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The following information is provided to you from the Western Integrated Pest Management Center regarding the use of dimethoate on crops where this insecticide is used on less than 1% of the total crop acreage and is being sent in response to your December 30, 2005 request. You asked about use on many crops but in the six-state Pacific Northwest (PNW) region, comprised of Alaska, Idaho, Oregon, Montana, Utah, and Washington, the applicable crops are: alfalfa, alfalfa seed, asparagus, field corn, pear, safflower, sorghum, and wheat. In your request you asked the following five questions:

- (1) In what region (state/county, etc.) of the US does the use occur?
- (2) What are the pests that they feel are critical for the low usage of dimethoate use?
- (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?)
- (4) What worker activities typically occur when they need to apply dimethoate?
- (5) What alternatives, if any, do they feel they would have to use to replace dimethoate?

Recall that in February 2003 we submitted a somewhat detailed description of dimethoate use on PNW crops. This information is more detailed than what you asked for in this request but because it is germane to the topic I am also including excerpts from our February 28, 2003 response, containing use information on alfalfa and alfalfa seed crops, as attachments to this letter.

Alfalfa:

Q: In what region (state/county, etc.) of the US does the use occur?

A: Alfalfa growing regions of Oregon, Washington, Idaho, Montana, and Utah.

Q: What are the pests that they feel are critical for the low usage of dimethoate use?

A: Dimethoate is used in alfalfa to control pea aphid, blue aphid, spotted alfalfa aphid, lygus, grasshopper, and alfalfa weevil.

Q: 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: Because pest pressure varies in alfalfa across the PNW, dimethoate use in our region varies. In all cases dimethoate is applied at 0.5 # ai/A. In Washington dimethoate is typically only applied once per season to about 10% of Washington's alfalfa acreage or about 45,000 acres. Applications are made in the fall but may sometimes be made in the spring or mid-summer and occasionally a second application is needed. Dimethoate applications for grasshopper control are only made once every 5 years and when dimethoate is used in this manner it is only applied to 1% of the acreage. In contrast, over a two or three year period 80% of Utah's 550,000 acres of alfalfa, will be treated with dimethoate at least once per season, while 15% of the acreage receives a second application, and 5% is treated three times a season.

Q: What worker activities typically occur when they need to apply dimethoate?

A: Workers require field access following a dimethoate application for routine irrigation activities and pest scouting.

Q: What alternatives, if any, do they feel they would have to use to replace dimethoate?

A: Alternatives to dimethoate are permethrin (Ambush, Pounce), cyfluthrin (Baythroid, Renounce), and lambda-cyhalothrin (Warrior). Retaining dimethoate use on alfalfa is important for two reasons: it is considerably less expensive than the listed alternatives, and because the alternatives are all synthetic pyrethroids, dimethoate remains an important tool for resistance management.

Alfalfa Grown for Seed: Note that retaining dimethoate use on alfalfa seed crops has been identified as a regulatory priority in the [*Pest Management Strategic Plan for Western U.S. Alfalfa and Clover Seed Production, revised 3/23/05.*](#)

Q: In what region (state/county, etc.) of the US does the use occur?

A: Alfalfa seed is grown in Idaho, Montana, Oregon, Utah, and Washington.

Q: What are the pests that they feel are critical for the low usage of dimethoate use?

A: The main pest controlled by dimethoate in PNW alfalfa seed crops is lygus; however, dimethoate is also used to control spotted alfalfa aphid, other aphids, alfalfa weevil and grasshoppers.

Q: 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: There are two different use patterns for dimethoate use in alfalfa grown for seed; however, in both cases, when used dimethoate is applied at 0.25 to 0.5 # ai/A. In the Columbia Basin dimethoate is typically applied to nearly all of the Basin's 8,000 acres of alfalfa seed acreage in mid-August as a late-season cleanup spray. In this area dimethoate is only occasionally applied prebloom in a tank mix with lambda-cyhalothrin when there are outbreaks of pea aphids or heavy lygus infestations.

In alfalfa seed grown in the Treasure Valley (23,000 acres) growing region and in Utah (5,000 acres) dimethoate is used to control lygus as well as secondary pests such as pea aphid and

spotted alfalfa aphid. Dimethoate is used in a tank mix, typically applied with either bifenthrin (Capture) or lambda-cyhalothrin (Warrior) as a prebloom treatment. Typically this application is made in late May or early June and application is made only once. In the Treasure Valley 85% of the alfalfa seed acreage is treated each year with dimethoate.

Q: What worker activities typically occur when they need to apply dimethoate?

A: Workers require field access to perform routine irrigation activities and, 7 to 10 days following a prebloom application, workers require field access to bring in pollinators.

Q: What alternatives, if any, do they feel they would have to use to replace dimethoate?

A: The alternatives for the use of dimethoate are methomyl (Lannate), carbofuran (Furadan), and lambda-cyhalothrin (Warrior). Dimethoate use is important in alfalfa seed production because, as with alfalfa, it is much less expensive than the alternatives. Also because the mechanism of control is different than either the carbamates or the synthetic pyrethroid listed above, dimethoate use is very important in resistance management in alfalfa seed.

Asparagus: As you may be aware PNW asparagus production is declining. About 13,000 acres of asparagus were grown in Washington last year with another 1,000 acres produced in Oregon.

Q: In what region (state/county, etc.) of the US does the use occur?

A: Dimethoate is used in asparagus production in eastern Oregon and eastern Washington.

Q: What are the pests that they feel are critical for the low usage of dimethoate use?

A: Dimethoate is used for the control of asparagus aphid and secondarily this use also controls asparagus beetle.

Q: 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: Dimethoate applications are made to asparagus from late June through early Fall, after harvest is complete and the ferns have grown up. I was unable in the time allowed to obtain detailed information for the use of dimethoate on asparagus.

Q: What worker activities typically occur when they need to apply dimethoate?

A: Workers require field access to perform routine irrigation activities.

Q: What alternatives, if any, do they feel they would have to use to replace dimethoate?

A: The primary insecticide used in PNW asparagus production for the control of asparagus aphid is disulfoton (Di-Syston). However, dimethoate remains a very important alternative for this use. According to WSU's IPM Coordinator, Dr. Doug Walsh, there has been some interest in pursuing a Section 18 for the use of lambda-cyhalothrin (Warrior) on asparagus. Further, Dr. Walsh mentioned that tests of neonicotinoid compounds have shown these to be ineffective for the control of asparagus aphid.

Field Corn: Dimethoate is not used in PNW field corn.

Pear: Dimethoate use is not important in PNW pear production.

Safflower: Dimethoate is not an important insecticide in safflower production in our region.

Sorghum: Dimethoate is not an important insecticide for sorghum production in most states in the PNW. While some use has been reported in Washington for mite control, no details were forthcoming.

Wheat:

Q: In what region (state/county, etc.) of the US does the use occur?

A: Some dimethoate is used in wheat grown in Montana and Idaho.

Q: What are the pests that they feel are critical for the low usage of dimethoate use?

A: Dimethoate is used for the control of brown wheat mite.

Q: 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: No more than one dimethoate application is made per season at 1/3 to 1/5 pt/A. Applications are made sporadically when mites appear. It is estimated that <20,000 acres are treated with dimethoate each year.

Q: What worker activities typically occur when they need to apply dimethoate?

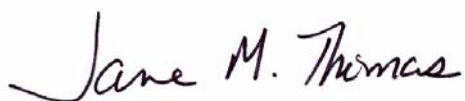
A: There are no worker activities in dryland wheat at the time of year when this product would be applied.

Q: What alternatives, if any, do they feel they would have to use to replace dimethoate?

A: According to the [High Plains IPM Guide](#) both chlorpyrifos (Lorsban) and disulfoton (Di-Syston) are labeled for use on wheat to control brown wheat mite but they are not recommended.

I have included a contact list should you have further questions. I hope that you find this information useful.

Sincerely,



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Attachment A
Dimethoate Use Information for Alfalfa from 2/28/03 Response

Alfalfa: In our region, dimethoate is used to control aphids (pea aphid and spotted alfalfa aphid), lygus, and weevil; and it also provides some mite control in alfalfa. Although alfalfa growers have the use of Warrior (lambda-cyhalothrin), retaining dimethoate use is very important because this chemical is much less expensive than alternatives and because it provides better control for some pests such as spotted alfalfa aphid and alfalfa weevil. (See the cost comparison provided under the alfalfa seed discussion.) Although dimethoate labels allow one application per cutting, estimates from Utah indicate that alfalfa acreage is treated as follows: 80% of acreage is treated once a year, 15% is treated twice a year, and 5% is treated three times a year. Growers in some geographic areas such as the Treasure Valley region (western Idaho and eastern Oregon) use less dimethoate. Alfalfa grower's biggest concerns are the proposed cancellation of aerial application and the proposed 15-day REI for arid regions.

It is estimated that 75% of current dimethoate alfalfa applications are made by air. Crop experts in Idaho have stated that the loss of aerial application for dimethoate use in alfalfa may preclude using this chemical altogether on this crop. Making dimethoate applications by ground is a problem for several reasons. Dimethoate is typically applied relatively close to harvest, in the warm season when the alfalfa is growing rapidly. Aphid populations increase as the crop grows up and the canopy begins to provide shade. At this point the crop is tall enough that the use of ground equipment would damage the crop and the damaged crop would be hard to cut. Yield losses of up to 5% could be expected from the use of ground equipment to make dimethoate applications.

When there is an aphid outbreak, typically it hits all the alfalfa acreage at once. In some areas there aren't enough applicators or equipment to do all the necessary applications by ground in a timely manner. (See note under General Comments.)

When alfalfa is furrow irrigated, ground application is not an option. In order to make a ground application tractors must be carefully driven down the fields so that damage is not caused to the furrows by the tractor tires. At the stage that dimethoate is applied (2 to 3 weeks after cutting), a driver cannot see through the vegetation to make this type of application. Ground applications can only be made to furrow-irrigated alfalfa right after harvest.

The proposed 15-day REI for arid growing regions will pose a problem in our region because of the need to access the fields for irrigation. In Washington, all the alfalfa acreage is irrigated with approximately 75% under center pivot and the remaining 25% irrigated with sprinklers (either wheeled or hand lines). In Utah 95% of the alfalfa is irrigated with 15% of that under center pivot and the remainder either sprinkler or furrow irrigated. In Idaho, 79% of the alfalfa is irrigated, of which it is estimated that half is furrow and half is sprinkler. All these types of irrigation equipment require routine access: sprinklers need to be changed once a day as do hand lines, center pivot systems require daily maintenance, and siphon tubes used for furrow irrigation are changed daily. Should EPA insist on a 15-day REI this will impact all the irrigated alfalfa production except that grown under furrow irrigation. (Changing siphon tubes does not involve contact with treated foliage.)

We are asking that EPA retain the use of dimethoate on alfalfa, that aerial application be retained for this crop, and that EPA consider either altering the early entry irrigation exemption or consider putting a variable REI in place as has been suggested in General Comments.

Attachment B
Dimethoate Use Information for Alfalfa Grown for Seed from 2/28/03 Response

Alfalfa Grown for Seed: Idaho, Oregon, Utah, and Washington, together with California, Wyoming, Nevada, and Montana produce between 80 and 90% of the alfalfa seed in the United States. For this crop, dimethoate is even more important than it is in alfalfa grown for hay. There are two use patterns for dimethoate in alfalfa seed in our region. In the Columbia Basin, dimethoate is most often used as a late-season cleanup spray at the end of the pollinating season, typically in the middle of August. At this time there are few flowers and thus few bees in the fields. Applications are made by air at dusk when the few remaining bees are safely out of the fields. In the Columbia Basin dimethoate is only occasionally used prebloom in a tank mix with Warrior when there are outbreaks of pea aphids or a heavy infestation of lygus. (Typically Warrior alone is used prebloom and when used this way it is not recommended for a second application due to concerns about insect resistance management.) Nearly all the Columbia Basin alfalfa seed acreage requires the late-season treatment with dimethoate for lygus control.

Dimethoate is much less expensive to use than other products. The information below, supplied by WSU's John Kugler, indicates that dimethoate is a quarter to a third as expensive as other products for this use:

Cygon (dimethoate) at 1 pt/A = \$5.00/A
Lannate (methomyl) at 2 pt/A = \$13.50/A
Furadan (carbofuran) at 2 pt/A = \$21/A
Warrior (lambda-cyhalothrin) at 3.84 oz/A = \$13.47/A

In the Treasure Valley growing region and in Utah, there is a different use pattern for dimethoate. Here dimethoate is used to control lygus as well as secondary pests such as pea aphids and spotted alfalfa aphid. Dimethoate is used in a tank mix, typically applied with either Capture (bifenthrin) or Warrior as a prebloom treatment. Typically this application is made in late May or early June and application is made only once. Applications are made both by air as well as with ground equipment. In Utah, 80% of the applications are made by air. In the Treasure Valley, 70% of dimethoate applications are made by ground and 30% by air with 85% of the acreage being treated each year with dimethoate. In the Treasure Valley, 85 to 90% of the alfalfa seed acreage is furrow irrigated. Here workers do not need foliage-contacting access to operate irrigation equipment; however, access is required for one critical operation. Access to treated fields is necessary within 7 to 10 days of a dimethoate application to bring pollinators into the fields. This is a critical use for the Treasure Valley in order to provide both timely lygus control and to protect pollinators. This use of dimethoate is the basis for the in-season IPM program. EPA has previously been sent a copy of the document *Activity Tables for Alfalfa Seed in Treasure Valley of Southwest Idaho and Eastern Oregon* describing alfalfa seed production in this region in detail. A copy is attached to this letter for your information.

In summary, retaining aerial application is important to alfalfa seed growers in our region for two reasons: late season lygus control in the Columbia Basin and pollinator release timing in the Treasure Valley and in Utah. Ground application is not an option for late season lygus control in the Columbia Basin. At the time of this application the crop is tall and entering fields with ground equipment will damage the seed-bearing foliage. Besides damaging the foliage, the height of the crop makes accurate application of a spray by ground equipment impractical unless growers are utilizing (expensive) GPS guidance systems.

In the Treasure Valley and in Utah, growers begin incubating bees a month before projected 10 to 20% bloom in the alfalfa seed fields. If there is hot weather at the end of May, fields will need to be irrigated. When fields are wet and ground is soft and muddy, growers are unable to enter fields with ground equipment in order to make dimethoate applications. Aerial application is a necessity in this case because dimethoate must go on the alfalfa ahead of the release of the pollinators.

As with alfalfa, the proposed 15-day REI will present problems:

- On non-furrow irrigated acreage, access to treated fields is required for routine irrigation operations.
- For prebloom applications, access to treated fields is required 7 to 10 days following an application to bring pollinators into the fields.

We are asking that dimethoate use on alfalfa seed be retained, that aerial application be retained for this crop, and that EPA shorten the proposed REI for alfalfa seed or consider a variable REI as has been suggested in General Comments.

Contact List
Dimethoate Benefits Information

Crop:	Last Name:	First Name:	Organization:	Title:	Work Ph:	Email:	Responsible State:
alfalfa	Kugler	John	Washington State University	Area Extension Educator	(509) 754-2011	kugler@wsu.edu	Washington
alfalfa	Westover	Steve	Steve Regan Company	Sales Representative	(801) 268-4500	stevew84003@yahoo.com	Utah
asparagus	Darnell	Tom	Oregon State University	Extension Horticulturist	(541) 938-5597	thomas.darnell@oregonstate.edu	Oregon
asparagus	McReynolds	Bob	Oregon State University	Extension Horticulturist	(503) 678-1264	bob.mcreeynolds@oregonstate.edu	Oregon
asparagus	Walsh	Doug	Washington State University	IPM Coordinator	(509) 786-6927	dwalsh@wsu.edu	Washington
corn, field	Boob	Ed	Hush & Hush Fertilizer Co.	Fieldman	(509) 728-5555	boobsrus@compwrx.com	Washington
corn, field	Parton	Norm	Wilbur-Ellis	Fieldman	(509) 349-2333	nparton@wecon.com	Washington
pear	Willett	Mike	Northwest Horticultural Council	Vice President for Scientific Affairs	(509) 453-3193	willett@nwhort.org	Multiple
safflower	Bradley	Vicky	USDA/ARS	Curator	(509) 335-3616	bradley@wsu.edu	Washington
safflower	Fagerlie	Dan	Washington State University	Director, Ferry County Extension	(509) 775-5235	fagerlie@wsu.edu	Washington
safflower	Fisher	Glen	Oregon State University	Entomology Extension Specialist	(541) 737-5502	fisherg@science.oregonstate.edu	Oregon
safflower	Meadows	Bill	Mountain States Seed	Owner	(208) 221-2041	wjmeadows@direcway.com	Idaho
safflower	Tuck	Brian	Oregon State University	Professor	(541) 296-5494	Brian.Tuck@oregonstate.edu	Oregon
sorghum	Fisher	Glen	Oregon State University	Entomology Extension Specialist	(541) 737-5502	fisherg@science.oregonstate.edu	Oregon
sorghum	Fransen	Steve	Washington State University	Forage Crops Specialist/Assoc. Crop Scientist	(509) 786-9266	fransen@wsu.edu	Washington
sorghum	Tuck	Brian	Oregon State University	Professor	(541) 296-5494	Brian.Tuck@oregonstate.edu	Oregon
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sorghum seed	Woodward	Tim	Washington State University	Area Extension Educator	(509) 545-3511	woodward@wsu.edu	Washington
Sudan grass	Woodward	Tim	Washington State University	Area Extension Educator	(509) 545-3511	woodward@wsu.edu	Washington
wheat	Blodgett	Sue	Montana State University	IPM Coordinator	(406) 994-2402	blodgett@montana.edu	Montana
wheat	Whitesides	Ralph	Utah State University	Extension Weed Specialist	(435) 797-8252	ralphw@ext.usu.edu	Utah
N/A	Blodgett	Sue	Montana State University	Western IPM Center State Liaisons/Representatives	(406) 994-2402	blodgett@montana.edu	Montana
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	Deer	Howard	Utah State University		(435) 797-1602	howardd@ext.usu.edu	Utah
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	Jenkins	Jeff	Oregon State University		(541) 737-5993	jenkinsj@ace.orst.edu	Oregon