

UC IPM Updates

Tunyalee Martin, Associate Director for Communications, University of California Statewide Integrated Pest Management Program, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618; (530) 750-1243; tlamartin@ucanr.edu

Jim Farrar, Director, University of California Statewide Integrated Pest Management Program, Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618; (530) 750-1249; jjfarrar@ucanr.edu

Keywords: integrated pest management, online training, decision support tool, bee pesticide toxicity

Introduction

The University of California Statewide IPM Program (UC IPM) helps residents, growers, land managers, community leaders, and other professional pest managers prevent and solve pest problems with the least unintended impacts on people and their surroundings. The program draws on expertise of University of California (UC) scientists to develop and distribute UC's best information on managing pests using safe and effective techniques and strategies that protect people and the environment. These techniques and strategies are the basis of integrated pest management, or IPM. UC IPM works through Cooperative Extension to deliver information to clients in every California county. Printed publications and online information and tools provide a wealth of how-to information about identifying and managing pests

Pest Management Guidelines updates

The *UC IPM Pest Management Guidelines* are the University of California's official guidelines for managing agricultural pests in California (ipm.ucanr.edu/PMG/crops-agriculture.html). The *UC IPM Pest Management Guidelines* includes information to manage pest insects and mites, nematodes, weeds, and plant diseases. The publication series includes practical recommendations for pest control, including nonchemical methods and pesticides, and how to use these tactics in an effective, integrated program. With the year-round IPM programs, the guidelines describe a multidisciplinary, monitoring-based IPM program. Additionally, the guidelines include crop-specific tables such as a comparison of relative toxicities of pesticides to natural enemies.

Improvements to the author, peer review and production processes are increasing the number of updates and revisions to the *Pest Management Guidelines*. Our crop leadership teams help focus the direction and content. We are currently working to make the *Pest Management Guidelines* mobile-friendly.

New tools

The agricultural *Decision-Support Tool* (ipm.ucanr.edu/decisionsupport) was a deliverable for a California Department of Pesticide Regulation funded project to document the critical uses of chlorpyrifos in four key crops. Because of the amount of information in the *Pest Management Guidelines*, it can be difficult to navigate, compare, and assess information for multiple arthropod pests. With the tool, multiple pests and their pest management practices can be compared for their spectrum of activity, and pesticides can be reviewed for their movement into water bodies and risk of harm to human health, role in resistance management, and impact on

honey bees and natural enemies. Using the tool results in a report linking to detailed online information that includes pesticide safety and mitigation information. The tool provides an overview of IPM options for alfalfa, almond, citrus, and cotton insect pests where chlorpyrifos was listed as an option to use. We plan to expand the tool to include lettuce, strawberry, pistachio, and walnuts. Additionally, we want to explore with key UC weed and disease experts how to include the other pest disciplines such as diseases and weeds.

Information about the harm of pesticides to honey bees can be found in the new ***Bee Precautions Pesticide Ratings*** (ipm.ucanr.edu/beeprecaution). The purpose of this tool is to help users make an informed decision about how to protect bees when choosing or applying pesticides. Pesticides can harm bees if they are applied or allowed to drift to plants that are flowering. The bee precaution pesticide ratings cover the active ingredients for acaricides (miticides), bactericides, fungicides, herbicides and insecticides. Ratings fall into three categories. Red, or rated I, pesticides should not be applied or allowed to drift to plants that are flowering. Plants include the crop AND nearby weeds. Yellow, or rated II, pesticides should not be applied or allowed to drift to plants that are flowering, except when the application is made between sunset and midnight if allowed by the pesticide label and regulations. Finally, green, or rated III, pesticides have no bee precautions, except when required by the pesticide label or regulations. Pesticide users must follow the product directions for handling and use and take at least the minimum precautions required by the pesticide label and regulations.

The ***Herbicide Symptoms*** (herbicidesymptoms.ipm.ucanr.edu) online database and educational materials can be used to help diagnose and assess the damaging effects of herbicide symptoms. Herbicide symptoms can look very similar to symptoms caused by diseases or nutrient deficiencies, resulting in unnecessary pesticide and fertilizer applications. Unintended injury can occur through herbicide residue left in the soil or spray tank, overapplication, or drift. Other online resources with herbicide symptoms exist, but cover only a few crops. This database is the largest and most comprehensive repository of herbicide symptom pictures available.

New and Revised Publications

A card set, ***Understanding Pesticide Labels for Making Proper Applications***, helps users understand pesticide labels. The primary way pesticide applicators can assure that they make proper applications and avoid illegal pesticide residues is to follow the pesticide label. The card set is in English and Spanish and PDFs can be downloaded online (ipm.ucanr.edu/IPMPROJECT/freepublications.html). Intended for pesticide handlers, applicators, safety trainers, and pest control advisers, the cards explain when to read the label, describe what kind of information can be found in each section of a pesticide label, and point out specific instruction areas so that applicators can apply pesticides safely and avoid illegal pesticide residues.

The newly revised third edition of ***The Safe and Effective Use of Pesticides*** provides detailed information for training employees to select, use, handle, store, and dispose of pesticides safely and properly. Newly updated content covers recent changes to federal and state pesticide laws, including the federal Worker Protection Standard. Emphasis is placed on prevention of groundwater contamination, protection of endangered species and wildlife, and reduction of environmental impact. This comprehensive publication is the recommended study guide for the California Department of Pesticide Regulation's pest control adviser and pesticide applicator

examinations. It is an essential reference and study tool that applies to agricultural, structural, landscape maintenance, greenhouse and nursery, right-of-way, forest, aquatic, demonstration and research, public health, and regulatory pesticide-use situations. *The Safe and Effective Use of Pesticides* is Volume 1 of the Pesticide Application Compendium (ipm.ucanr.edu/IPMPROJECT/pesttrain.html#COMPENDIUM). This series was written for professionals trying to meet California's tough applicator licensing requirements.

New Videos

View our videos and learn to identify pests or how to monitor for them.

- ***Identification of Parasitized Alfalfa Caterpillars***
https://www.youtube.com/watch?v=8_9zpYyY7Ig&feature=youtu.be (2:37)
- ***Sampling with a Sweep Net in Alfalfa***
<https://www.youtube.com/watch?v=hVDgA7DWh0c> (1:48)
- ***Aphid Identification and Monitoring in Alfalfa***
<https://www.youtube.com/watch?v=K1a355JO79c&feature=youtu.be> (5:22)
- ***How to Monitor for Aphids in Plum and Prune***
<https://www.youtube.com/watch?v=kbm55xeQIWs> (4:00)
- ***Detecting Asian Citrus Psyllid***
<https://www.youtube.com/watch?v=QhQXL4bwnXI> (1:00)
- ***Brown Marmorated Stink Bug Identification***
<https://www.youtube.com/watch?v=EHhtss8E7xM> (2:59)
- ***How to Monitor for Mites in Peach and Nectarine***
https://www.youtube.com/watch?v=Wg_IAqZiSAM (3:12)
- ***How to Distinguish Phytophthora Root Rot from Bacterial Canker***
https://www.youtube.com/watch?v=Wg_IAqZiSAM (2:47)
- ***How to Monitor Shoot Strikes in Peach and Nectarine***
<https://www.youtube.com/watch?v=hfsqSVOG-zE> (3:03)
- **ਆਤੂ ਅਤੇ ਨੈਕਟਰੀਨ ਵਿਚ ਕੀਟ ਪ੍ਰਬੰਧ ਲਈ ਮੁਰਝਾਈਆਂ ਕਰੁੰਬਲਾਂ ਦਾ ਮੁਆਇਨੇ** [pa]
<https://www.youtube.com/watch?v=l0aP5AiHtfk> (3:42)

New Online training

View these online trainings and others on our online training webpage (<http://ipm.ucanr.edu/training/>).

The ***Pesticide Application Equipment and Calibration*** course provides practical information on calibrating various types of application equipment to make sure you apply the correct amount of pesticide to a treatment area. Continuing education units: 1.5 hours "Other" From the Department of Pesticide Regulation; 1.5 hours "Technical" towards Branches 2 & 3 from Structural Pest Control Board—meets the continuing education category of Pesticide Use and Application for licensed applicators. The course is free to enroll.

The ***Pesticide Resistance*** course provides information on pesticide resistance in fungi, insects, and weeds and discusses practical ways of managing or delaying resistance. Continuing education units: 2.0 hours "Other" from the Department of Pesticide Regulation. The course is free to enroll.

The ***Proper Pesticide Use to Avoid Illegal Residues*** course provides information on pesticide residues, monitoring, tolerances, and risk assessment, and focuses on important sections of the pesticide label, presenting real-life scenarios where the most important factors leading to illegal residues are identified. Continuing education units: 2.0 hours "Pesticide Laws & Regulations" from the Department of Pesticide Regulation; 2 credits from the Arizona Department of Agriculture. The course is \$40 to enroll. If you do not need continuing education units, view the content of this course on YouTube for free
(<https://www.youtube.com/playlist?list=PLo3rG4iqv4gEHrtixdZnOipGoR-pBWv>)