Comments in Response to the Notice of Availability of Certain Ethylenebisdithiocarbamates (EBDCs) and Ethylene Thiourea (ETU); Risk Assessments and Preliminary Risk Reduction Options (With Comments from Hawaii Farm Bureau Federation)

Date: February 18, 2005

To: Rick Melnicoe, WIPMC Director

From: Cathy Tarutani
American-affiliated Pacific Islands (API) Comment Coordinator
University of Hawaii
Honolulu, HI 96822

Re: Comments in Response to the Notice of Availability of Certain Ethylenebisdithiocarbamates EBDCs) and Ethylene Thiourea (ETU); Risk Assessments and Preliminary Risk Reduction Options Docket OPP-2004-0078

As indicated in the attached letter from the Hawaii Farm Bureau Federation, the EBDC fungicides are important in Hawaii for the economic viability of food crops (tomatoes, cucumbers, asparagus, field and seed corn, onions, watermelon, potatoes, melons (honeydew and cantaloupe), papayas and bananas). The EBDC fungicides are also important to the production of ornamentals, most importantly Dendrobium orchids and also other orchids, cut foliage, roses, poinsettias and a number of lei flower crops. EBDC fungicides are also used by the landscape industry and on golf courses.

Microsoft Word document (12 pages)

Comments submitted by:
Dr. Michael Kawate
Phone: (808) 956-6008

Cathy Tarutani
Phone: (808) 956-2004
Department of Plant and Environmental Protection Sciences
3190 Maile Way, St John 307
University of Hawaii
Honolulu, HI 96822

Hawaii Farm Bureau Federation
2343 Rose Street • Honolulu, Hawaii 96819
Phone: (808) 848-2074 • Neighbor-Islands: (800) 482-1272
Fax: (808) 848-1921 • Email: hfbf@hfbf.org

February 11, 2005
Memo to: Cathy Tarutani

From: Hawaii Farm Bureau Federation
RE: Comments on EBDC Re-registration

The Hawaiian Islands are blessed with year round sunshine, subtropical temperatures and rainfall which allow many different types of organisms to exist year round. This makes for a climate where produce production can occur for 365 days a year. It also is a climate that favors the proliferation of many different types of pathogenic organisms, especially fungal diseases. EBDC products are critical to the continued successful production of the crops for which it is labeled.

The range of diseases controlled by EBDC products includes: powdery mildew, late blight, early blight, anthracnose, Alternaria leaf spot, Cercospora leaf spot, downy mildew, leaf mold, Septoria leaf spot, gummy stem blight, Helminthosporium leaf blight, Botrytis leaf blight, neck rot, purple blotch, and rust. Crops grown in Hawaii which rely on EBDC products are tomatoes, cucumbers, asparagus, field and seed corn, onions, watermelon, potatoes, melons (honeydew and cantaloupe, and bananas. Total acreage treated with EBDC products annually in Hawaii exceeds 8,000 acres (Hawaii Agricultural Statistics Service, 2003).

Because of the year round disease pressure, the loss of EBDC products for crop production would increase resistance pressure on the remaining fungicides registered on crop plants. Hawaii Farm Bureau Federation understands the risks associated with the use of all pesticides but we feel that if the products are used in a manner consistent with the pesticide label then risk to applicators and workers is minimal. We support the continued registration of EBDC products for crop production in Hawaii.

Subject: Docket ID Number OPP-2004-0078
February 18, 2005

Comments in Response to the *Notice of Availability of Certain Ethylenebisdithiocarbamates EBDCs) and Ethylene Thiourea (ETU); Risk Assessments and Preliminary Risk Reduction Options*

As indicated in the attached letter from the Hawai‘i Farm Bureau Federation, the EBDC fungicides are important in Hawai‘i for the economic viability of food crops (tomatoes, cucumbers, asparagus, field and seed corn, onions, watermelon, potatoes, melons (honeydew and cantaloupe), papayas and bananas). The EBDC fungicides are also important to the production of ornamentals, most importantly Dendrobium orchids and also other orchids, cut foliage, roses, poinsettias and a number of lei flower crops. EBDC fungicides are also used by the landscape industry and on golf courses.

A. Bananas

Information provided by:
Scot C. Nelson, Associate Plant Pathologist, Komohana Research and Extension Center, College of Tropical Agriculture and Human Resources, UH, in consultation with the Hawaii Banana Industry Association; and
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH.

1. Common use practices

Product used:	The most important product as identified by the Hawai‘i Banana Industry Association is Dithane F45 (62719-396)
Typical use rate:	1.6-2.4 quarts per acre Dithane F45 (62719-396)
Application frequency:	Once every two weeks under extreme conditions, or up to approximately 20 times per year. Under less severe conditions product used every three weeks or more.
Timing of Application:	Based on disease severity estimates obtained from field scouting.
Application information:	Dithane F-45 is applied using a range of application equipment (backpack sprayers, mist blowers, etc.)
Products also used:	Dithane M45 (707-78); Dithane F45 (707-156)
Typical use rate:	1-2 quarts per acre
Application frequency:	1 application per week, especially during winter months
Timing of application:	Based on disease severity estimates obtained from field scouting.

2. Target pests.
   Primary target pest: Black leaf streak disease caused by the fungus *Mycosphaerella fijiensis*.
   Secondary target pests: 1) Anthracnose caused by *Colletotrichum musae*;
   2) Leaf spot diseases caused by *Curvularia* sp. and *Cordana musae*;
   3) Cigar end rot caused by *Verticillium theobromae*.
   4) Sigatoka (Dithane M45 (707-78); Dithane F45 (707-156))

3. Cost and efficacy impacts of alternative treatments.
   Alternative treatments include the use of other fungicides including Enable (fenbuconazole), Abound (azoxystrobin). Both of these fungicides are considerably more expensive than Dithane F-45.

4. Pest resistance issues involving alternatives to EBDC's.
   The fungicide Enable (fenbuconazole) is at high risk for the development of fungicide resistance within populations of *Mycosphaerella fijiensis*. Dithane F-45 is a critical management tool to suppress the development of fungicide resistance to alternative products such as Enable. Without Dithane F-45 it is likely that some banana farms would fail due to the lack of disease control. The fungicide options for resistance management in bananas are very limited, consisting of only three main fungicides (mancozeb, azoxystrobin and triazole fungicides). Therefore, it is very important to retain all fungicides registered for use on banana in Hawaii.

5. Percent of the crop is treated aerially or by ground equipment.
   100% of the crop is treated by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   The primary benefit of using Dithane F-45 to control black leaf streak disease in Hawaii is the reliable performance of the product and its value as a fungicide resistance management tool, and the ability of the product to control a wide range of fungal diseases.

B. Papayas

Information provided by:
Wayne T. Nishijima, Hawai‘i County Administrator and Plant Pathologist, Komohana Research and Extension Center, College of Tropical Agriculture and Human Resources, UH; and
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH.

1. Common use practices

Product used:	
Typical use rate:	1.5 pounds active per acre per application.
Maximum application rate:	1.875 pounds active per acre per application; 28 pounds active per growing cycle (time from flower to fruit=6 months)
Application frequency:	14 to 21 day intervals, shorter intervals during rainy periods
Timing of application:	All year round, after fruit set; Typically applied in the morning or when it is not raining
Worker activities:	Fungicide applications are usually scheduled when no other farming activity is scheduled for the day.
Product also used:	Dithane M45 (707-78); Dithane F45 (707-156); Maneb 80WP (4581-255)
Typical use rate:	1-2 quarts per acre
Application frequency:	1 application per week, especially during winter months
Worker activities:	Fungicide applications are usually scheduled when no other farming activity is scheduled for the day.

2. Target pests.
   Phytopthora palmivora: phytophtora blight, canker, fruit rot
   Colletotrichum gloeosporioides: anthracnose, chocolate spot
   Asperisporium caricae: black spot (fruit and leaves)
   Cersospora papayae: black spot
   Mycosphaerella sp.: dry rot, stem-end rot
   Fusarium spp.: fruit rot
   Lasiodiplodia theobromae: fruit and stem-end rot
   Oidium caricae: powdery mildew
   Rhizopus stolonifer: soft rot (field inoculum reduction)
   Stemphylium lycopersici: fruit spot
   Phomopsis sp.: wet fruit rot

3. Cost and efficacy impacts of alternative treatments.
   Copper sulfate (for anthracnose control) is not as effective as EBDCs and is phytotoxic to papayas under certain conditions. More expensive than EBDC.

   Metalaxyl is registered for control of *Phytophthora* but resistance is a concern as well as product costs.

   Chlorothalonil is registered for use on papayas but is not used because of higher cost, skin sensitivity by workers and sensitizing of fruit surfaces to damage by required quarantine heat treatments.

4. Pest resistance issues involving alternatives to EBDC's.
   Metalaxyl is known to become ineffective on crops where it is used continuously. It has not been used extensively for papayas because of this, and because of the higher costs

associated with its use. Metalaxyl is recommend for special circumstances to ward off epiphytotics or when rainy weather is predicted (prediction is very difficult).

Chlorothalonil is not being used by papaya growers with the exception of a few individuals.

5. Percent of the crop is treated aerially or by ground equipment.
   100% of the crop is treated by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   Risks of EBDC's: the threat of ETU residue.
   Risks of Alternatives to EBDC: are described above in 4 above.
   Chlorothalonil (for anthracnose control) has been shown to cause phytotoxicity to the fruit surface after quarantine treatments. Quarantine treatments (heat or irradiation) are required for papayas prior to export, because of the fruit fly population in Hawai'i. More expensive than EBDC.

   Benefits of EBDC's: very effective against a wide range of fungi;
   inexpensive compared to alternatives;
   no signs of fungal resistance.

7. Feasibility of using either dry flowables or water soluble packaging
   There is no particular need for use of WP formulations. DF, flowable, dissolvable bag formulation/packaging are fine

C. Vegetable Crops: Corn (including sweet, field and seed)
Cucumbers,
Tomatoes
Eggplant
Peppers

Information provided by:
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH; and
Hawai'i Farm Bureau Federation

1. Common use practices
   All vegetable crops above:
   Products used: Maneb 80WP (4581-255), dry flowable formulations
   Typical use rate: 1-2 pounds per acre
   Application frequency: 1 application per week, especially during winter months

   Corn and Tomato:
   Product used: Dithane M45 (707-78); Dithane F45 (707-156)
   Typical use rate: 1-2 quarts per acre
   Application frequency: 1 application per week, especially during winter months

2. Target pests.

Corn:	*Helminthosporium* leaf blight, rust, anthracnose, leaf spots
Cucumbers:	leaf spots (*Cercospora citrullina*), powdery mildew, downy mildew, anthracnose, gummy stem blight, leaf spots
Tomato:	early blight (*Alternaria solani*), late blight (*Phytophtora infestans,)* leaf spots, anthracnose, leaf mold
Eggplant:	Powdery mildew, blight, rust, anthracnose, leaf spots, leaf streak
Peppers:	leafspot *(Cercospora capsici),* anthracnose

3. Cost and efficacy impacts of alternative treatments.
   Alternatives are sometimes more costly, but work just as well.

4. Pest resistance issues involving alternatives to EBDC's.
   Because of the year round disease pressure, the loss of EBDC products for crop production would increase resistance pressure on the remaining fungicides registered on crop plants.

5. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

D. Vegetable and Melon Crops: Asparagus
Onions
Watermelons
Honeydew melons
Cantaloupe

Information provided by:
Hawai‘i Farm Bureau Federation

1. Common use practices
   Product used: dry flowable formulations

2. Target pests.

Asparagus:	Rust, blight, anthracnose, leafspot
Onions:	*Botrytis* leaf blight, purple blotch, neck rot, rust
Watermelons:	Powdery mildew; *Colletotrichum lagenarium*, anthracnose; gummy stem blight
Honeydew melons:	Powdery mildew, downy mildew, anthracnose, gummy stem blight, *Alternaria* leafspot
Cantaloupe:	Powdery mildew, downy mildew, anthracnose, gummy stem blight, *Alternaria* leafspot

3. Pest resistance issues involving alternatives to EBDC's.
   Because of the year round disease pressure, the loss of EBDC products for crop production would increase resistance pressure on the remaining fungicides registered on crop plants.

4. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

E. Dendrobium orchids

Information provided by:
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH; and
Hawai‘i Orchid Growers' Association

1. Common use practices

Product used:	Mancozeb (Dithane T/O)
Typical use rate:	1 to 1.5 lbs/100 Gal of water
Application frequency:	8 applications per year; infestations are more severe during the wetter winter months;
Timing of Application:	some apply in the afternoon after harvesting is completed; some apply in the mornings on weekends when no harvesting is occurring.
Application information:	Mancozeb (Dithane) is a critical part of the rotation for the control of *Phyllosticta* spp. program that is designed to mix the chemistries of fungicides.

2. Target pests.

Primary target pest:	*Phyllosticta* spp.
Secondary target pests:	*Alternaria* *Bipolaris* *Botrytis* *Calonectria* *Colletotrichum* *Fusarium* *Pseudocercospora*

3. Cost and efficacy impacts of alternative treatments.
   Alternatives (chlorothalonil, thiophanate-methyl, and thiram) are more expensive than mancozeb, sometimes costing two to three times as much (per 100 gal of solution). Mancozeb is highly valuable because it is a broad spectrum fungicide and one application controls diseases caused by several different types of fungi and oomycetes. Growers save on labor costs because they do not have to make multiple applications and mancozeb is still relatively inexpensive.

4. Pest resistance issues involving alternatives to EBDC's.
   If mancozeb were not used, there would be increased risk of resistance developing to the alternatives. Pathogen strains resistant to mancozeb are extremely rare or have not been widely reported.

5. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   Dithane is often used because it controls a broad spectrum of fungal pathogens.

   There have been no reported incidents to the Association or the Extension Service of worker reactions to Mancozeb applications. The benefits associated with Mancozeb fungicides is that it is cost effective, accepted as the industry standard for fungal protection, and its broad range of efficacy. Because of Hawaii's tropical climate, plants are susceptible to a wide array of fungal pathogens. Mancozeb fungicides have provided an effective pest management program with no reported resistance problems even after more than 40 years of usage!

   It should be noted, however, that several growers on the island of Oahu have found that Dithane has caused dermalogical rashes and itchiness in some of their sensitive workers and have discontinued using it. But the growers that don't use it pay a higher price for controlling pathogens and risk the increased possibility of pathogen resistance.

7. Feasibility of using either dry flowables or water soluble packaging.
   Water soluble packages (WSP) would be suitable to some of the larger scale operations, but many orchid growers have small scale operations that would be unable to use WSP because of the smaller quantity of solution they require.

E. Orchids

Information provided by:
Hawai‘i Orchid Growers' Association; and
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH

1. Common use practices

Products used:	Dithane, Fore, Pentathlon, Protect, and Cleary's
Application frequency:	7-14 day interval depending on spray programs with other rotational fungicides. If protectant fungicide sprays exceed a 3 week interval, disease problems are exacerbated.
Timing of Application:	Many growers time their spray applications to Fridays or Saturdays, the last working day of the week. This practice reduces worker contact and allows for weekend drying.
Application information:	Both mancozeb and maneb are very important for fungicide rotation programs that are designed to mix the chemistries of fungicides.

2. Target pests.
   Alternaria: early blight
   Bipolaris
   Botrytis
   Calonectria
   Colletotrichum: anthracnose
   Didymella: gummy stem
   Exherohilum
   Fusarium
   "Helminthosporiums"
   Phyllosticta
   Phytophthora: late blights, heart rots, damping-off, downy mildews, white rusts
   Pseudocercospora
   Pythium: damping-off
   Rhizoctonia: web blight, rusts
   Scab
   Septoria

3. Cost and efficacy impacts of alternative treatments.
   There are no effective alternative fungicides that encompass Mancozeb's broad spectrum activity, lack of fungal resistance problems, and industry acceptance as a cost-effective product. Alternative treatments are expensive, limit the number of applications due to resistance concerns, and typically do not provide broad-spectrum control. These alternatives are usually targeted to a specific fungal organism.

   If a disease is NOT controlled and 90% of the crop is unmarketable, application of mancozeb/maneb would reduce disease levels by 30 to 75%. These alternative chemicals are inhibitory by contact, thus spores that escape can germinate and cause disease. Many of the new fungicides have higher rates of efficacy, especially for those that are systemic. However, many of these highly effective systemic fungicides become ineffective as fungi become resistant to them after short periods (2-3 seasons or 5-7 applications).

4. Pest resistance issues involving alternatives to EBDC's.
   If a disease is NOT controlled and 90% of the crop is unmarketable, application of mancozeb/maneb would reduce disease levels by 30 to 75%. These alternative chemicals are inhibitory by contact, thus spores that escape can germinate and cause disease. Many of the new fungicides have higher rates of efficacy, especially for those that are systemic. However, many of these highly effective systemic fungicides become ineffective as fungi become resistant to them after short periods (2-3 seasons or 5-7 applications).

5. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   There have been no reported incidents to the Association or the Extension Service of worker reactions to Mancozeb applications. The benefits associated with Mancozeb fungicides is that it is cost effective, accepted as the industry standard for fungal

protection, and its broad range of efficacy. Because of Hawaii's tropical climate, plants are susceptible to a wide array of fungal pathogens. Mancozeb fungicides have provided an effective pest management program with no reported resistance problems even after more than 40 years of usage!

It should be noted, however, that several growers on the island of Oahu have found that Dithane has caused dermalogical rashes and itchiness in some of their sensitive workers and have discontinued using it. But the growers that don't use it pay a higher price for controlling pathogens and risk the increased possibility of pathogen resistance.

7. Feasibility of using either dry flowables or water soluble packaging.
   Many of Hawaii's orchid growers are smaller family farms and cannot utilize water soluble packaging which typically is utilized in 100 gallon tank mixes. Many nurseries have smaller spray tanks and back-pack sprayers which makes water soluble packets more difficult to handle. Therefore, usage of WP and dry flowables are still a very desirable formulation. We orchid growers feel it is very important to maintain and utilize the concept of resistance management.

F. Cut foliage
Roses
Poinsettia
Lei flower crops
Information provided by:
Cooperative Extension Staff, College of Tropical Agriculture and Human Resources, UH; and
Hawai'i Orchid Growers' Association

1. Common use practices

Product used:	Mancozeb (Dithane T/O)
Typical use rate:	1 to 1.5 lbs/100 gal of water
Application frequency:	Applications are more frequent in the wetter winter months.
Timing of Application:	Some apply in the afternoon after harvesting is completed; some apply in the mornings on weekends when no harvesting is occurring.
Other products used:	Dithane, Fore, Pentathlon, Protect, and Cleary's

2. Target pests.
   Alternaria: early blight
   Bipolaris
   Botrytis
   Calonectria
   Colletotrichum: anthracnose
   Didymella: gummy stem
   Exherohilum
   Fusarium
   "Helminthosporiums"

Phyllosticta
Phytophthora: late blights, heart rots, damping-off, downy mildews, white rusts
Pseudocercospora
Pythium: damping-off
Rhizoctonia: web blight, Rusts
Scab
Septoria

3. Cost and efficacy impacts of alternative treatments.
   For many pathogens there are alternatives to mancozeb, but most, if not are are more expensive - sometimes costing two to three times as much (per 100 gal of solution).

4. Pest resistance issues involving alternatives to EBDC's.
   If EBDCs were not used, there would be increased risk of resistance developing to the alternatives.

5. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   Growers that don't use EBDCs pay a higher price for controlling pathogens and risk the increased possibility of pathogen resistance.

7. Feasibility of using either dry flowables or water soluble packaging.
   Water soluble packages (WSP) would be suitable to some of the larger scale operations, but many orchid growers have small scale operations that would be unable to use WSP because of the smaller quantity of solution they require.

G. Golf Courses

1. Common use practices

Product used:	Fore
Typical use rate:	11 lbs/acre (target rate is 4 oz./1,000 sq. ft.)
Application frequency:	only when *Pythium* is observed, warm, humid weather conditions; about once or twice a year
Timing of Application:	in the morning, before play begins, one nine at a time to allow for drying
Application information:	used on greens only and only used in combination with Subdue or Aliette; only wet, chilly courses are expected to have *Pythium* problems

2. Target pests. *Pythium*

3. Cost and efficacy impacts of alternative treatments.
   Subdue use would probably double to 2 oz./1,000 sq. ft.

4. Pest resistance issues involving alternatives to EBDC's.
   No increased pest resistance has been yet observed using the Subdue/Fore combination approximately once a year. Resistance problems are expected if Subdue is used alone.

5. Percent of the crop is treated aerially or by ground equipment.
   100% by ground equipment.

6. Unique risks or benefits associated with the EBDC's or alternative products.
   Resistance problems are expected if Subdue, a systemic fungicide, is used alone.

7. Feasibility of using either dry flowables or water soluble packaging.
   It is feasible to use a WSP or dry flowable on golf courses.

Comments submitted by:

Dr. Michael Kawate
voice: 808/956-6008
e-mail: mike@hpirs.stjohn.hawaii.edu

Cathy Tarutani
voice: 808/956-2004
e-mail: cathy@hpirs.stjohn.hawaii.edu

Department of Plant and Environmental Protection Sciences
3190 Maile Way, St John 307
University of Hawai‘i
Honolulu, HI 96822

Hawaii Farm Bureau
FEDERATION

2343 Rose Street • Honolulu, Hawaii 96819
Phone: (808)848-2074 • Neighbor-Islands: (800)482-1272
Fax: (808)848-1921 • Email: hfbf@hfbf.org

February 11, 2005

Memo to: Cathy Tarutani

From: Hawaii Farm Bureau Federation

RE: Comments on EBDC Re-registration

The Hawaiian Islands are blessed with year round sunshine, subtropical temperatures and rainfall which allow many different types of organisms to exist year round. This makes for a climate where produce production can occur for 365 days a year. It also is a climate that favors the proliferation of many different types of pathogenic organisms, especially fungal diseases. EBDC products are critical to the continued successful production of the crops for which it is labeled. The range of diseases controlled by EBDC products includes: powdery mildew, late blight, early blight, anthracnose, Alternaria leaf spot, Cercospora leaf spot, downy mildew, leaf mold, Septoria leaf spot, gummy stem blight, Helminthosporium leaf blight, Botrytis leaf blight, neck rot, purple blotch, and rust. Crops grown in Hawaii which rely on EBDC products are tomatoes, cucumbers, asparagus, field and seed corn, onions, watermelon, potatoes, melons (honeydew and cantaloupe, and bananas. Total acreage treated with EBDC products annually in Hawaii exceeds 8,000 acres (Hawaii Agricultural Statistics Service, 2003). Because of the year round disease pressure, the loss of EBDC products for crop production would increase resistance pressure on the remaining fungicides registered on crop plants. Hawaii Farm Bureau Federation understands the risks associated with the use of all pesticides but we feel that if the products are used in a manner consistent with the pesticide label then risk to applicators and workers is minimal. We support the continued registration of EBDC products for crop production in Hawaii.

Date: February 4, 2005

Dr. Michael Kawate
UHM-CTAHR, Dept. of Plant and
Environment Protection Services
3190 Maile Way, St. John 307
Honolulu, HI 96822

Dear Dr. Kawate:

I am writing this letter of support for approximately seventy-five (75) papaya growers that have contracted with Tropical Hawaiian Products (THP), a handler, to produce papaya for export to the continental United States and Japan. THP cultivates approximately 1,000 acres of which approximately half is producing papayas at any given time.

THP growers depend on both the Mancozeb and Maneb fungicides to produce export quality papayas and to maximize the longevity of the papaya plant for 3.5 to 4 years. The major problem in the production of papaya is fungi that attack both the fruit and plant. These ethylene-bisdithiocarbamates (EBDC) fungicides have proven to be the most effective material and are sprayed at 2 to 3 week intervals to protect the fruit and plant from infection. This chemical is the standard of industry and is used extensively by all producers of papaya.

The EBDC fungicides have been the fungicide of choice for use on papaya for over 30 years because of its reasonable cost and its effectiveness on two of the most important diseases of papaya; Phytopthora blight and anthracnose.

Tropical Hawaiian Products strongly recommends to the Environmental Protection Agency (EPA) the re-registration of the EBDCs. Without these vital fungicides the papaya growers will slowly lose their crop and export plants will close.

Sincerely,

Loren Mochida
General Manager

Date: February 4, 2005

Administrator
Office of Pesticides and Toxic Substance
Environmental Protection Agency
401 M. Street, S.W.
Washington, D.C. 20460

SUBJECT: EPA DOCKET ID Number OPP-2004-0078

My name is Loren Mochida, Director of the "HAWAII PAPAYA INDUSTRY ASSOCIATION" (HPIA) in the State of Hawaii. Our industry cultivates over 1,700 acres of papaya and supports approximately 350 growers in the state. HPIA is concerned about the future availability of **ETHYLENE BISDITHIOCARBAMATES** (EBDC) fungicides.

EBDCs are critical to the production of papayas. Since papayas are primarily grown in moist tropical areas, they are highly susceptible to fungal diseases, particularly during the wet winter months. Fungal diseases of papaya are the most important limiting factors affecting fruit quality in papaya shipments from Hawaii. Tree canker, root rot, and fruit rot caused by Phytopthora palmivora during heavy rains can devastate a papaya orchard within weeks.

There are hardly any effective fungicides that are presently registered for use on papayas. Copper Sulfate is not as effective as EBDC fungicides and is phytotoxic to papayas under certain condition. Chlorothalonil (Bravo) can be used to control Anthracnose and stem end rots. However, Chlorothalonil has been shown to cause phytotoxicicity to the fruit surface after quarantine treatments. Export papayas are required to be heat treated or irradiated prior to exporting due the fruit fly population in Hawaii.

Grower protection when spraying is being monitored by the Hawaii Department of Agriculture (HDOA) and the 24-hour reentry to the field is being adhered to.

EBDCs are the only effective and broad-spectrum fungicide that is available to our growers. The industry humbly requests that the EPA maintain or re-register the EBDC fungicides for use on papayas. This will benefit all the growers and keep the industry alive in the State of Hawaii.

On behalf of the HPIA, please allow me to thank you for your understanding of the benefits of EBDC fungicides in papayas and the importance of it for the survival of the papaya industry.

Sincerely,

Loren Mochida
Director