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January 20, 2006

Dr. Teung F. Chin  
Office of Pest Management Policy  
USDA Animal & Plant Health Inspection Service  
4700 River Road, Unit 149 (Room 5A66)  
Riverdale, MD 20737-1237

RE: Dimethoate Uses on Several Crops in the West

Dear Teung,

This letter is in response to your December 30, 2005 request for information concerning the use of dimethoate on 15 crops with minor uses (less than 1% crop treated). In your request you stated that EPA is in the early stages of preparing risk mitigation decisions for dimethoate. Because of the August 2006 FQPA deadline to reassess all tolerances, dimethoate is scheduled by EPA for final decisions within the next several months. EPA has requested USDA assistance in obtaining benefits information for 24 crops with less than 1% crop treatment with dimethoate.

Per EPA, the crops with less than 1% crop treated are: alfalfa, asparagus, corn, cotton, grapefruit, onions, oranges, spring wheat, peanuts, pears, sorghum, tobacco, wheat, soybeans, and safflower.

Per EPA to OPMP, "Please consider the best way for us to work together to get at this information quickly, since our time frame is short. If a use is to be maintained, we will need some documentation to support that use in light of existing risks. Specifically, it would be helpful if growers could provide answers to as many of the following questions as possible."

I will respond for California, with several regional references.

Alfalfa<sup>1</sup>:

- (1) In what region (state/county, etc.) of the US does the use occur? Western U.S.
- (2) What are the pests that they feel are critical for the low usage of dimethoate use? Lygus bug and aphid weevil (AZ).

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<sup>1</sup> Pest Management Strategic Plan for Western U.S. Alfalfa and Clover Seed Production, Summary of a workshop held on February 18-19, 2004, Boise, ID. Issued 2-23-05, Revised 3-23-05.

- (3) What are the details of their typical usage pattern (e.g., number of applications per season, use rate per application, acres treated, and time of application in the season?) Used as a pre-bloom treatment or as a post-bloom clean-up spray. In California, the median number of sprays is 1, with a maximum of 3 per season<sup>2</sup>. Much use occurs during the winter months in AZ.
- (4) What worker activities typically occur when they need to apply dimethoate? The only worker activities with foliar contact in alfalfa would be scouting. Other operations include cutting, windrowing and baling.
- (5) What alternatives, if any, do they feel they would have to use to replace dimethoate? An advantage of dimethoate is that bees can be placed in the field sooner following application. If alfalfa weevil numbers do not exceed established threshold and lygus predators are present, control lygus bugs in with a selective insecticide such as Metasystox-R, timed to catch the first hatch of lygus bug nymphs in late May or early June. Treat before lygus bugs develop into 4th instar nymphs but when lygus hatch is nearly complete. Metasystox-R will not provide good control of late instar lygus nymphs and adults. If lygus predators are not present a less selective pesticide such as Capture, Warrior, Lorsban, Dimethoate or Supracide can be used with minimal disruption of predator populations.

One of the Regulatory Priorities in the Strategic Plan is to preserve the dimethoate registration.

Growers do not have very many cost effective treatments to control these pests in alfalfa. Dimethoate is a critical piece of their Integrated Pest Management program. It also plays a key role in AZ Insecticide Resistant Management programs for the Vegetable Industry. By having an effective alternative such as dimethoate for aphid control, growers can effectively control aphids in rotation with pyrethroids. What this does is 1) economically control aphids in alfalfa, and 2) keep the neonicotinoids, and other new chemistries that are critical to the produce industry out of alfalfa and preserve non-treated refugia from these a.i.'s for whiteflies. One of the best things Bayer didn't do was register Provado on alfalfa. This is one of the factors that many feel is responsible for the sustained efficacy of the neonicotinoids on whiteflies in the desert. Another reason to have dimethoate in alfalfa is it reduces reliance on pyrethroids, which are heavily used during the year on ALL crops. Many of major pests are exposed to pyrethroids in alfalfa (worms, thrips, whiteflies, etc.). Dimethoate allows the growers this alternative<sup>3</sup>.

Dimethoate is used on alfalfa forage and seed in Nevada. It was used on about 7500 acres according to my Ag Stats book for Nevada, which makes it a fairly important tool. It is used primarily on aphids and is considered a valuable tool for controlling them<sup>4</sup>.

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<sup>2</sup> California Department of Pesticide Regulation Pesticide Use Report 2004.

<sup>3</sup> Dr. John Palumbo, Vegetable IPM Specialist and IR4 Coordinator, University of Arizona, (928) 782-3836, jpalumbo@ag.arizona.edu.

<sup>4</sup> Dr. Jay Davison, Extension Specialist, University of Nevada, (775) 428-0202, davisonj@unce.unr.edu.

### Citrus<sup>5</sup>

- (1) In what region (state/county, etc.) of the US does the use occur? Reporting for California
- (2) What are the pests that they feel are critical for the low usage of dimethoate use? Use in California is primarily for citrus thrips and katydids and occasionally for black scale, citricola scale and various lepidopteran pests (worms).
- (3) What are the details of their typical usage pattern (e.g., number of applications per season, use rate per application, acres treated, time of application in the season?)
  - a. 0.25-lb rate used for katydids (used in April and May)
  - b. 1-2 lb rate used for citrus thrips and worms (used in April-June)
  - c. 1.8-3.75 lb rate used for scales (used May-October)
- (4) What worker activities typically occur when they need to apply dimethoate? Scouting, pesticide and fertilizer applications, cultivation, pruning and irrigation. Harvesting occurs prior to dimethoate applications.
- (5) What alternatives, if any, do they feel they would have to use to replace dimethoate?
  - d. Katydids: pyrethroids such as cyfluthrin and fenprothrin can be used, however, natural enemies are far more tolerant of organophosphates such as dimethoate used at very low rates than they are pyrethroids.
  - e. Citrus thrips: Many populations of citrus thrips in the San Joaquin Valley region of CA have developed resistance to dimethoate and so the primary insecticide used throughout the state for citrus thrips control is spinosad. Dimethoate is still used in some situations where resistance is not a problem. Maintaining registration of dimethoate is important, as it and other insecticides will be needed when citrus thrips populations develop resistance to spinosad.
  - f. Lepidoptera: Before petal fall when fruit is not present and slow pesticide action is acceptable, alternatives include *Bacillus thuringiensis* products and kryocide. After petal fall the tolerance for fruit damage drops, and requires faster acting insecticides. Alternatives at this time of year would be the carbamate methomyl, other organophosphates such as chlorpyrifos, or pyrethroids such as cyfluthrin or fenprothrin. Natural enemies are far more tolerant of organophosphates such as dimethoate used at very low rates than they are pyrethroids or carbamates.

Black scale and citricola scale: Other organophosphate insecticides are available for black scale control (malathion, methidathion) and citricola scale control (chlorpyrifos).

Dimethoate is used in all citrus varieties in AZ for control of citrus thrips and occasionally in mixes for woolly whitefly. Although alternatives are available, the loss of Dimethoate would hinder our ability to rotate insecticide classes, thus disrupting resistance management programs. There are not very many effective insecticides currently in use for thrips control in AZ citrus<sup>6</sup>.

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<sup>5</sup> Dr. Beth Grafton-Cardwell, IPM Specialist and Research Entomologist, Kearney Ag Center, 559-646-6591, bethgc@uckac.edu.

<sup>6</sup> David Kerns, Citrus IPM Specialist, University of Arizona, 928-782-3836, dkerns@ag.arizona.edu.

1. Spinosad - Most effective product available; limited number of applications; resistance is of concern.
2. Dimethoate - Effective early season product.
3. Formetanate - Very effective, but REI and other label restrictions greatly negate the amount used.
4. Cyfluthrin - Effective, but resistance appears to be developing.
5. Fenpropathrin - No longer effective due to resistance.

Cotton<sup>7</sup>:

- (1) In what region (state/county, etc.) of the US does the use occur? Reporting for California.
- (2) What are the pests that they feel are critical for the low usage of dimethoate use? Lygus bugs, occasionally for thrips.
- (3) What are the details of their typical usage pattern (e.g., number of applications per season, use rate per application, acres treated, time of application in the season?) Normally used early once per season, occasionally twice. Median use rate is 0.49 lb ai/ac. Range is 0.03 (probably spot treatment) to 0.52 lb ai/ac<sup>2</sup>.
- (4) What worker activities typically occur when they need to apply dimethoate? The only activity that might involve worker contact would be scouting.
- (5) What alternatives, if any, do they feel they would have to use to replace dimethoate?  
Dimethoate may be used early season for thrips, however acephate is the first choice.  
Pyrethroids + imidacloprid such as Leverage (bifenthrin and imidacloprid) are alternatives.  
Carbaryl, a new material, should target immatures.

Dimethoate is a compound that is occasionally used by AZ cotton growers. Most all treatments are made by ground in a band on very young cotton and principally for thrips (and other early season insect) control. As such, it has a niche fit for some growers, but would not be considered keystone. It can be important for some of the very oddball pests that sometimes attack desert cotton and for which there are few alternatives. Many of the replacements (including some of the new seed treatments) are not as broad spectrum as dimethoate<sup>8</sup>.

Use of organophosphates may cause aphid flare ups, so they are avoided as much as possible.

Pears<sup>9</sup>:

- (1) In what region (state/county, etc.) of the US does the use occur? Reporting for California.
- (2) What are the pests that they feel are critical for the low usage of dimethoate use? Western flower thrips, occasionally boxelder bugs, lygus and stinkbugs.
- (3) What are the details of their typical usage pattern (e.g., number of applications per season, use rate per application, acres treated, time of application in the season?) There were only seven

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<sup>7</sup> Dr. Peter Goodell, Area IPM Specialist and Research Entomologist, Kearney Ag Center, 559-646-6515, ipmpbg@uckac.edu

<sup>8</sup> Dr. Peter Ellsworth, IPM Specialist, University of Arizona, 520-568-2273, peterell@ag.arizona.edu.

<sup>9</sup> A Pest Management Strategic Plan Pear Production in California, November 2003,  
<http://www.ipmcenters.org/pmsp/pdf/CAPear.pdf>

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applications of dimethoate in 2004. The median rate was 1.23 lb ai/ac. Generally only one application was made, with a maximum of two<sup>2</sup>.

(4) What worker activities typically occur when they need to apply dimethoate? Scouting, irrigating. Little foliar contact by workers occurs.

(5) What alternatives, if any, do they feel they would have to use to replace dimethoate? No good alternatives for thrips. Fenprothrin plus dimethoate control bugs well.

Wheat:

(1) In what region (state/county, etc.) of the US does the use occur? Reporting for California.

(2) What are the pests that they feel are critical for the low usage of dimethoate use? Aphids.

(3) What are the details of their typical usage pattern (e.g., number of applications per season, use rate per application, acres treated, time of application in the season?) One application per season. The median application rate is 0.37 lb ai/ac, with a maximum rate of 0.46 lb ai/ac. Applications occur from late January through April<sup>2</sup>.

(4) What worker activities typically occur when they need to apply dimethoate? Minimal worker exposure. Scouts may have some contact.

(5) What alternatives, if any, do they feel they would have to use to replace dimethoate? Dimethoate is not used heavily in recent years. The alternative is disulfoton. The wheat growers would like to keep this material for times when aphids are severe<sup>10</sup>.

There is virtually no worker exposure to pesticides applied to wheat. Only occasional scouts might come in contact with foliage.

If you have any further questions, please contact me.

Sincerely,



Rick Melnicoe  
Director, Western IPM Center

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<sup>10</sup> Betsy Peterson, Associate Director of Technical Services and Programs, California Seed Association, 916-441-2251, bpeterson@cgfa.org