

National Pesticide Risk Assessment Tool Under Development: “IPM Options Evaluation Tool”

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Conservation Innovation Grant Program

2007 national grant:

- National IPM Institute of North America
- \$805,000
- September 2007 – August 2010
- Comprehensive Pesticide Environmental Assessment Tool for U.S. Agriculture, aka “IPM Options Evaluation Tool.”

What is the IPM Options Evaluation Tool?

An on-line pesticide product ranking tool that provides information about relative risks to people and natural resources, and is easy for a layperson to use.

Purpose

Mitigate agricultural impacts on soil, water and air quality, nontarget species, and worker and consumer health and safety by improving pesticide product selection and access to information on mitigation options.

Many Potential Tool Users

- Growers, commodity groups
- Pest Control Advisors
- Pest control and pesticide businesses
- Research and extension scientists
- Third-party certifiers of sustainable production
- “Green” food processors, wholesalers and retailers
- Government agencies including NRCS
- Advocacy groups



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About Us

We're an independent non-profit organization formed in 1998 to foster recognition and rewards in the marketplace for goods and service providers who practice Integrated Pest Management, or IPM.

IPM is an approach to managing pests that protects health and the environment, and improves economic returns. IPM practitioners in agriculture and communities learn pest biology and use that knowledge to reduce pest control costs and hazards.

IPM relies on inspection and monitoring - to detect and correct conditions



**The IPM
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needs YOU!**
Join the non-
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and help
increase IPM
awareness
and adoption!



Project Team

- Project Director: Tom Green, IPM Institute
- Project Coordinator: Wade Pronschinske, IPM Institute
- Karen Benbrook, Benbrook Consulting
- Paul Jepson, Oregon State University
- Jonathan Kaplan, Natural Resources Defense Council
- Pierre Mineau, Carleton University & Environment Canada

WISCONSIN



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Eco-friendly Fruit.

the

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RULES**

FOR SUSTAINABLE WINEGROWING

**CERTIFIED
BY PROTECTED HARVEST**

Starting Point: WIN-PST

- Online tool for comparing the water quality impacts of pesticide active ingredients.
- Focuses on toxicity to humans and fish.
- Created by USDA-NRCS scientists for use in NRCS field offices.



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Announcing...

- [Squash Bugs](#) Pest Note, new publication
- [Peppers, Cucurbits](#) and [Celery](#) Guidelines, updated
- [IPM for Strawberries](#), 2nd edition, now available
- [Onion/Garlic Guidelines](#), updated
- [Strawberry Guidelines](#) updated with complete [Year-Round Program](#)

Solve your pest management problems with UC's best information, personalize it with interactive tools, or find out about pest management research and extension projects.

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How to manage pests



Manage and identify insects, mites, diseases, nematodes, weeds, and vertebrates

- ▶ [Homes, gardens, landscapes, and turf](#) (*including Pest Notes*)
- ▶ [Agriculture and floriculture](#) (*Pest Management Guidelines*)
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Use tools to help make decisions

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- ▶ [Research tools and databases: California pesticide use summaries](#)



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New! Year-Round Programs

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- [Almond](#)
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How to Manage Pests

Pests of Agriculture, Floriculture, and Turf

UC IPM Pest Management Guidelines and More—Information about managing pests, including University of California's official guidelines for monitoring pests and using pesticides and nonpesticide alternatives for managing insect, mite, nematode, weed, and disease pests. | [More](#) | [Acknowledgments](#) |

| [PDFs to print](#) | [Recent updates](#) |

Includes Year-Round Program, with annual checklist.

- [Alfalfa](#)
- [Almond](#)
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- [Artichoke](#)
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- [Barley](#) (see [Small Grains](#))
- [Beans](#) (see [Dry Bean](#))
- [Bermudagrass Seed Production](#)
- [Blackberries](#) (see [Caneberries](#))
- [Broccoli](#) (see [Cole Crops](#))
- [Brussels Sprouts](#) (see [Cole Crops](#))
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(Blackberries, Raspberries)
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- [Wheat](#) (see [Small Grains](#))

More information

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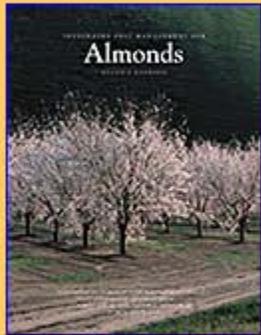


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For more information, see this UC IPM book:



Integrated Pest Management for Almonds

How to Manage Pests

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- Agriculture
- Natural environments
- Exotic & invasive

- Weather data & products
- Degree-days
- Interactive tools & models

Educational Resources

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How to Manage Pests

Almonds

Year-Round IPM Program—tells you what you should be doing throughout the year in an overall IPM program. Includes Round IPM Program Annual Checklist.

[Year-Round IPM Program for Almonds](#)

- [Dormant/Delayed Dormant](#)
- [Bloom to Postbloom](#)
- [Fruit Development](#)
- [Harvest](#)
- [Postharvest](#)

UC IPM Pest Management Guidelines—University of California's official guidelines for pest monitoring techniques, pesticides, and nonpesticide alternatives for managing pests in agriculture, floriculture, and commercial turf. [More](#)

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General Information

- [Dormant Spur Sampling and Treatment Guidelines](#) (1/05)
- [Approximate Impact Ratings of Various Pest Management Tools Against Natural Enemies](#) (1/05)
- [General Properties of Fungicides Used in Almonds](#) (1/05)
- [Fungicide Treatment Timing in Almonds](#) (2/08)

Diseases

- [Almond Leaf Scorch](#) (1/05)
- [Alternaria Leaf Spot](#) (1/05)
- [Anthracnose](#) (1/05)
- [Armillaria Root Rot \(Oak Root Fungus\)](#) (1/05)
- [Bacterial Canker](#) (1/05)
- [Brown Rot Blossom Blight](#) (1/05)
- [Crown Gall](#) (1/05)
- [Green Fruit Rot \(Jacket Rot\)](#) (1/05)
- [Hull Rot](#) (1/05)

Insects and Mites

- [Ants](#) (1/05)
- [Brown Mite](#) (1/05)
- [European Fruit Lecanium](#) (1/05)
- [European Red Mite](#) (1/05)
- [Fruittree Leafroller](#) (1/05)
- [Leaffooted Bug](#) (1/05)
- [Navel Orangeworm](#) (1/05)
- [Obliquebanded Leafroller](#) (1/05)
- [Oriental Fruit Moth](#) (1/05)
- [Peach Silver Mite](#) (1/05)
- [Peach Twig Borer](#) (1/05)
- [San Jose Scale](#) (1/05)
- [Tenlined June Beetle](#) (1/05)
- [Tent Caterpillar](#) (1/05)
- [Tree Borers](#) (1/05)
- [Webspinning Spider Mites](#) (1/05)

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UC Pest Management Guidelines

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Almond Navel Orangeworm

Scientific name: *Amyelois transitella*
(Reviewed 1/05, updated 1/05)

In this Guideline:

- [Description of the pest](#)
- [Publication](#)
- [Damage](#)
- [Glossary](#)
- [Management](#)



DESCRIPTION OF THE PEST

Navel orangeworm is a primary pest of almonds in California and is found on several hosts. Adult [moths](#) have irregular, silver gray and black forewings and legs and a snoutlike projection at the front of the head. Females begin egg laying about 2 nights after emergence. [Eggs](#) are laid on mummy nuts in the trees or new crop nuts and hatch within 4 to 23 days, depending on temperature. Eggs are not laid on new crop nuts until initiation of hull split. [Newly hatched larvae](#) are reddish orange and later vary from milky white to pink in color. Larvae have reddish brown head capsules and a pair of [crescent-shaped marks](#) on the second segment behind the head. Pupae are light to dark brown, encased in a [woven cocoon](#), and found inside nuts or between hulls and shells. There are three to four [adult flight periods](#) per year. The larvae overwinter in [mummy nuts](#) either in trees or on the ground.

DAMAGE

First instar larvae bore into the nutmeat and later instars can consume most of the nut, producing large amounts of webbing and frass. Usually more than one larva can be found feeding in a nut. Navel orangeworm larval damage can also lead to fungal infections. Some cultivars are more susceptible to damage, especially later maturing, softshell almonds with a lengthy hull split period or a poor shell seal.

MANAGEMENT

Two cultural practices-effective removal of mummy nuts in fall or winter and rapid, early harvest-provide the most effective control of navel orangeworm. Insecticide treatments are needed only when these practices are not carried out properly, or where infested trees, such as fig or pomegranate, are nearby. If infested crops of these alternate hosts are harvested, navel orangeworm moths may migrate into almond orchards. Treating border rows (at least 10 rows) may be adequate to prevent the moths from infesting the almond crop. Sprays are timed using egg traps, monitoring of hull split and/or degree-days. Two introduced parasitic wasps may be found in orchards, but they cannot be relied on to provide effective control alone.

Common name
(trade name)

Amount/Acre**
(conc.) (dilute)

P.H.I.+
(days)



SPRING SPRAYS

A.	SPINOSAD (Entrust)# (Success)	1.25-3 oz 4-10 oz	0.3-0.75 oz 1-2.5 oz	14 14
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B.	METHOXYFENOZIDE (Intrepid) 2F COMMENTS: An insect growth regulator. Use allowed under a supplemental label.		Label rates	14
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C.	TEBUFENOZIDE (Confirm) 2F COMMENTS: An insect growth regulator. Use allowed under a supplemental label.		Label rates	14
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HULL SPLIT SPRAYS

A.	AZINPHOSMETHYL* (Guthion) 50WP COMMENTS: Do not apply more than twice following bloom. Restricted entry interval is 30 days.	4 lb	1 lb	30
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B.	CHLORPYRIFOS* (Lorsban) 4E COMMENTS: Do not apply more than 3 foliar applications/season. Do not allow livestock to graze in treated orchards.	2 qt	—	14
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C.	PHOSMET (Imidan) 70WP COMMENTS: Do not apply more than twice/season as a foliar spray. This material is a good choice near residential areas. Breaks down rapidly in water. Can be used where label restrictions prevent use of other organophosphates. Late season treatments must be applied before hull split reaches 10%.	4 lb	1 lb	30
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D.	ESFENVALERATE* (Asana XL) COMMENTS: Pyrethroid residues remaining on leaves and bark will continue to affect mite predators long after application, increasing the potential for spider mite infestations. Never use a pyrethroid insecticide as a May spray and avoid use of pyrethroids in almond orchards if possible.	16 oz	—	21
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E.	METHOXYFENOZIDE (Intrepid) 2F COMMENTS: An insect growth regulator. Use may be most effective during spring when egg laying is more synchronized than later in the season where life stages tend to overlap more. Use allowed under a supplemental label.		Label rates	14
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Almond: Navel Orangeworm

Comparison among pesticides included in [UC IPM Pest Management Guideline](#) when applied under these general conditions:

See detail

Table

Data file

Site conditions [Change*](#)

- soil highly susceptible to pesticide movement
- low probability of rainfall expected within 7-10 days of pesticide application
- low-efficiency irrigation expected within 7-10 days of pesticide application
- no residue management

Application conditions

- application to more than 50% of the field ([M](#))
- surface applied ([S](#))
- application rate more than 1/4 pound AI per acre ([Q](#))

⚠ Application rate, method, and site conditions may not be typical for this crop.

To change these conditions to match your own, see below.

Delete row	Active ingredient (AI) (Sample trade name)	Application conditions Change^?		Potential Pesticide Hazard on High-Risk Soils							
				Fish (Long-term)			Human (Long-term)				pH
				Leaching	Adsorbed runoff	Solution runoff	Leaching	Solution runoff			
<input type="checkbox"/>	Aluminum phosphide	M-S-Q		no information*	no information*	no information*	no information*	no information*	no information*	no information*	
<input type="checkbox"/>	Azinphosmethyl (Guthion)	M-S-Q	<input type="radio"/>	X	I	X	I	I	I	n/a	
<input type="checkbox"/>	Chlorpyrifos (Lorsban)	M-S-Q	<input type="radio"/>	X	L	X	I	I	I	n/a	
<input type="checkbox"/>	Esfenvalerate (Asana)	M-S-L	<input type="radio"/>	H	H	X	V	V	V	n/a	
<input type="checkbox"/>	Methoxyfenozide (Intrepid)	M-S-Q	<input type="radio"/>	L	L	L	L	L	L	n/a	
<input type="checkbox"/>	Phosmet (Imidan)	M-S-Q	<input type="radio"/>	H	L	H	H	H	H	n/a	
<input type="checkbox"/>	Spinosad (Success)	M-S-Q	<input type="radio"/>	V	V	V	V	V	V	n/a	
<input type="checkbox"/>	Tebufozide (Con firm)	M-S-Q	<input type="radio"/>	L	L	L	L	L	L	n/a	

Shorter bars indicate less risk

No mitigation measures needed

Mitigation measures may be needed

* No information: chemical not included in [PPD](#).

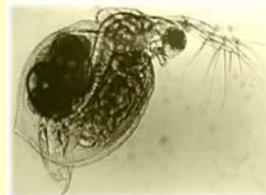
** No known risk: UC IPM knows of no water quality risk associated with this pesticide.

In Comparison, the IPM Options Evaluation Tool Will...

- Complement and expand upon WIN-PST, probably including some aspects of the Pesticide Environmental Assessment System (PEAS) model as well as novel features.
- Address a broader spectrum of pesticide risks.
- Display a unique user interface and report screens.

IPM Options Evaluation Tool: Which Risks Are Included?

- Pesticide drift potential
- Soil and air quality
- Ground and surface water quality
- Aquatic risk
- Consumer (residues on food) and worker risks
- Nontarget species
- Pesticide resistance risk



Tool Capabilities

- Evaluate risks to each resource of concern, separately or in combination.
- Consider individual or combined pesticide products.
- Weigh impacts of application method, timing, frequency.
- Account for site-specific conditions.
- Access information on mitigation options.
- Provide “scores” and ranking for each application and for all applications over a single season.

Project Deliverables

- On-line, user-friendly pesticide risk assessment tool.
- Outreach program.
- External peer review.
- Evaluation of use over two seasons in key cropping systems and production regions.
- Reduction in impacts of the highest hazard pesticides by 10% by tool users by the end of the 2010 growing season.

Work is Just Beginning...

- How well will the IPM Options Evaluation Tool reflect real-world pesticide risks?
- How well will this tool reflect California conditions?
- Development time and resources needed to include most of California's main crops?
- Who will use the IPM Options Evaluation Tool?

Questions?