C/T/A/H/R
College of Tropical Agriculture & Human Resources
University of Hawaii at Manoa

Cooperative Extension Service
U. S. DEPARTMENT OF AGRICULTURE COOPERATING

Extension Pesticide Programs

The Pesticide Label

Key to Pesticide Safety and Education

September–December 2003 Department of Plant and Environmental Protection Sciences

Contents

Staff's Notes

This newsletter is shorter than the usual 16 pages. So we have only enough space here to wish you Happy Holidays and a prosperous New Year!

Aloha,

Charles Nagamine, Instructor
Pesticide Risk Reduction Education Program

THIS NEWSLETTER IS SUPPORTED IN PART BY THE STATE OF HAWAII DEPARTMENT OF AGRICULTURE.

Regulatory Updates

We listed Special Local Need (SLN) labeling in previous issues of this newsletter. Here is an update.

You may use the items in this article to update the leaflet *List of Special Local Need Labelings for Pesticides in Hawaii as of Nov. 1, 2002***.** The leaflet is available from the Internet at: *http://pesticides.hawaii.edu*.

NEW OR RENEWED

For growers of **pineapple** plants (non-food)—use of the pesticide **Maintain CF125** (Uniroyal; EPA Reg. No. 400-395)—requires having a copy of **HI-830011**, valid 10/2/03–10/1/08—some notes: • For a non-food use: rapid reproduction of pineapple planting material. • Do not use treated pineapple plants for feed or forage.

For growers of **pineapple** plants (non-food)—use of the pesticide **Maintain CF125** (Repar; EPA Reg. No. 69361-6)—requires having a copy of **HI-980007**, valid 10/1/03–9/30/08—some notes: • For a non-food use: rapid reproduction of pineapple planting material. • Do not use treated pineapple plants for feed or forage.

For growers of **grapes**—use of the pesticide **Dormex** (Degussa Ag; EPA Reg. No. 54555-2)—requires having a copy of **HI-030003**, valid 11/4/03–11/3/08—some notes: • Aerial application is prohibited. • Use a coarse droplet spray with nozzle pressure not to exceed 40 psi and a minimum number of nozzles to achieve adequate wetting. • Do not exceed 100 gallons of total spray per acre and do not use more than 4 gallons Dormex per acre. • Do not apply closer than 300 yards to surface water. • This is a restricted-use pesticide.

EXPIRED or EXPIRING SOON

Rice grown for seed—**Quadris Flowable Fungicide** (Zeneca Inc.; 10182-415)—**HI–990001** expires 2/01/04.

CAUTION!

The lists of special local need (SLN) labelings in this newsletter are not substitutes for any SLN labeling. At the time of application, the applicator must have a copy of the appropriate SLN labeling in his or her possession.

A SLN labeling is *not* valid after the expiration date printed on it.

The applicator must comply with all instructions, limitations, and restrictions specified by the SLN labeling as well as the label on or attached to the pesticide's container. The instructions, limitations, and restrictions may apply to any or all of the following: • crop, object, or site that may be treated • application method • application timing • preparing the crop, object, or site for treatment • wearing protective clothing (for example, a long-sleeve shirt) and personal protective equipment (for example, a respirator) • measuring, mixing, and loading pesticide into application equipment • dosage or dilution of pesticide • setting up, adjusting, and calibrating application equipment • restricting entry by others into a treatment area • cleaning up or securing treated area • notifying other persons of hazards (for example, by training them, warning them, or by posting signs) • storing, locking up, or disposing of the pesticide container • washing up himself or herself after the treatment • making and keeping records.

* * *

RECERTIFICATION CREDITS may be earned by certified applicators (except those in *commercial* categories 8 and 10) who take advantage of "recertification topic" articles in this newsletter.

To earn credit(s) for an article, an applicator must correctly answer at least 70% of the evaluation questions prepared by the Hawaii Department of Agriculture staff. For more information, telephone one of these HDOA offices: Kauai 274-3069, Oahu 973-9401, Maui 873-3555, Hawaii 974-4143. The area code for all offices is 808.

Review a Pesticide Label Before You Buy (Recertification Topic)

Review the label of a pesticide before you buy it so you can be sure you:

- Do not treat a **site**, **object**, **animal**, or **crop** unless the pesticide's label gives instructions for doing so.
- Do not handle the pesticide unless you wear the **protective clothing** or **safety gear** required by the pesticide's label.
- Do not apply the pesticide unless you have the **application equipment** required by the label.
- Do not apply the pesticide unless you can **wait the number of hours or days after application** required by the label. If pesticides are used for livestock operations, the labels may specify a number of days before slaughtering, selling milk, or feeding an animal, or allowing an animal to graze a treated pasture. If pesticides are used to treat agricultural plants, the labels may specify a "days-to-harvest" or a "restricted entry interval" (REI). If a fumigant pesticide is used to treat a structure, the label will specify a waiting period (in hours) before allowing customers to re-enter the treated structure. If pesticides are used to treat lawns or indoor spaces, the labels may give a warning such as, "Keep children and pets out of treated area until sprays have dried." These label restrictions protects our air, soil, and water as well as pets, customers and wildlife, from exposure to pesticides. Not complying with these restrictions is considered to be a "misuse" of pesticides and you could be cited by the Hawaii Department of Agriculture of any misuse.

* * *

Temperature Effects on Storage of Greenhouse, Ornamental and Turf Pesticides (Recertification Topic)

Fred Fishel
Department of Agronomy
Cooperative Extension
University of Missouri-Columbia

Temperature extremes in the pesticide storage facility pose several problems. The normal temperature range recommended for storing liquid pesticides is usually 40 to 100 degrees Fahrenheit, although some pesticide labels state a specific temperature range for maintaining optimal shelf life. The purpose of this guide is to provide a quick reference for specific storage information and temperature requirements, if relevant, for many commonly used greenhouse, ornamental and turf pesticides.

Temperature extremes in storage can reduce the effectiveness of pesticides. Freezing of liquid pesticides can result in the active ingredients separating from the solvents or emulsifiers, which may lead to crystallization or coagulation of the pesticide. Some pesticides may be thawed and reused after being frozen by rolling, shaking or otherwise agitating the container to resuspend its contents. Call the manufacturer for advice on reusing specific pesticides that have frozen. Also note that the freezing point of many pesticides is lower than 32° due to the hydrocarbon solvents and inert ingredients present.

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Temperature Effects, *continued from page 3*

At the other extreme, excessive heat can cause pesticides to volatilize and drift away from the storage site. Some pesticides are flammable.

Temperature extremes can also damage the integrity of the pesticide container. Freezing temperatures can cause glass, metal and plastic containers to break.

As a rule, wettable powders and granules are not affected by low temperatures. Moisture is the greatest factor affecting their storage as it can cause caking that may reduce the effectiveness of the pesticide. Products formulated in water-soluble packets have a high affinity for moisture and become brittle when frozen. Brittle packets may break open when handled, so store these products in a warm, dry area.

Before storing pesticides, read the "storage and disposal" section of the pesticide label. Many pesticide labels provide specific storage information. The following precautions should be used in the storage of all pesticides:

- Do not store near heat, sparks or open flame.
- Do not contaminate other pesticides, fertilizer, water, food or feed by storage.
- Keep containers tightly closed, dry and at a moderate temperature in a locked, well-ventilated place that is out of the reach of children.
- Store products in original containers only.

If storage information cannot be found on the label, contact the manufacturer of the pesticide. [The author lists specific storage information taken from the "storage and disposal" section of several dozen pesticide labels. You may view this list at the following web site: *http://muextension.missouri.edu/xplor/agguides/pests/ipm1012.htm*.]

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New Hawaii Poison Hotline Telephone Number (Recertification Topic)

Hawaii residents anywhere in the state may now dial a toll-free number, **1-800-222-1222**, for a direct connection to trained poison specialists who provide free and confidential services, 24 hours a day, 7 days a week.

Poison center services are available for people with hearing problems and for non-English speakers.

* * *

Hawaiian Place Names

Holua-loa. Village, elementary school, land sections, and bay, Kai-lua qd., Hawaii. Lit*., long sled course.*
From Place Names of Hawaii*, a book by Mary Kawena Pukui, Samuel H. Elbert, and Ester T. Mookini. 1974. The University of Hawaii Press.*

* * *

Don't Treat Swallowed Poison With Syrup of Ipecac Says AAP (Recertification Topic)

Chicago—In a new policy statement, "Poison Treatment in the Home," the American Academy of Pediatrics (AAP) recommends that syrup of ipecac no longer be used routinely as a home treatment strategy. Until now, the AAP advised that parents keep a 1-ounce bottle of syrup of ipecac in the home to induce vomiting if it was feared a child had swallowed a poisonous substance. Ipecac was recommended for use only on the advice of a doctor or poison control center.

Although it seems to make sense to induce vomiting after the ingestion of a potentially poisonous substance, it was never proven to be effective in preventing poisoning. Recent research has failed to show benefit for children who were treated with ipecac. This is the key reason for this policy change.

Source: November, 2003 Media Mailing, American Academy of Pediatrics.

http://www.aap.org/pressroom/aappr-nov03mailing.htm

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Accurate Identification of Pesticide Products (Recertification Topic)

Accurately identifying a pesticide product is critical when giving and getting pesticide recommendations. Why? Because two or more products may have similar names and pesticide users should be sure they apply the right product. Accurate identification is also important because several laws and regulations require applicators to record and sometimes report product names, for example, when:

- recording and providing pesticide **application information**. The federal Food Agriculture Conservation and Trade (FACT) Act requires *private applicators* and *certain commercial applicators* to record their applications of restricted use pesticides. The federal Worker Protection Standard (WPS) requires farm, greenhouse, nursery, and commercial forestry employers to record their applications of any *agricultural* pesticide (whether a "restricted use" pesticide or not). The WPS also requires the employers to post the information in a central location for their employees to see, to explain it to their employees if required by the product labeling, and to provide the information to labor contractors or other employers whose employees work on the farm, greenhouse, nursery or commercial forest. Both the FACT Act and theWPS also require employers to provide the information to medical personnel treating an employee for actual or possible exposure to the pesticide.
- making an **inventory** of certain amounts of pesticides in storage. This is required by the Hawaii Emergency Planning and Community Right-to-Know Act.

Start identifying a pesticide by searching its labeling for the **brand name**. It is the complete name of the pesticide product usually printed in the biggest letters. For example, Distance® Fire Ant Bait and Distance® Insect Growth Regulator are the brand names of two different insecticides. Both brand names contain the trademarked name "Distance®", but one is a granular product and the other is a liquid. If you were to give or get a recommendation about either one, be sure to discuss the complete brand name rather than just "Distance". As another example, consider these three brand names: Iprodione 50WP T&O, Iprodione 50WP AG Fungicide, and Iprodione 4L AG Fungicide. To be accurate, discussion about any one of these fungicides should include the

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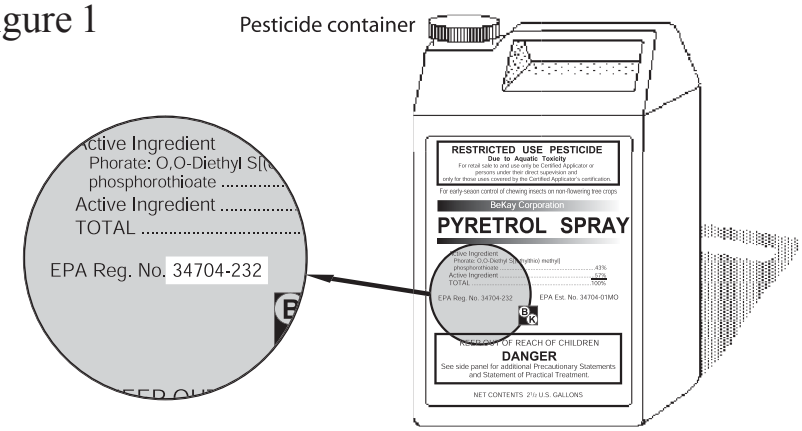
entire brand name rather than just "Iprodione", or "Iprodione AG", or "Iprodione 50WP".

A careful reading of the **EPA Registration Number** (often abbreviated "EPA Reg. No.") may help in further distinguishing between similar brand names. This is a string of digits (and sometimes letters) printed on the pesticide's label, usually on the front panel near the brand name (Figure 1). A unique EPA Reg. No. is assigned to each pesticide product by the U.S. Environmental Protection Agency. In the examples listed below, notice the differences between the sets of three digits to the right of the dash.

Figure 1



Brand Name	**EPA Reg. No.**
Iprodione 50WP T&O	51036-339
Iprodione 50WP AG Fungicide	51036-341
Iprodione 4L AG Fungicide	51036-340

Summary: When you need to accurately identify a pesticide product, check both the brand name and the EPA Reg. No.

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List of Hawaii's Special Local Need (SLN) Labelings on the Internet

A list of Special Local Needs (SLN) labelings currently registered for Hawaii may be viewed and downloaded from a Hawaii Department of Agriculture web page: *http://www.hawaiiag.org/hdoa/pi_pest_list.htm*. On the same web page, readers may also get the list of pesticide products licensed for distribution and sale in Hawaii. For more information, contact the Honolulu office of the Pesticides Branch of the Hawaii Department of Agriculture: telephone (808) 973-942 or 973-9414 or 973-9415.

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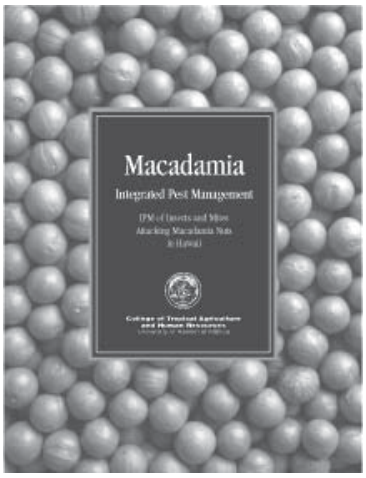
Macadamia Integrated Pest Management and Quick Reference Guide.



Vincent P. Jones, formerly of the Department of Plant & Environmental Protection Sciences in CTAHR, University of Hawai'i at Manoa, recently published a book entitled "Macadamia Intergrated Pest Management: IPM of Insects and Mites Attacking Macadamia Nuts in Hawai'i", providing a comprehensive overview of many years of his own work on macadamia pests in Hawai'i as well as the work of many of his predecessors and colleagues. The book provides comprehensive details on pest biology, type of damage caused and management options, including chemical, biological and alternative control measures. Mark Wright, who recently joined the PEPS faculty, has compiled a "Quick Reference" poster for the book, providing a series of illustrations of pests, their typical damage, and biological control agents, linked to page references in Jones's book. The objective is to provide a grower with an easy-to-use field guide, which can then be used to track down more detailed information in the book.

The book ($16) and poster (free) are available through the CTAHR Publications and Information Office, ph. (808) 956-7036.

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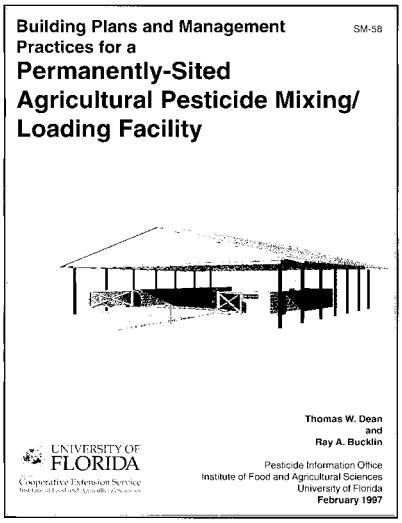
Building Plan for a Sprayer Mix/Load and Wash-down Facility



A mixing/loading facility can be useful for containing and/or recycling water used to wash pesticide sprayers as well as any drips or spills that occur while mixing/loading pesticides. A University of Florida booklet provides detailed guidance for planning and constructing one with an inward-sloping concrete pad, work area, entrance and exit ramps, and roof. *Building Plans and Management Practices for a Permanently-sited Agricultural Pesticide Mixing/Loading Facility* contains a full set of building plan drawings and provides specific guidance on: • pad surface and sump management techniques • facility workspace considerations • safety equipment • floor coatings • special hazard areas • emergency response actions • spill clean-up techniques. It even discusses inspection and maintenance of the facility, and topics for training employees who use the facility. The booklet may also be used for assessing an existing mix/load facility.

The booklet was reviewed by Florida's regulatory personnel and others familiar with pesticide storage issues. But the authors note that the booklet's details and guidance do not carry the force of law and also encourage anyone planning to build a pesticide mixing/loading facility to consult a licensed contractor familiar with local building code requirements before implementing these plans.

The 45-page booklet costs $3.00. To inquire about shipping and handling charges or to get more information, contact the University of Florida/IFAS

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Building Plan for a Sprayer Mix/Load & Wash-Down Facility, *continued from page 7*

Extension Bookstore, Building 440, Mowry Road, PO Box 110011, Gainesville, Fl 32611, phone: 352-392.1764, fax: 352.392.2628, or view the web site at: *http://ifasbooks.ufl.edu/merchant2/merchant.mv?*. See the listing for publication code number SM-058, *Building Plans and Management Practices for a Permanently-sited Agricultural Pesticide Mixing/Loading Facility*, 1997, by Thomas W. Dean and Ray A. Bucklin, University of Florida, Institute of Food and Agricultural Sciences.

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Federal Pesticide Law (FIFRA) versus Clean Water Act

This article appeared in the newsletter, "The Label", August 2003, Vol. 15, No. 8, http://pested.unl.edu/thelabel/tlaug03.htm*, Larry Schulze, Pesticide Education Specialist, University of Nebraska–Lincoln.*

In recent years, differing viewpoints have developed concerning the application of pesticides to waters of the United States. Jurisdictional issues have arisen under the Clean Water Act (CWA) pertaining to pesticides regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). A statement issued by the U.S. Court of Appeals for the Second Circuit in *Altman v. Town of Amherst* highlighted the need for EPA to articulate a clear interpretation of whether National Pollutant Discharge Elimination Systems (NPDES) permits are required for application of pesticides that comply with relevant requirements of FIFRA.

Cases are present where interpretation of the Clean Water Act considered a pesticide applied to water as a "pollutant," which, in turn, triggers the requirement for an NPDES permit or a state-issued permit in order to make such an application. The Second Circuit issued a Summary Order encouraging EPA to make a clear interpretation of current law.

On July 11, 2003, an "Interim Statement and Guidance on Application of Pesticides to Waters of the United States in Compliance with FIFRA" was jointly released by two EPA administrators: Stephen Johnson, Assistant Administrator for Prevention, Pesticides, and Toxic Substances, and G. Tracy Mehan, III, Assistant Administrator for Water.

Johnson and Mehan indicated that a "pollutant" in Section 502(6) of the Clean Water Act is specifically described. "The term 'pollutant' means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." EPA evaluated whether pesticides applied consistent with FIFRA fall within the above definition, in particular whether they are "chemical wastes" or "biological wastes."

In reference to the "chemical waste" definition, EPA's interim statement referred to the basics. It quoted two dictionaries that defined "waste" as "an unusable or unwanted substance or material, such as a waste product." EPA concluded that "chemical wastes" do not include pesticides applied consistent with FIFRA.

What, then, about "biological wastes?" The EPA memo stated, "we think it unlikely that Congress intended EPA and the States to issue permits for the discharge into water of any and all material with biological content." The memo further stated, "taken to its literal extreme, such an interpretation could

arguably mean that activities such as fishing with bait would constitute the addition of a pollutant." EPA also concluded that "biological materials" do not include pesticides applied consistent with FIFRA.

The Statement was sent to the ten EPA Regional Administrators and addressed two sets of circumstances concerning the application of pesticides to water:

1) The application of pesticide directly to waters of the United States in order to control pests. Examples of such applications include applications to control mosquito larvae or aquatic weeds that are present in the waters of the United States,

2) The application of pesticides to control pests that present over waters of the United States that results in a portion of the pesticides being deposited to water of the United States. An example is where insecticides are aerially applied to a forest canopy where waters of the United States may be present below the canopy or when insecticides are applied over water for control of adult mosquitoes.

EPA is concluding in its interim statement and guidance that the application of pesticides in compliance with relevant FIFRA requirements is not subject to NPDES permitting requirements under the Clean Water Act. Meanwhile, EPA will solicit comment on this interim statement through the Federal Register prior to determining a final Agency position. (Source: Johnson and Mehan EPA Memorandum, July 11, 2003)

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Mosquito Repellent Recommendations Updated

The last issue of *The Pesticide Label* featured the article, "Mosquito Repellents" that mentions the American Academy of Pediatrics' (AAP) recommendations on the use of DEET products on small children. Since then, the AAP has modified their recommendations. Previously, products containing up to 10% DEET was recommended for use on children. However, the AAP now states that repellents with a concentration of 10% DEET appear to be as safe as products with a concentration of 30% *when used according to the directions on the product labels*. DEET is not recommended for use on children under 2 months of age.

Source: AAP News–June 2003, American Academy of Pediatrics.

http://www.aap.org/family/wnv-jun03.htm

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Hawaiian Place Names

Kainaliu. Village, Kailua qd., Kona, Hawai'i; formerly Kā-i-nā-liu (bail the bilge), the name of a canoe bailer for Keawe-nui-a-'Umi.

Pāpa'i. Land Section, Maku'u qd., Hawai'i; where Ka-mehemeha I was struck on the head with a paddle while his foot was caught in a crevice; now called King's landing. Lit*., crab.*
From Place Names of Hawaii*, a book by Mary Kawena Pukui, Samuel H. Elbert, and Ester T. Mookini. 1974. The University of Hawaii Press.*

* * *

EPA Issues Label Review Manual–Third Edition

While the purpose of EPA's Label Review Manual (LRM) is ostensibly targeted for people who develop and approve pesticide labels, it also is instructive for those who simply want to know more about the labeling process. The third edition, published in electronic format means that this information is now being made available to the masses.

EPA considers the LRM as a tool for understanding the pesticide labeling process. If you notice errors in or ways to improve the LRM, please contact the Office of Pesticide Programs at 703-308-9068. EPA considers the document to be an instructional aid that does not establish new guidance, but instead compiles current interpretations of statutory and regulatory provisions and reiterates current policies. This tool also is useful in understanding approaches for how labels should generally be drafted. As always, EPA will consider each label on its own merits and will consider deviations from labeling the policy under the appropriate provisions of FIFRA and its implementing regulations.

The chapter outline of the LRM is listed below:

1. Purpose of Manual
2. What is a Pesticide?
3. General Labeling Requirements
4. Types of Label Review
5. Ingredient Statement
6. Use Classification
7. Precautionary Labeling
8. Environmental Hazards
9. Physical or Chemical Hazards
10. Worker Protection Labeling
11. Directions for Use
12. Labeling Claims
13. Storage and Disposal
14. Identification Numbers
15. Company Name and Address
16. Graphic & Symbols on Labels
17. Content/Net Weight Statement
18. Unique Product Labeling
19. The Consumer Labeling Initiative and Pesticide Labels

The LRM is available for download in Adobe Acrobat format from the following EPA URL: *www.epa.gov/oppfead1labeling/lrm*

Source: North Dakota State University, Extension Service, Pesticide Program newsletter, "North Dakota Pesticide Quarterly", Vol. 21 No. 4, Oct. 2003.

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Short Courses in 2004

The instructor for the Pesticide Risk Reduction Education short courses is planning for Molokai in March, Kauai in April, Kona in June, and Oahu in August.

If you would like to get an announcement when the dates and training sites are set, send a request to be listed on the "waiting list". In your request, include your **name**, day-time **telephone number**, and at least **one of the following**: email address, mailing address, or fax number. Also list your training **site preference** (Kona, Molokai, Kauai, Oahu); list more than one

site if you are willing to travel. Send requests to Charles Nagamine: email: *charlie@hpirs.stjohn.hawaii.edu*, telephone: (808) 956-6007 fax: (808) 956-9675, mail: PEPS Dept., 3190 Maile Way, Rm. 307, Honolulu, HI 96822.

The instructor may cancel and reschedule a course if too few people register for a particular site. Keep this in mind if you plan to travel.

You may also check our web site at any time for announcements. As dates and sites are set, announcements and registration information will be posted at *http://pestworld.stjohn.hawaii.edu/pat/schedule.html*.

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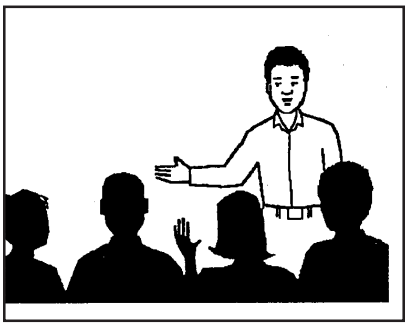
Hilo Short Course for Pesticide Applicators



A *Pesticide Risk Reduction Education* short course will be offered in February in Hilo. The short course will benefit people who want to (1) be better informed about proper pesticide handling, or (2) prepare for the Hawaii Department of Agriculture's certification exam for restricted use pesticides. (*Pesticides* includes insecticides, fungicides, herbicides, and rodenticides.) Previous trainees include owners, managers, supervisors, and pesticide buyers and applicators for these operations: farms, nurseries, commercial forestry, natural area conservation, botanical gardens, parks, landscaping, golf courses, hotels & resorts, and structural pest control. The 2½-day short course will be conducted by an instructor from the UH College of Tropical Agriculture and Human Resources.

Dates & Times

February 10, Tuesday, 12:45–4:15pm, and

February 11, Wednesday, 8:30am–4:15pm, and

February 12, Thursday, 8:30am–4:15pm.

Breaks are 50–60 minutes apart. Lunch breaks are 75 minutes.

Location

Komohana Agricultural Complex, on Komohana Street, in Hilo

Topics—The instructor will emphasize the study packet's "core" materials, which provide information common to all categories of certification. Topics include: • Types and formulations of pesticides • Pesticide labeling and MSDSs • Laws and regulations about buying, storing, transporting, applying, disposal, employee protection • Integrated pest management basics & alternatives to pesticides • Common pests' general identification features and life cycles • Common application equipment • Dilution and dosage calculations • Pesticide movement and breakdown • Groundwater protection • Endangered species protection • Carry-over, resistance, phytotoxicity • Hazards to pesticide handlers • Protective clothing and equipment • Safe mixing, loading, and application practices • Proper transport, storage, and disposal. The instructor will not cover the study packet's "category-specific" materials, so you should study all of the material in the packet if you plan to take any of the certification exams.

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This newsletter is published by the Extension Pesticide Programs. For information on pesticide programs, please contact:
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Editors: Dr. Barry Brennan and
Charles Nagamine

Hilo Pesticide Short Course, *continued from page 11*

Deadline for registration is **January 9,** Friday. The course will be postponed if less than 10 people have registered by this deadline. Enrollment will be limited to 25 people.

If you have a disability and may need accommodations to fully participate, contact the Agricultural Diagnostic Service Center (Honolulu), (808) 956-6706, by **January 9**.

Fee $**115**, Includes classroom handouts and one complete packet of study material for the category you designate on your registration form; $90 if you already have a current study packet. Details on registration form.
Registration Form Available from the instructor or this web site: *http://pestworld.stjohn.hawaii.edu/studypackets/ordrfrm3.html*.

Contact Instructor, Charles Nagamine: **PHONE (808) 956-6007** (Honolulu), **FAX** (808) 956-9675, **EMAIL** *charlie@hpirs.stjohn.hawaii.edu*.

Leaflet available before short course begins

For a free copy of the leaflet, *Test Your Math Skills*, contact the instructor or download it from the Internet at *http//:pestworld.stjohn.hawaii.edu/pat/schedule.html#Test_Your_Math_Skills_available*. The leaflet presents exercises and answers that will help **trainees** refresh basic math skills needed to understand the instructor's calculation examples. The exercises review (1) common fractions and their decimal number equivalents, (2) rounding off, (3) conversions between • seconds and minutes • ounces and pounds • fluid ounces, pints, and gallons • square feet and acres, and (4) calculating square feet of rectangular areas. These basic math skills (and more) will help test-takers answer some of the certification exam questions.

Trainees who find the exercises difficult will get more benefit from the short course if they seek tutoring before the course begins.

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