UC IPM
University of California
Agriculture and Natural Resources

Retail Nursery and Garden Center

IPM News

Vol. 9· No. 2 · Summer 2019

Addressing the Science Surrounding Glyphosate

University of California Agriculture and Natural Resources (UC ANR)'s charge is research and extension and we provide guidance about how to manage weeds using registered pesticides and by non-chemical methods. UC ANR includes information in its publications on how to effectively and safely use glyphosate where it is legal to do so as well as provide options for alternative chemical and non-chemical approaches for managing weeds.

UC ANR recognizes that the use of any pesticide carries risks, including in some cases the possibility of acute (immediate), chronic (long term) or carcinogenic effects, to those who may be exposed to them. This is true of any pesticide, which includes herbicides such as glyphosate.

UC ANR has not specifically addressed carcinogenicity or other health issues related to glyphosate; these are areas of active research, data interpretation, and debate over inferences, conclusions, and courses of action in the scientific community and regulatory bodies as well as in the public discourse. However, to date, regulatory agencies in the United States have not significantly changed the legal uses of glyphosate herbicides.

What is risk?

The specific risks of a pesticide are a function of both hazard (toxicity) and exposure; the risks from more hazardous materials can often be reduced by minimizing exposure (e.g. strictly following the directions on the label, using proper personal protective equipment, and using appropriate application methods). Conversely, high exposure levels (e.g. large concentrations, frequent exposure, long-term exposure) to a relatively lower hazard material has the potential to increase health risks.

What is glyphosate?

Glyphosate is the active ingredient in herbicides such as the Roundup branded products as well as many other herbicides marketed under a variety of trade names. Glyphosate has been available since 1974 and is widely used by farmers, ranchers, landscapers, wildland managers, and home gardeners in California and around the world. This herbicide is used in a variety of systems because it is effective at controlling a wide range of annual and perennial grassy and broadleaf plants Glyphosate herbicides typically are applied to the foliage of emerged plants as a diluted spray but there are other application techniques and formulations for specific uses (e.g. cut stump treatments, no-surfactant formulations for some aquatic uses). Most glyphosate herbicides used in agriculture and commercial applications are sold as concentrated products that are then diluted in water before use; homeowner products may be either concentrates or sold in pre-diluted "ready to spray" packages.

C REYNOLDS, UCIPM

Applying glyphosate from a hand-held sprayer to control weeds.

How toxic is glyphosate?

Glyphosate has been placed in Toxicity Category III by the US EPA. Toxicity Category I indicates the highest degree of acute toxicity, and Category IV, the lowest. People may become exposed to glyphosate and other pesticides directly by getting it on their skin or in their eyes or indirectly through environmental contamination such as food and water contamination. Applicators must follow label instructions with regard to

... continued on page 2

INSIDE...

WANT A FREE SUBSCRIPTION?
Sign up to receive this newsletter electronically at ucanr.edu/subscribeIPMretailnews. Please share the newsletter with your co-workers and encourage them to subscribe too!

Glyphosate *...continued from p.1*

personal protective equipment (PPE). Whether or not specifically required by the product label, wearing long pants, closed toed shoes, chemical resistant gloves, and protective eyewear will reduce the risk of glyphosate exposure. Even if chemical-resistant gloves are worn, people should always wash their hands after applying pesticides, and before activities such as eating, smoking, or using the restroom. Most glyphosate products available for the homeowner indicate on the label that people and pets may enter the treated area after the spray has dried.

What about cancer?

In 2015, the International Agency for Research on Cancer (IARC), a non-regulatory organization, reviewed the published scientific literature on the carcinogenicity of glyphosate alone and in formulations. Based on their review, the IARC classified glyphosate as "probably carcinogenic to humans" and put it in group 2A. This category is used when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.

C REYNOLDS, UCIPM

Chemical resistant gloves.

Other groups such as the World Health Organization (WHO) and United Nations Food and Agriculture Organization (FAO) also examined the scientific literature on glyphosate. The joint FAO/WHO report concluded that glyphosate alone or in a formulation is unlikely to cause a carcinogenic risk to humans from exposure in the diet. The U.S. Environmental Protection Agency (US EPA), the regulatory agency that determines how pesticides may be used legally in the U.S. also concluded that it is not likely a cancer risk.

Glyphosate was added to California's Proposition 65 list (chemicals known to the state to cause cancer or reproductive toxicity) in 2017 because California regulations require chemicals listed in IARC hazard group 2A to be put on the Prop 65 list unless their report was deemed to have "less than sufficient evidence of carcinogenicity in humans and animals."

Weeds can have negative impacts on agriculture, public health, natural resources, and our economy. Likewise, pest control practices also have a range of potential impacts and outcomes. UC ANR promotes the use of Integrated Pest Management (IPM) strategies, including

M POE, UCIPM

cultural and mechanical practices, and herbicides when needed. If glyphosate or any other herbicide is used to manage weeds, the pesticide label must be followed to ensure these products are used safely and legally for minimal exposure to applicators, non-target organisms, and our environment. For more information about weed management practices and the safe and effective use of pesticides, visit the UC IPM website at ipm.ucanr.edu.

For detailed information about glyphosate or any other pesticide, visit the National Pesticide Information Center website at npic.orst.edu or call 1-800-858-7378 Monday–Friday, between 8:00 a.m.–12:00 p.m. Pacific Time. The National Pesticide Information Center provides objective, science-based answers to questions about pesticides.

—Developed by a team of UC ANR Advisors and Specialists with expertise in weed science

For more information: Please contact UC ANR Strategic Communications:
anrcs.ucanr.edu/Strategic_Communications/

Check out UC IPM's urban and community blog!

Our blog provides readers with timely information about pests in and around homes, gardens, landscapes, and structures in California. We post short pieces about common seasonal pests, invasive pests, beneficials, and new UC IPM resources, including new and revised *Pest Notes*, training events, and other educational materials for residential audiences and pest management professionals. View or subscribe to the blog at ucanr.edu/blogs/ucipmurbanpests/.

Hands-on Vegetable Pests and Solutions Workshops Coming Soon!

We are planning our next IPM workshops for retail nursery and garden center employees, managers, owners, and affiliates. These exciting, hands-on, train-the-trainer workshops will focus on solving vegetable problems including insect pests, diseases and disorders, and vertebrate pests.

Participants will receive materials and resources to help better serve their customers. Cost of registration will be $40 and include breakfast, lunch, and a set of *Vegetable Pest Identification for Gardens and Small Farm* card sets.

Stay tuned for more information and to register. Details will be posted on our online retail training page: ipm.ucanr.edu/RETAIL/training.info.html

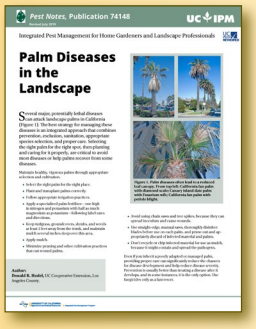
Training locations

- **Sacramento (November 2019)**
- **Oakland (January 2020)**
- **San Diego (February 2020)**

Recently Revised *Pest Notes*

Published in July 2019

Palm Diseases in the Landscape


Pest Notes, Publication 74148 UC IPM
Integrated Pest Management for Home Gardeners and Landscape Professionals
Palm Diseases in the Landscape

Palm trees, a common sight in many parts of California, must be carefully tended to avoid potentially lethal palm diseases. Learn more about disease identification, selecting the right palms, and management for palms in our recently updated *Pest Notes: Palm Diseases in the Landscape*, authored by UC Cooperative Extension advisor Donald Hodel. There's a new section with information on petiole and rachis blights as well as tips to maintain healthy, vigorous palms.

Online at ipm.ucanr.edu/PMG/PESTNOTES/pn74148.html

Pocket Gophers


Pest Notes, Publication 7433 UC IPM
Integrated Pest Management for Home Gardeners and Landscape Professionals
Pocket Gophers

Pocket gophers are unwelcome guests in gardens, hidden underground but wreaking havoc above. Effective management of pocket gophers in the garden relies on trapping and poison baits. Find more information in our newly updated *Pest Notes: Pocket Gophers*, authored by Roger Baldwin, a UC Cooperative Extension Specialist in Human-Wildlife Conflict Resolution. In this revised version, you'll find updates about current restrictions on fumigant and rodenticide use, optimal trapping techniques, and new carbon monoxide exhaust machines.

Online at ipm.ucanr.edu/PMG/PESTNOTES/pn7468.html

Roses in the Garden and Landscape: Cultural Practices and Weed Control


Pest Notes, Publication 7465 UC IPM
Integrated Pest Management for Home Gardeners and Landscape Professionals
Roses in the Garden and Landscape: Cultural Practices and Weed Control

Many gardeners love to grow roses and through careful selection of varieties and appropriate cultivation, roses can be grown with a minimum of pest problems. Find more information on growing healthy roses in our newly updated *Pest Notes: Roses in the Garden and Landscape: Cultural Practices and Weed Control*, authored by UC Cooperative Extension Advisor John Karlik. There are examples of new cultivars with color photographs, additional information on establishing bare-root stock, and updated information about appropriate herbicides for use in controlling weeds in a rose garden.

Online at ipm.ucanr.edu/PMG/PESTNOTES/pn7465.html

Visit UC IPM's *Pest Notes* web page for these and many more titles.

ipm.ucanr.edu/PMG/PESTNOTES

Wear the Right Gear When Using Pesticides

When using any kind of pesticide, including herbicides, it's important to read the pesticide label carefully and to be sure that you have the proper equipment for applying the pesticide correctly and safely. You will need certain clothing to protect yourself from the unwanted effects of acute (immediate) and chronic (long-term) exposure, even when applying organic or least-toxic pesticides.

Personal protective equipment, or PPE, is the term used for clothing and eyewear that act as a barrier between your body and the pesticide. However, for home use pesticide products, PPE is not always listed on the label—some simply say to avoid contact with eyes, skin, or clothing. So how do you know what to wear?

Before using a pesticide

Read the label to know what PPE you need before you handle, mix, or apply the pesticide. Minimally, protective gear should include chemical resistant gloves, eye protection, a long-sleeved shirt, long pants, socks, and closed-toed shoes.

Gloves: You must use the type of glove specified on the label. If the label does not specify that gloves are required, or if it only states that chemical-resistant or waterproof gloves are required, choose gloves of any chemical-resistant material. Avoid using cotton gardening gloves that may absorb the pesticide and result in prolonged contact with your skin.

Eyewear: Most home use pesticide labels do not specify what kinds of eyewear is required. If not specified, wear either a face shield, goggles, or safety glasses that provide front, side, and brow protection. All types of protective eyewear must be labeled "Z87.1" or "Z87+" (Figure 1) to indicate that it meets national protection standards.

Respirators: Most home use pesticides do not require a complicated fit-tested respirator, but you can use a NIOSH approved mask to reduce inhaling any pesticide dust or particles. Appropriate masks will be rated with a code that includes either N, R, or P paired with a number. N95 is a very common one. Lightweight painter's masks may not provide enough protection. Again, check the pesticide label requirements.

Applying a pesticide and cleaning up after use

Ready-to-use (RTU) products usually come in trigger pump sprayers, shake containers, or aerosals and don't require special mixing equipment. Even when using RTU products, read the label first and wear PPE to limit your exposure to the chemical.

When using concentrated pesticides that need to be diluted before use, equipment such as a hand-pump compressed air sprayer may be needed. This type of spray equipment requires careful maintenance and operation as well as precise mixing of chemicals. PPE should be worn when handling, measuring, and applying the pesticide, as well as when cleaning the equipment after use.

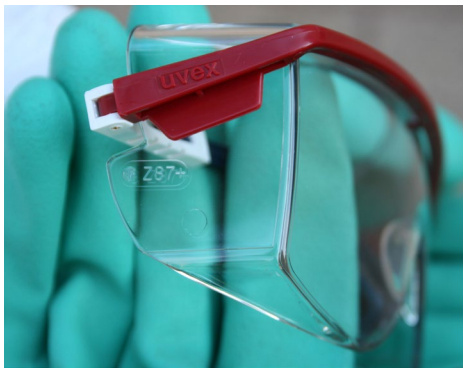


Figure 1. Safety glasses showing evidence of compliace with the designated "Z87" marked.

After application, take a shower as soon as possible. Wash clothing separately from other laundry. Always wash your hands after spraying or handling a pesticide and before smoking, drinking, eating, or using the bathroom.

Remember to carefully read and follow instructions and equipment requirements stated on all labels. For more information about pesticides, see the list of resources on the UC IPM web page "Pesticides in homes and landscapes" ipm.ucanr.edu/GENERAL/pesticides_urban.html.

—Karey Windbiel-Rojas, Associate Director for Urban and Community IPM, UC Statewide IPM Program, kwindbiel@ucanr.edu

WHAT IS IPM? Integrated Pest Management (IPM) programs focus on long-term prevention of pests or their damage through a combination of techniques including resistant plant varieties, biological control, physical or mechanical control, and modification of gardening and home maintenance practices to reduce conditions favorable for pests. Pesticides are part of IPM programs but are used only when needed. Products are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

University of California Statewide IPM Program
2801 Second Street
Davis, CA 95618-7774
Editor: K. Windbiel-Rojas
Production: B. Messenger-Sikes
E-mail: UCIPMretail@ucanr.edu
Online: ipm.ucanr.edu/RETAIL

Connect with us!
@ucipmurban
@ucipm

Produced by the University of California Statewide Integrated Pest Management Program with partial funding from the USDA NIFA CPPM Extension Implementation Program.

For more information about managing pests, contact your University of California Cooperative Extension office, or visit the UC IPM website at ipm.ucanr.edu.