries Service (NMFS) Biological Opinion Issued under the Endangered Species Act for Chlorpyrifos, Diazinon and Malathion. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on various crops grown in Hawaii that uses Diazinon, Malathion and Chlorpyrifos as an important component in their pest management decisions.

Diazinon

- Pineapple

In 2017, a total of 1,912.50 lbs ai of the restricted use pesticide Diazinon was sold in Hawaii (combined Maui and Oahu counties) (HDOA, 2017). However, Diazinon use in pineapple is considered to be very low according to pineapple growers. Diazinon is used in rotation with Malathion to control major insect pests in pineapple such as mealybugs, scale insects and lepidopterous pests.

Malathion

- Macadamia

Macadamia nut is the largest orchard crop grown in Hawaii with 16,000 harvested acres and a total farm value of 53.9 million as of last year (NASS, 2017). Macadamia Nut Association had reported previous use of Malathion to control red-banded thrips (*Selenothrips rubrocinctus*). Past information also revealed that Malathion was only used for the control of new pests as well as outbreaks of existing pest such as the southern green stink bug (*Nezara viridula*).

- Pineapple

Malathion is used by pineapple growers to control pests such as pineapple pink (*Dysmicoccus neobrevipes*) and gray mealybugs (*D. brevipes*), scale insects, lepidoptera and white grub larvae. Malathion is rotated with Diazinon 50W to control above-mentioned pests.

- Papaya and other tropical fruits

Malathion is used in papaya to control mealybugs, leafhoppers, aphids, white peach scale, fruit flies (Mediterranean fruit fly *Ceratitis capitata*, Melon fly *Bactrocera cucurbitae*, Oriental fruit fly *B. dorsalis*) and Stevens leafhopper *Empoasca stevensi*). The application rate for Malathion 8 Aquamul for pest control of papaya was 1.25 lb ai/Acre with maximum recorded at 6 applications per year depending on severity of pest infestation. In general, Malathion is also used in mango, guava and passionfruit for whiteflies and soft scale control.

-Vegetable crops

For vegetable crops, Malathion is used in **cabbage** to control diamondback moth and imported cabbage butterfly in Hawaii. In American Samoa, cabbage farmers use Malathion to control cabbage cluster caterpillar (*Crociodolomia pavonana*). **Cucumber** growers also use Malathion for aphids, fruit flies and pickleworm control. Pickleworm (*Diaphania nitidalis*) is a major pest of economic importance and attack crops of the Cucurbitaceae family (cucumber, zucchini, squash, pumpkin). Aphids and carmine spider mites (*Tetranychus cinnabarinus*) population are also managed by **eggplant** growers using Malathion. Other vegetable growers in the islands use Malathion to manage aphids and caterpillar pests as reported by the county extension agents in Hawaii.

Vegetable growers in Hawaii typically use Malathion at maximum rate and applied via hand gun sprayers or through boom application. This insecticide is used as a rotational product for both cabbage and cucumbers. There is very limited products available that are effective for control of major pests in cabbage and cucumber and potential resistance to Malathion may develop due to limited alternatives.

-Flowers and ornamentals

In Hawaii, malathion is used in ornamentals particularly jasmine (pikake), orchids (cut flowers) and potted plants.

-Seed corn

A representative of the seed corn industry in Hawaii had reported using Malathion for the control of corn thrips (*F. williamsi*) and corn planthoppers (*Peregrinus maidis*). This insecticide is applied at a rate of 1 lb ai/Acre with maximum of two applications per year. Ground application with sprayer is made during vegetative stage of the crop depending on pest pressure and following label recommendations. Alternative control practices employed in the farm prior to Malathion spray and when pest pressure is low, include the use of cultural practices, biological

control through natural presence of beneficial predatory insects within the vicinity, physical control through sticky traps, and use of trap crops. Malathion is alternately applied with pesticides of other modes of action to help avoid resistance to any one particular pesticide. Corn growers also emphasized that if the management option to use Malathion is lost, they would lose an effective and alternative mode of action product which could impact their yield and pesticide resistance management strategies.

Chlorpyrifos

Chlorpyrifos (Lorsban) use was reported by pineapple growers for the control of pineapple mealybugs and budmoths. The reported use of Chlorpyrifos showed an average single application rate of 1.25 lbs ai/Acre sprayed immediately after planting. Chlorpyrifos was considered an important part of the insect pest control program rotated with other insecticides such as Diazinon and Malathion. Pesticides containing Chlorpyrifos will be banned in the state of Hawaii starting January 1, 2019.

Comments were received from pineapple growers, corn seed grower, vegetable and fruit growers, the Hawaii Papaya Industry Association (HPIA) and the Hawaii Macadamia Nut Association (HMNA).

References Cited :

Hawaii Department of Agriculture (HDOA) 2017. Summary of Restricted Use Pesticides sold in 2017.

USDA National Agricultural Statistics Service (NASS). 2017 Hawaii State Agriculture Overview.

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