



August 26, 2013

Ref: 2013-9-1

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Subject: Abamectin: Use and Usage

I am responding to your request for information on the use and usage of abamectin. This response from the Western Integrated Pest Management Center provides input from a seven-state region: Alaska, California, Idaho, Montana, Oregon, Utah, and Washington.

Almond:

See the attached information provided by the Almond Board of California.

Blueberries/Raspberries:

Abamectin is not used on Washington berry crops.

Cotton:

Abamectin is important in cotton. It is used to control web spinning mites. While there are other miticides, abamectin is used first in the season. The use remains important because it is still effective and is inexpensive. Typically abamectin is applied once per season using ground equipment. In cases where pest pressure is high abamectin might be applied twice per season.

Grape:

In California grape production abamectin is widely used for spider mite control. When it is used it is applied only once per season and is applied at 1.75 to 3.5 oz. per acre.

Hops:

Abamectin use is important in Idaho hop production.

Ornamentals:

Abamectin is reported to be important in ornamentals production in Alaska.

Potato:

Please see the attached letter from the Washington State Potato Commission.

Tree Fruit:

In the Pacific Northwest abamectin is widely used post-petal fall in pears for pear psylla and spider mite control. Its use on pears is early, before leaves harden-off. Abamectin is also used in the production of apples. There is minimal use of abamectin in Oregon and Washington cherries. For apples approximately 5% of Oregon acreage is treated with abamectin while 7% is treated in Washington. Here abamectin is used to control European red mite, McDaniel spider mite, tentiform leafminer, twospotted spider mite, and white apple leafhopper. In pears the use is higher: 64% of Oregon acreage and 56% of Washington pear acreage is treated each year. Abamectin is used to control the following pests in pears: European red mite, McDaniel spider mite, pear psylla, pear rust mite, twospotted spider mite, and yellow mite.

In apples applications are made with either aerial or ground sprayers, alone or with a horticultural spray oil. In pears applications are made with ground sprayers.

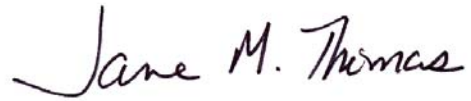
According to the 2011 data from the National Agricultural Statistics Service in apples both Oregon and Washington averaged 0.018 # per acre per application and the average number of applications per season was 1. In pears both states averaged 0.022 # per acre per application. Oregon averaged 1.1 applications per season while Washington's average was 1.3 applications per season.

In Utah fruit growers primarily use abamectin for spider mite control in apple, cherry, and peach (minor use). In apple the use for spider mite control is classified as low importance because there are other effective miticide alternatives and many orchards are only treated with horticultural mineral oil for mites. When it is applied it is used at 5 to 8 oz. per acre, applied by air blast sprayer, and is used once per season. This use is occasional as abamectin is only applied in some apple orchards in some years. In Utah's tart cherry and peach production abamectin use for spider mite control is basically the same described above for apples.

I have attached the California abamectin use information.

I hope you find this information useful.

Sincerely,

A handwritten signature in black ink that reads "Jane M. Thomas". The signature is written in a cursive, flowing style.

Jane M. Thomas
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Abamectin Use in Almonds

Abamectin is used as a preventative control for webspinning spider mites. If left untreated, mites can cause severe economic damage in almond orchards.

Webspinning Spider Mites

There are several species of webspinning spider mites that can cause damage in almond orchards. Abamectin can control Pacific spider mite, twospotted spider mite, strawberry spider mite, and European red mite.

- Spider mites are often a problem in water-stressed orchards. Mites feed on tree leaves, sucking the cell contents from the leaves which causes leaf stippling and can eventually cause the leaves to turn yellow and drop off. High spider mite populations cover tree terminals in webbing. Both of these factors cause reduced photosynthetic rates, which in turn have an adverse impact on almond production the following year.
- A classic study by a UC entomologist on the effects of a mite infestation found a 16% reduction in yield, a 25% drop in terminal growth, and a 7% drop in leaf size.
- Webspinning Spider Mites levels should be monitored once every 2 weeks from March to early May and once a week or more after that. Treatment is not necessary after August because mites begin to migrate off trees to prepare for overwintering.

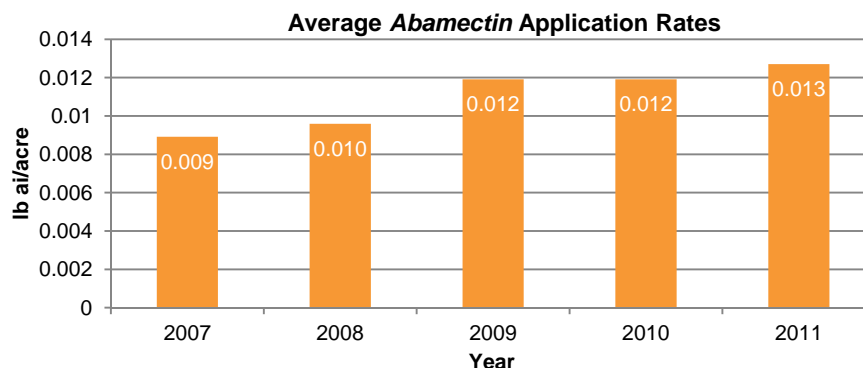
Suggested Usage

The Almond Board of California suggests using monitoring and treatment decision guidelines from the *UC IPM Pest Management Guidelines: Almond*. If treatment for webspinning spider mites is required, the UC IPM guidelines suggest Agri-mek (abamectin) as a treatment option by following label rates and methods.

- Application Rate Dilute Spray: 0.003-0.005 lb ai./ac (2.5-5.0 fl oz/ac)
- Application Rate Concentrate Spray: 0.012-0.023 lb ai./ac (10-20 fl oz/ac)

Observed Usage

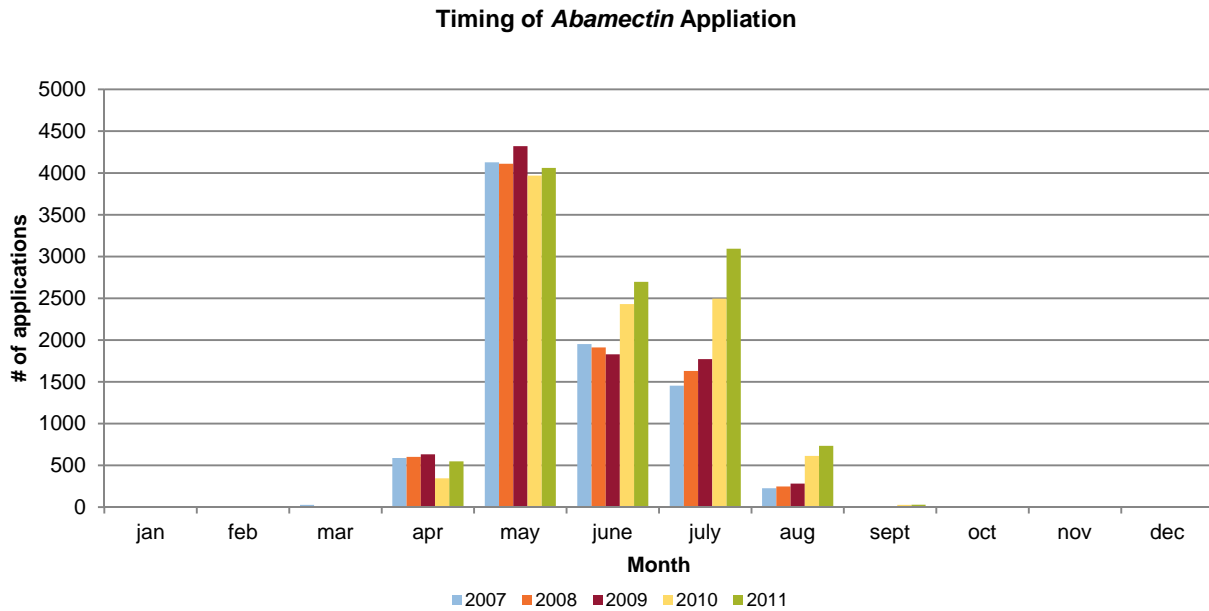
The following represents observed usage patterns in California almond orchards between 2007 and 2011.



*5 year average
application rate:*

0.011 lb ai/ac

Observed Usage (Continued)



In almond orchards between 2007 and 2011, abamectin was applied at least once, but often twice per growing season.

Label instructions indicate that Agri-mek may be applied twice per season, but not to exceed 0.047 lb ai/acre (40 fl oz/acre) annually.

Importance

Webspinning spider mites can become problematic in almond orchards during drought, high temperature, and/or dusty conditions. Their life cycle allows for mites to develop in 7 days, with 8 to 10 generations per season. These increasingly common summer conditions combined with the mite’s effective reproduction strategy can cause rapid population explosions which become difficult to manage. For this reason, growers prefer to use a preventative control like Agri-mek (Abamectin).

- Further exacerbating this problem is the reliance on pyrethroids to control almond’s principal pest: navel orangeworm (NOW). Prior to its phase out for tree nuts in April 2010, Guthion (azinphos-methyl) was the main compound used to control NOW. Azinphos-methyl has, to some extent, been replaced by pyrethroids and insect growth regulators. Pyrethroids have the side effect of causing mite population flare ups. This creates a cyclical pattern necessitated by the need to keep NOW numbers under control.

August 22, 2013

Office of Pesticide Programs
Regulatory Public Docket (7430)
Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460-0001

Chris Voigt, Executive Director
Washington State Potato Commission
108 Interlake Road
Moses Lake, WA 98837

This letter is in response to the Environmental Protection Agency's request for comments regarding the registration review of abamectin, docket number EPA-HQ-OPP-2013-0360.

The Washington State Potato Commission is a quasi-governmental agency of the State of Washington. The Potato Commission was created by state legislation 57 years ago. The Washington State Department of Agriculture is the state agency with oversight responsibilities for the Potato Commission. The primary role of the Potato Commission is to fund research, provide consumer and industry education, expand trade opportunities, and speak on behalf of the Washington potato industry in regulatory and legislative issues. The Washington State Potato Commission is fully funded by potato grower assessments and receives no general support funding from the State of Washington.

General Industry Information

The Washington State Potato Commission represents over 250 potato growers in the State. There are two primary growing regions in the state. The Columbia Basin, which is located in Central Washington, is responsible for about 90% of the potatoes grown in the State. The remaining 10% of potatoes are located in North Western Washington. There were 160,000 acres of potatoes planted in Washington State in 2013. Approximately 87% of the potatoes grown in Washington are processed into frozen, dehydrated, and refrigerated, value added products. Washington State is the second largest producer of potatoes behind the state of Idaho. The farm gate value of the potato crop was \$771 million in 2011. Washington State has the highest average yields in the US. In 2012, the average yield in Washington was 595 cwt./acre. The US average yield was 427cwt./acre.

According to a study by Dr. Michael Brady of Washington State University, (The Economic Impact of Potatoes in Washington State, 2011) the value of the potato industry to the economy of Washington State is over \$4.7 billion. Most of this economic activity is located in the Columbia Basin. The economy of Central Washington relies heavily on the production and processing of potatoes. Many of these rural communities would suffer extreme hardship if restrictions prevented the current level of potato production and processing.

Abamectin and its Use on Potatoes in Washington State

Abamectin has become an important insecticide for use in potato production due to the recent infestation of potato psyllids, which is the vector for the disease "zebra chip". Zebra chip is a devastating disease that causes an extreme loss of potato quality and makes the potato unsuitable for processing. The disease was first detected in Washington State in 2010. Since 87% of the Washington potato crop is used for processed products, this disease is a very serious issue.

Application use data older than 2012 will not be an accurate portrayal of use in Washington State potato production since zebra chip was only recently detected in the State. Use of this product and its importance in potato production has grown considerably since 2011. Abamectin provides good control of the potato psyllid and growers also benefit from its control of mites and thrips. It also provides control of the psyllid in the egg, nymph, or adult stage which greatly improves the ability to manage this pest and disease.

Typical use is 1-2 applications, late in the growing season, with rates varying from 12-16 ounces per acre. There are some portions of our State where psyllid pressure is much higher and show up much earlier. In those areas it is not uncommon to see 3 applications at rates of 16 ounces per acre.

The Washington State Potato Commission is a strong proponent of IPM practices. The WSPC provides free IPM supplies, such as sweep nets, beat sheets, sticky cards, pheromones, delta traps, and insect identification cards for both pests and beneficial insects, to all Washington State growers. The WSPC also funds a pest monitoring program that consists of field scouting and insect traps throughout the growing region. Weekly results are emailed to the industry and posted online as a supplement to the grower's own monitoring system.

Our current psyllid monitoring program assists growers by providing information that helps them determine whether an application of abamectin should be considered. Since zebra chip and potato psyllids are a new pest to Washington State, there is much to learn about this pest and how to control it. A tremendous amount of research is in progress on this pest and disease. It is our hope that this research will provide new information that will allow us to develop improved control measures and prevent the infection of zebra chip.

Abamectin is a critical insecticide for the control of potato psyllid and zebra chip in Washington State. Without the control of this pest and disease, over 23,500 potato related jobs and \$4.6 billion of economic activity would be at risk in the rural areas of Washington State. Please do not hesitate to contact us if we can be of any assistance in continuing the registration of this important crop protectant.

Sincerely,

Chris Voigt
Executive Director
Washington State Potato Commission

Department of Pesticide Regulation
2011 Annual Statewide Pesticide Use Report
Indexed by Chemical

Chemical Commodity	Pounds Applied	Agricultural Applications	Amount Treated	Unit Type
ABAMECTIN				
Alfalfa	78.65	76	5,426.70	A
Almond	10,735.97	11,179	845,614.32	A
	< 0.01	1	45.00	?
Total Pounds On This Commodity	10,735.97			
Apple	35.03	65	1,963.56	A
Apricot	10.45	23	651.50	A
Arrugula	0.12	8	9.39	A
Avocado	589.85	1,384	30,866.33	A
	0.19	7	1,295.00	U
Total Pounds On This Commodity	590.04			
Basil, Sweet	1.37	46	107.26	A
Bean, Dried	76.73	107	7,283.80	A
Bean, Succulent	5.34	11	499.00	A
Bitter Melon	0.04	3	3.00	A
Cantaloupe	163.64	269	17,188.21	A
Cauliflower	24.01	1	9.50	A
Celeriac	0.99	46	71.60	A
Celery	230.96	1,839	19,356.81	A
Cherry	351.04	713	17,685.56	A
Christmas Tree	0.03	1	3.00	A
Cilantro	0.80	31	63.24	A
Citrus	2.49	19	180.76	A
Commodity Fumigation	0.92			
Corn (Forage - Fodder)	1.63	3	219.00	A
Corn Salad	0.61	35	54.11	A
Corn, Grain	0.44	1	54.00	A
Cotton	3,412.85	4,298	343,035.84	A
Cucumber	69.63	171	6,016.14	A
Dandelion Green	0.06	6	4.33	A
Dill	0.06	4	2.00	A
Edible Flowers	0.02	3	1.50	A
Eggplant	12.65	101	837.67	A
	< 0.01	2	0.40	U
Total Pounds On This Commodity	12.66			
Endive (Escarole)	0.74	45	70.58	A
Grape	1,437.76	1,685	71,868.94	A
Grape, Wine	2,123.94	2,046	114,615.48	A
Grapefruit	30.18	129	1,629.36	A
Herb, Spice	0.09	3	6.78	A
Landscape Maintenance	15.79			
Lemon	234.15	916	16,463.11	A
Lettuce, Head	479.46	3,582	54,638.55	A
Lettuce, Leaf	441.61	4,674	46,073.26	A
Lime	0.11	2	7.00	A
Melon	74.93	128	7,458.24	A
Mint	3.04	17	244.50	A
N-Grnhs Flower	22.78	748	2,020.09	A
	5.91	223	8,769,787.00	S
Total Pounds On This Commodity	28.69			
N-Grnhs Plants In Containers				
	32.23	1,757	2,890.42	A
	14.41	1,057	38,805,929.75	S
	2.99	30	160,418.00	U
Total Pounds On This Commodity	49.63			
N-Grnhs Transplants				
	1.03	206	3,264,538.00	S
	0.98	59	97.63	A
Total Pounds On This Commodity	2.01			

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N-Outdr Flower	16.22	405	1,704.19	A
	1.52	111	3,010,829.00	S
Total Pounds On This Commodity	17.74			
N-Outdr Plants In Containers	86.28	1,378	4,397.84	A
	2.78	253	7,271,018.64	S
Total Pounds On This Commodity	89.06			
N-Outdr Transplants	9.07	151	653.39	A
	0.94	35	2,430,510.00	S
Total Pounds On This Commodity	10.02			
Nectarine	132.89	555	7,096.90	A
Nursery Soil	0.03	1	3.00	A
Oat (Forage - Fodder)	0.22	1	15.00	A
Orange	839.29	1,903	51,535.13	A
Parsley	0.74	29	55.77	A
Pastureland	0.28	1	18.00	A
Peach	407.18	1,041	17,509.69	A
Pear	178.84	277	9,533.80	A
Pecan	0.78	7	32.30	A
Pepper, Fruiting	136.31	402	11,138.60	A
Pepper, Spice	2.14	2	199.50	A
Persimmon	0.07	1	3.66	A
Pistachio	0.83	1	40.00	A
Plum	77.10	308	4,087.27	A
Pluot	0.02	1	2.00	A
Pomelo	0.44	6	53.50	A
Potato	5.53	6	373.00	A
Prune	85.36	111	5,626.73	A
Pumpkin	31.58	68	2,496.70	A
Radicchio	0.48	8	32.55	A
Regulatory Pest Control	6.22			
Research Commodity	3.34	70	55.18	A
	1.56			
Total Pounds On This Commodity	4.90			
Rights Of Way	0.85			
	0.16	1	7.00	A
Total Pounds On This Commodity	1.00			
Rosemary	0.02	1	2.00	A
Soil Fumigation/Preplant	0.93	3	96.00	A
Spinach	134.82	1,690	12,250.73	A
Squash	23.76	79	1,782.90	A
Squash, Summer	0.01	2	1.00	A
Squash, Winter	1.26	1	80.00	A
Strawberry	928.23	1,730	49,925.73	A
	0.03	3	87,125.00	S
Total Pounds On This Commodity	928.26			
Structural Pest Control	9.93			
Sudangrass	0.56	1	28.00	A
Sweet Potato	0.76	2	53.00	A
Swiss Chard	8.35	270	836.96	A
Tangelo	33.48	84	1,635.24	A
Tangerine	474.29	671	26,886.51	A
Tarragon	0.02	4	2.00	A
Tomatillo	0.05	2	4.25	A
Tomato	46.25	128	3,695.59	A
	< 0.01	2	20,100.00	S
Total Pounds On This Commodity	46.26			
Tomato, Processing	383.63	648	43,112.74	A

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Chemical Commodity	Pounds Applied	Agricultural Applications	Amount Treated	Unit Type
Uncultivated Ag	1.05	3	70.00	A
Unknown	4.70	22	295.50	A
	< 0.01	2	0.40	U
Total Pounds On This Commodity	4.70			
Vertebrate Control	< 0.01			
Walnut	1,621.71	2,395	85,835.12	A
Watermelon	225.66	452	17,632.52	A
Wheat	0.48	1	76.00	A
Chemical Total	26,657.78	53,089		
ABAMECTIN, OTHER RELATED				
Structural Pest Control	0.02			
Chemical Total	0.02			
S-ABSCISIC ACID				
Grape	1,850.98	255	9,518.82	A
Grape, Wine	0.40	1	6.00	A
Pomegranate	8.65	4	17.48	A
Unknown	1.10	1	3.33	A
Chemical Total	1,861.13	261		
ACEPHATE				
Alfalfa	8,068.41	122	9,114.70	A
Almond	294.32	8	401.90	A
Bean, Dried	5,208.08	102	4,719.96	A
Bean, Succulent	2,173.11	51	2,401.34	A
Bean, Unspecified	966.45	34	1,049.69	A
Brussels Sprout	269.51	28	283.85	A
Cauliflower	1,834.30	147	1,896.30	A
Celery	11,507.94	1,054	12,292.62	A
Christmas Tree	7.28	6	17.00	A
Citrus	15.41	2	17.00	A
Cotton	43,281.13	452	45,054.88	A
	12,131.80		1,561.20	T
	275.13		35.00	K
Total Pounds On This Commodity	55,688.05			
Fava Bean	1.95	1	4.00	A
Grape, Wine	92.91	2	48.00	A
Grapefruit	4.37	1	10.00	A
Landscape Maintenance	2,261.25			
	0.42	8	22.00	A
Total Pounds On This Commodity	2,261.67			
Lemon	2.91	1	8.00	A
Lettuce, Head	32,007.60	2,554	35,250.41	A
Mint	1,063.90	19	1,109.00	A
N-Grnhs Flower	1,195.93	514	1,187.55	A
	196.01	166	6,441,219.00	S
	2.33	3	39,521.00	U
Total Pounds On This Commodity	1,394.27			
N-Grnhs Plants In Containers	632.37	426	606.56	A
	343.40	443	11,037,470.99	S
	5.71	8	20,090.00	U
Total Pounds On This Commodity	981.48			
N-Grnhs Transplants	133.72	101	232.19	A
	25.61	66	1,110,967.00	S

Abamectin
Contact List

First Name	Last Name	Phone	Email	Organization	Title	Crop	State
Ronda	Hirnyck	(208) 364-4046	rhirnyck@uidaho.edu	University of Idaho	Pesticide Coordinator	alfalfa seed	ID
Danielle	Veenstra	(209) 343-3257	dveenstra@almondboard.com	Almond Board of California	Specialist, Agricultural and Environmental Affairs	almond	CA
Debbie	Carter	(509) 453-3193	carter@nwhort.org	Northwest Horticultural Council	Technical Issues Manager	tree fruit	WA
Brian	Cieslar	(360) 410-8165	briancieslar@yahoo.com	Enfield Farms and Curt Maberry Farm	Agronomist	small fruit	WA
Lydia	Clayton	907.262.5824	lclayton2@alaska.edu	University of Alaska Fairbanks	Agriculture and Horticulture Agent	ornamentals	AK
Lucia	Varela	(707) 565-2621	cesonoma.ucdavis.edu	University of California	North Coast IPM Advisor	grape	CA
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Laura	Grunenfelder	(509) 453-3193	laura@nwhort.org	Northwest Horticultural Council	Science Policy Specialist	tree fruit	WA
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