



Pesticide Applicator Report



a Publication of the Vermont Agency of Agriculture, Food & Markets
for Vermont's Pesticide Applicators

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News from the Vermont Agency of Agriculture, Food & Markets

EPA Orders Chemical Testing for Hormone Effects

WASHINGTON – The U.S. Environmental Protection Agency has issued the first test orders for pesticide chemicals to be screened for their potential effects on the endocrine system. Endocrine disruptors are chemicals that interact with and disrupt the hormones produced or secreted by human and animal endocrine systems, which regulate growth, metabolism and reproduction.

“After years of delay, EPA is aggressively moving forward by ordering the testing of a number of pesticide chemicals for hormone effects,” said Steve Owens, assistant administrator of EPA’s Office of Prevention, Pesticides, and Toxic Substances. “These new data will be carefully evaluated to help identify potential hormone disruptor chemicals.”

On Oct. 21, EPA made available the battery of scientific assays and test guidelines for conducting the assays, as well as a schedule for issuing test orders to manufacturers for 67 chemicals during the next four months. The data generated from the screens will provide robust and systematic scientific information to help EPA identify whether additional testing is necessary, or whether other steps are necessary to address potential endocrine disrupting chemicals.

Testing, conducted through the agency’s Endocrine Disruptor Screening Program (EDSP), will eventually expand to cover all pesticide chemicals. Now that screening is under way for the first group of chemicals, EPA is preparing to review the responses, evaluate the data, determine the potential of endocrine interaction, and whether additional testing is necessary to guide further regulation.

The EDSP is the most comprehensive mandated testing program for hormone effects in the U.S. The program is the result of a multi-year effort that includes validation of the science through a transparent scientific review process.

More information about the screening program: <http://www.epa.gov/endo>

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Questions or comments regarding this newsletter? Please contact **Matthew Wood** at the Vermont Agency of Agriculture at 802-828-3482 or matthew.wood@state.vt.us

The Label and the Applicator

The label is the most important source of information for you, the applicator, about how to properly use a pesticide product. Pesticide labels are rather complex and can be intimidating to read, but it is extremely important that the applicator read and understand the ENTIRE label before proceeding with the application. The label should be read before each and every application, don't rely upon your memory or copy what was done previously by you or another applicator. It may have been done incorrectly then and now you are about to repeat the same mistake.

The best argument for reading the entire label is what I see when someone taking the certification exam comes across what they think is the correct answer to a question about a pesticide label. They write down their first impression without reading further on, where they would have found more information and the correct answer to their question.

The purpose of all of this label information is to protect you, consumers, property and the environment. All of the information you will ever get from the manufacturer is on the label, which includes what is physically attached to the container plus any supplemental information including brochures, leaflets, and information handed out by your dealer, sales rep, or other recognized authority. This supplemental information may also be incorporated by reference such as the mention of a website that needs to be referred to for an endangered species bulletin. It is the applicator's responsibility to comply with ALL of this information.

Listed below are the various sections of the label in the *approximate* order that they appear on a label. Note that somewhat different formats are used for certain classes of products (e.g., rodenticide baits), and "homeowner" labels will have different information than those intended for use by professionals.

Label Layout - Front Panel

Restricted Use Pesticide Statement

(if applicable). This will appear right across the top of the label if it is deemed "restricted use" by the US Environmental Protection Agency (EPA). There will be no indication like this on the label if the State of Vermont has classified it as "restricted use." It is the applicator's responsibility to know whether the product he/she is using is "restricted use."

To determine the class (A, B, or C) of any pesticide, or just to find if it is registered for use in Vermont, go to

<http://www.kellysolutions.com/VT/pesticideindex.htm>

and type in the product name or EPA registration number (EPA ID). A successful search will bring up a page showing all the pertinent information about that pesticide. Next to the "Restricted Use?" line you will find a "Y" for yes and an "N" for no, as well as the Vermont pesticide classification (A, B, or C).

Product Name, Brand or Trademark

Each manufacturer has brand names for their products, therefore different manufacturers will have different names for products containing the same active ingredients. On the other hand, products from a single manufacturer with slight variations in the name may actually be a completely different product with different active ingredients, so don't select a pesticide based on brand name only, check that ingredient statement.

Ingredient Statement

This section of the label identifies the name and the percentage by weight of each active ingredient and the percentage by weight of other/inert ingredients. Common names or official chemical names of the active ingredients must be listed. Usually they are both listed with the common name followed by the chemical name in parentheses. If the common name is used, it must be one that is accepted for use by the US EPA. When the size or form of the product package makes it impracticable to place the ingredient statement on the front panel, permission may be granted for the ingredient statement to appear elsewhere on the label.

"Keep Out of Reach of Children" (KOOROC) Statement

This specific statement, which is commonly referred to as the KOOROC statement ("child hazard warning"), appears on almost all end use pesticide products except those pesticides that are intended for use on children or where it is demonstrated that children will not come in contact with the product. In these cases, a modified statement is allowed.

Signal Words and Symbols

Signal words that correspond to the toxicity categories for product hazards (e.g., oral, dermal) appear on the front panel of the label. This word will give you a general idea of how dangerous the product is to humans.



Danger – This signal word will appear on the label of products that pose a threat of corrosiveness to the skin or eyes. Products which are highly toxic either orally, dermally or through inhalation will also carry the word POISON and the "skull and crossbones" symbol. Just a taste to a teaspoonful of this could cause death.

Warning – Products that are moderately toxic through oral, dermal, or inhalation exposure and those that cause moderate skin and eye irritation will be labelled WARNING. A teaspoon to a tablespoon of one of these through ingestion could cause death.

Caution – This is the signal word for products that are slightly toxic to relatively non-toxic through oral, dermal, or inhalation exposure routes or those that cause only slight eye and skin irritation. It would take from an ounce to a pint or more of one of these to cause death.

First Aid

A first aid statement must appear on the front panel of all pesticides assigned to Toxicity Category I (the most toxic) by any route of exposure, but the agency may allow reasonable variations in the placement of the statement. If it appears on the back, then there must be a reference to it such as "See First Aid statement on back panel" near the word "poison" and the skull and crossbones. First Aid statements for pesticides of other Toxicity Categories may appear on any panel of the label.

Net Contents/Net Weight

This section identifies the weight or volume of pesticide in the container.

Front or Back Panel

EPA Registration Number & Establishment Number

The EPA Registration Number is the single most important piece of information for tracking pesticide products, and this is what we require you record on your application records, invoices, and annual use reports. The EPA Registration Number must appear on the label of the product.

The EPA Establishment Number (EPA Est. # on the label) identifies the final physical location where the pesticide product was produced or labeled. The EPA Establishment Number may appear on any suitable location on the label or immediate container, however, it must appear on the wrapper or outside container of the package if the number cannot be clearly read through the wrapper or container. This number is NOT a substitute for the EPA Registration number in your records and/or reports.

There may also be an EPA SLN number, which stands

for "Special Local Need." This occurs when a state registers a product for use in a unique situation. This information is usually not on the package label, but instead contained on supplemental labeling that would accompany the product.

Company Name & Address

Identifies the name and address of the producer, registrant or person for whom the product is produced. Many times a phone number is also provided, which is a good way to contact the manufacturer with questions about the product.

Back Panel

Precautionary Statements

Hazards to Humans and Domestic Animals

Where a hazard exists to humans or domestic animals precautionary statements that describe the particular hazard, route of exposure and precautions to be taken must appear in this section of the label. These warning statements can vary as to where they appear on the label, and you should search for these warnings before doing any applications so you can do your application safely and knowledgeably.

Environmental Hazards

These environmental hazard warning statements appear on practically every pesticide label to remind you how to avoid contaminating the environment. Some pesticides may be quite harmful to the environment if mis-used and are classified as restricted use based solely on this threat. They may also include groundwater advisories and information on how to avoid contaminating water resources. Examples of the more common warning statements are "This product is toxic to fish, birds, and other wildlife. Do not apply directly to water," "Do not contaminate water when cleaning equipment or disposing of wastes," etc.

Physical or Chemical Hazards

Hazards such as flammability, explosive potential, corrosiveness or dielectric breakdown and the various precautions to be taken are identified on the label in this section. Keep these concerns in mind during all stages of pesticide handling. Not only during the application, but also during mixing, loading and storage of these products.

Directions for Use

This section of the label provides you with instructions on how to use the product, and identifies the pest(s) to be controlled, the application sites, application rates, mixing directions, compatibility information for other commonly-used products, possible site injury or staining problems, timing of application, and any special

12. Precautionary statements
13. Hazards to humans and domestic animals
10. Statement of practical treatment
11. Note to physician
9. Signal word
16. Directions for use

EZD-Pest Insecticide and Fungicide

STATEMENT OF PRACTICAL TREATMENT—If in eyes, flush with plenty of water. Call a physician. If in skin, wash with plenty of soap and water. Get medical attention if irritation persists. If swallowed, drink promptly a large quantity of milk, egg whites, or plain water, or if these are not available, drink large quantities of water. Avoid alcohol. If inhaled: Remove victim to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. Get medical attention. **NOTE TO PHYSICIAN** Carbaryl is a moderate to variable cholinesterase inhibitor. Atropine is antidote. Emergency medical information call 1-800-730-2222.

PRECAUTIONARY STATEMENTS—HAZARDS TO HUMANS AND DOMESTIC ANIMALS—**DANGER**—Causes irreversible eye damage. Irritant. Swallowed or inhaled. May cause allergic skin reactions. Do not get in eyes. Wear goggles or face shield when handling. Avoid contact with skin and clothing. Wear chemical resistant gloves. Also wear long pants and long-sleeved shirt and apply with the wind to your back. Wash hands and clothes thoroughly with soap and water before removing. Clothing worn while handling this product must be laundered separately from other clothing before reusing.

ENVIRONMENTAL HAZARDS—This pesticide is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water. Do not use in or near backyards or aquatic organisms in areas near the application site. Do not cover equipment or dispose of equipment washwaters in a manner that will contaminate water resources. This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

PHYSICAL OR CHEMICAL HAZARDS: Do not use or store near heat or open flame. Do not store below 32°F.

15. Physical or chemical hazards
14. Environmental hazards
17. Storage and disposal

SHAKE WELL BEFORE USING

DIRECTIONS FOR USE
 It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

EZD-Pest Insecticide and Fungicide is a complete concentrate containing fungicide, acaricide, miticide, scabicide and spreader-sticker. Easy to use; mixes with water instantly; no plugging, nozzles; no messy powders to handle, measure or mix; no pre-mixing or straining necessary. Designed especially for home gardens to protect roses, evergreens and flowers from the ravages of listed insects and diseases.

SHAKE PRODUCT THOROUGHLY BEFORE USING. Contains micron particles which settle upon standing and require reblending by agitation. Choose a cool, calm period, preferably early morning or evening. Shake sprayer occasionally or agitate to keep spray particles in suspension during application.

ROSES, EVERGREENS AND FLOWERS
Insects: Aphids, apple maggot, bagworm, black cutworm, bud moth, cherry fruit fly and worm, codling moth, plum curculio, fire beetles, fruit tree leaf roller, gypsy moth, Japanese beetle, leaf hoppers, lesser peach tree borer, mealy bugs, mistle towever, European red, red spotted and Wintered, oriental fruit moth, pear slug, psylla, red banded leaf roller, scale (Forbes, Putnam, San Jose), spider bug, tent caterpillar, unspotted flatworm leaf miner, and yellow neck caterpillar.
Diseases: Blight rot, black spot, black rot, blossom blight, Botrytis/shank rot, botrytis blossom and rot, brown rot, corymbous blight, downy mildew, fly speck, frog eye, leaf spot, scab, and sooty blotch.

MIX 1/4 TABLESPOONS PER GALLON OF WATER
 Begin applications when pests or disease symptoms first appear or conditions favor their development and repeat at weekly intervals or as necessary to maintain control. Remember, it is easier to prevent damage than to cure it. Therefore, a preventive spray schedule is recommended. Do not use if rain is expected shortly after application. Select soil periods for application (early morning or evening) to reduce waste by blow away and slow back application. Spray in early morning or in the evening to avoid direct sunlight. Do not apply through any type of irrigation equipment.

STORAGE AND DISPOSAL
STORAGE: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Avoid contamination of food and localities. Store in a cool, dry place, preferably in a locked storage area.
DISPOSAL: PRODUCT—Empty container should be rinsed and discarded in trash. CONTAINER—Do not reuse empty jug. Rinse thoroughly before discarding in trash.
NOTICE: Buyer assumes all responsibility for safety and use not in accordance with directions.

3. Ingredient statement
2. Type of pesticide
1. Product name
8. Keep out of reach of children

EZD-Pest
Insecticide and Fungicide
Controls Diseases and Insects on Flowers and Ornamentals

ACTIVE INGREDIENTS

*Carbaryl	11.76%
*Captan	24%
Methidathion (0,0-dimethyl dithiophosphato diethyl mercaptosuccinate)	6.00%
**Methoxychlor, 1,1,1-trichloro-2,2-bis (p-methoxyphenyl) of one	12.00%
Carbaryl (1-naphthyl-N-methylcarbamate)	0.30%
NET CONTENTS	89.76%

NET CONTENTS 1/2 GAL

5. Name and address
4. Net contents
6. EPA registration number
7. EPA establishment number
9. Signal word

EZD Company
 Fargo, ND 58102
 Made in U.S.A.
 EPA Reg. No. 999-2500-AA
 EPA Est. 999-ND-1

Keep out of reach of children
DANGER
 See back panel for additional precautionary statements

Label image from the North Dakota State University website: <http://www.ag.ndsu.edu/pubs/plantsci/pests/a1098w.htm>

application equipment that may be required. This section may also include information on certain worker protection issues such as a reentry statement that identifies the specific time period following treatment during which entry into a treated area is restricted. The harvest interval, the time which must pass between the last application to a food item and its harvest, will appear in this section of the label as well.

It is important to read this section carefully for statements that refer you to other labeling or sources of information regarding the use of this product. This may be the only notice you get, and you are responsible for knowing these additional instructions whether you have read them or not. Some of these directions may pertain to:

- ▶ agricultural worker protection
- ▶ ground and surface water protection
- ▶ endangered species protection (bulletins)
- ▶ pesticide transportation, storage and disposal

Storage and Disposal

This section of the label provides general instructions for storing the pesticide product and for disposing of any unused pesticide and the pesticide container. No matter what it says on the label, the state laws are allowed to supersede the federal, and in Vermont it is illegal to burn any pesticide container.

Warranty Statement

This is a disclaimer statement included voluntarily on most pesticide products by the registrant, usually releasing them from any responsibility for damages resulting from the use of their products.

Worker Protection Labeling

Remember when an agricultural pesticide is used in an agricultural situation, such as on a farm, in a greenhouse or nursery, or in a forest, the agricultural use requirements listed on the label must be followed. This "Ag Use Requirements" box will contain the Restricted Entry Interval (REI), which is the amount of time that must pass before unprotected workers are allowed into the treated area. It will also list the specific Personal

Protective Equipment (PPE) that must be worn by those that are entering the area before the REI has passed, and that these workers must be trained properly under the Worker Protection Standard (WPS) in order to be allowed early entry.

If that same product is used in a non-ag situation, then follow the directions in the non-agricultural use requirements box, which may show a different REI and PPE requirements for when the product is used in a non-agricultural situation. The reason there are different requirements for ag vs. non-ag use is because agricultural workers work with treated plants and products much more often than other people and need stricter protections to reduce their long term (chronic) exposure to pesticides.

Label Reminders

Before you buy a pesticide, get into the habit of reading the label to determine whether it is the right pesticide for the job, whether it can be used safely under the expected working conditions, where it can be used (livestock, crops, structures, etc.), whether there are any restrictions on its use, and how much you will need or will be able to use in this application season.

Before you mix, read the label to determine what Personal Protective Equipment you will need, what it can safely be mixed with (compatibility), how much to use, and the procedure for proper mixing.

Before you apply, the label will tell you what safety measures you need to follow, the period of time before entry to treated areas for workers or animals, and specifics on how to properly apply the pesticide.

Before you store or dispose of the pesticide or its container, read the label to learn where and how to store the pesticide, decontaminate and dispose of the container, and how to dispose of any surplus you may have when finished.

Thoroughly reading and understanding the entire label before applying the pesticide is the best way to ensure that the whole job is done properly, safely, effectively and legally. This will make your boss very happy, especially if you are your own boss.

Much of this information is taken from the Pesticide Safety Education Core Manual, 2nd Edition, Cornell University, 1990, and the US Environmental Protection Agency website.

* * *

Pesticide Enforcement Update

In fiscal year 2009, the Vermont Agency of Agriculture continued to monitor pesticide use, storage, sales, labeling and disposal activities throughout the state. 462 inspections/investigations were performed in FY 09 (Fiscal year 2009), covering the entire range of pesticide use in the state.

ROUTINE COMPLIANCE

MARKETPLACE - Agency staff conducted 155 Marketplace inspections in FY 09. These inspections are focused on dealer licensing issues, pesticide storage, labeling and registration. Marketplace inspections lead to the issuance of 8 cease and desist orders for violations such as pesticide spills and selling pesticides without the proper license. In one case, following the issuance of a cease and desist order, a notice of violation was issued and an administrative hearing was held. A final order was issued and a penalty was paid. Also, sixty-nine (69) stop sale letters were issued for selling unregistered pesticides.

RESTRICTED USE DEALERS CHECKS - In FY 09, the Agency conducted 22 restricted use dealer (RUD) checks. RUD inspections are similar to Marketplace Inspections, but special attention is given to ensuring that those regulations pertaining to the storage, sale and record keeping associated with restricted use pesticides are being followed.

CERTIFIED APPLICATOR RECORDS CHECKS - Routine inspections of certified applicators ensure that: individuals are properly certified for the work they are performing; their certification is current; they keep the required records of pesticides used; and, pesticides used are registered with both the EPA and the State of Vermont. In FY 09, the Agency conducted 214 certified applicator records checks. Two follow-up inspections of a company that had problems with their invoices in FY 2008 revealed that corrections had been made and were being implemented in the field.

ROUTINE USE INSPECTIONS are conducted to ensure that the applicator is properly certified, using the pesticide(s) in a safe and effective manner and according to label directions, maintaining the appropriate records, and using pesticides that are registered with both EPA and the State of Vermont. In the case of agricultural use inspections, special attention is given to determining whether the Worker Protection Standard requirements have been followed.

AGRICULTURAL USE INSPECTIONS - The Agency conducted 21 Ag. use inspections in FY 09. Forty seven (47) physical samples and 296 documentary samples were collected in the course of these inspections. In one

case, a cease and desist order was issued for violations involving the application invoice.

NON-AGRICULTURAL USE INSPECTIONS - The Agency conducted 22 non-ag use inspections in FY 09. Ten (10) physical and 175 documentary samples were collected in the course of these inspections. Inspections were made of applications to highway, utility and railroad Rights-of-Way (ROW). Other entities inspected included Pest Control Operators (PCOs), golf courses and lawn care applicators.

In some cases administrative penalties were issued. In one an administrative hearing was held and a penalty was paid. In another, a cease and desist order was issued and the applicator was prevented from making the application.

PESTICIDE REFERRAL / "FOR CAUSE" INVESTIGATIONS

Referral or "for-cause" investigations are conducted in response to complaints received from the public regarding a pesticide application that has allegedly violated state or Federal pesticide regulations, pesticide product labeling, or Agency-issued use permits.

AGRICULTURAL USE REFERRALS - the Agency conducted 10 agricultural use referral investigations in FY 09. In one case, a CDO was issued as a result of an incomplete invoice, and not leaving the invoice with the farmer at the time of application. In another case, a letter of warning was issued to a custom applicator/pesticide dealer for making written recommendations to a customer that were inconsistent with label use directions.

NON-AGRICULTURAL USE REFERRALS - the Agency conducted 16 non-ag use referrals in FY 09. Eighteen (18) physical and 133 documentary samples were collected in the course of these investigations. In only one case was a violation of pesticide regulations found to occur. A cease and desist order was issued for a use inconsistent with the label, and an administrative hearing was held in connection with that CDO.

WORKER PROTECTION STANDARD ACTIVITIES

A total of 15 WPS inspections were conducted. These inspections focus on determining if workers are properly trained, if the information center is adequate and up to date, and if appropriate PPE and decontamination supplies are available and adequate.

PESTICIDE PRODUCT REGISTRATION

During the summer months, the Agency inspected pesticide products being offered for sale in retail establishments to ensure that they are registered with

both EPA and the State of Vermont. When products are found that are not properly registered, the Agency sends a letter to the label company advising them of their responsibility to either register their products or remove them from the retail sales stream. In FY 09, a total of 69 unregistered products were found involving 18 different companies.

News from UVM Extension

Don't Delay – Register for the Master Gardener's Course Today

Registration for the 2010 Vermont Master Gardener Course is now underway. This University of Vermont Extension course is only offered once each year and fills quickly.

The Master Gardener course covers the fundamentals of plant and soil science and how it applies to home and community gardening. Training focuses on a variety of horticulture topics such as; vegetable and flower gardening, botany, sustainable landscape design, soils, plant diseases, entomology, invasive plants and pests, and more! University of Vermont faculty and experts from Vermont's horticultural agencies teach these classes.

Students who wish to earn "Certified Master Gardener" credentials are required to complete an internship following course completion. Interns put their classroom knowledge to work by participating in established Master Gardener projects in their communities. Certified Master Gardeners are then eligible for advanced gardening workshops and tours to stay up-to-date on horticultural research, learn and practice techniques like garden design, and have the opportunity to network with advanced gardeners, UVM faculty, and industry professionals.

The course takes place on Tuesday evenings, February 2 to April 27, in Bennington, Brattleboro, Johnson, Lyndon, Montpelier, Middlebury, Newport, Randolph Center, Rutland, Springfield, St. Albans, Waterbury, White River Junction, and Williston.

Course fee is \$315 plus \$70 for a comprehensive training manual (required) and all class materials. To register or for more information please:
Email master.gardener@uvm.edu Call 802-656-9562
Or Visit www.uvm.edu/mastergardener



Integrated Pest Management - How To

Ann Hazelrigg, UVM Pesticide Safety and Education Program

Integrated Pest Management, or IPM, is an effective and environmentally sensitive approach to management of pests (insects, weeds and diseases) that relies on a combination of common-sense practices. IPM programs use current information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

IPM methods can be successful controlling pests in the home, diseases in the garden and weeds in the fields. Judicious pesticide use can often be a component of a successful IPM program. When a pesticide is used in an IPM system it is always in combination with other tactics. An IPM practitioner chooses the least toxic pesticide that will manage the pest successfully. Organic producers can also use an IPM approach but if a pesticide is chosen, it must be one that is produced from a natural product as opposed to a synthetic chemical.

The benefits of using an IPM program can include slowing the development of pesticide resistance by pests and decreasing the effect on non-target organisms and the environment. IPM can also be used as a successful marketing tool for companies working with pest and disease control.

All successful IPM programs consist of several important steps:

Scouting and identifying the pest:

Not all insects, weeds and diseases need to be controlled! In our home gardens we may be able to tolerate more damage by insects and diseases than a commercial grower who is dependant on his or her crops for their livelihood. Whether in a home garden or a commercial field, it is essential to scout or monitor your plants on a regular basis throughout the growing season, at least once or twice a week. Catching pest problems before they build up is key to a successful integrated pest management plan and saves both money and crops.

Proper identification of pests can sometimes be tricky, but there are a few resources in Vermont to help you. If you have a home garden pest or disease question you can call the UVM Master Gardener Helpline, a toll free

number (1.800.639-2230 or master.gardener@uvm.edu) that puts you in contact with knowledgeable and trained volunteers who can help id your pest and give you options for management using IPM principles. If you are a commercial grower, landscaper, school facilities management staff, etc. you can contact the UVM Plant Diagnostic Clinic (656.0493 or ann.hazelrigg@uvm.edu) or the Vermont Agency of Agriculture (241.3544) to get your disease or insect problems identified. The web can also be a good source for pest and disease id information, but be sure to look for University sites for science-based information.

Once you get the correct identification, determine which point in its life cycle the pest is most susceptible to control measures. For example, an insect may be soft-bodied as a larva and hard-bodied as an adult. Typically, soft-bodied insects are controlled more easily than hard-bodied ones. Thus, timing of controls might be critical. In the case of a fungus disease on a tree, you may find that raking and destroying leaves in the fall will eliminate a lot of spores of the disease that would normally overwinter under the tree and re-infect the tree in the spring.

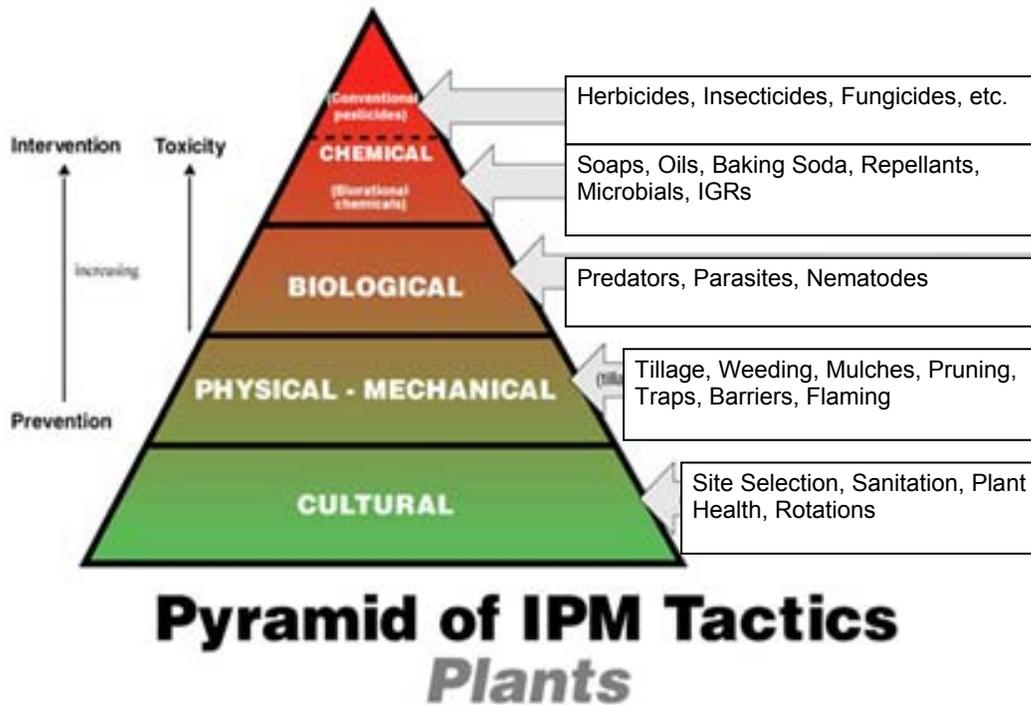
Determine how much damage you can tolerate, called the "Action Threshold"

The amount of damage you can tolerate from a pest is determined by the pest and the site or situation you are working with. If the pest is an ant or a mouse and you are monitoring a hospital kitchen, one pest is too many and the population would need to be eliminated. If you are a landscaper and a client has tar spot causing black spots on their maple foliage in September, you can tolerate a lot of damage since it is late in the season and the spots will not harm the long term health of the tree.

Seedlings would be less able to withstand pest damage than mature plants, so age of the crop may also affect the action threshold. Some pests and diseases have action thresholds that have been developed through years of research for the amount of damage that can be allowed before economic crop loss will occur. For example, in beans a population equal or exceeding an average of 1 potato leafhopper nymph per trifoliate leaflet can cause economic loss and indicates the need for control.

Management

The range of pest management methods can be represented by a pyramid or triangle (see next page). The methods at the base are preventative and low in toxicity. As you go higher in the pyramid, pest management methods that are designed to suppress or eradicate pests become more toxic to humans, non target organisms and the environment.



Before a pest problem is anticipated, cultural and physical tactics can be used to prevent a problem from occurring. For a home pest situation this may include using screens or caulk to stop pests from getting into the home. Keeping kitchens clean and free of crumbs and storing pet food in containers will help deter food storage pests or rodents in the home. Keeping house foundations and roofing in good repair will help exclude and deter infestations from carpenter ants and other structural or nuisance pests.

In the garden, cleaning up diseased plants in the fall will help decrease overwintering fungus diseases. Choosing resistant plant varieties will help avoid many disease problems in the landscape and garden. Crop rotation will also help limit repeat disease and insect problems in fields and gardens. Keeping plants healthy with the proper soil PH and avoiding drought or overwatering will also help to keep harmful diseases or insects from attacking plants.

As you move up the pyramid, pest management becomes more intervention than prevention. Biological strategies for IPM include use of beneficial organisms including predators, parasites or insect pathogens to reduce pest populations. This can be done either by

releasing these beneficials into a field, landscape or garden or by modifying cultural, chemical or other control tools to conserve the existing natural enemies. At the top of the pyramid is chemical control. If a pest or disease reaches threshold levels despite the use of preventative and other types of non-chemical control, chemicals may be a final helpful tool for pest management. Chemicals do not always guarantee success. Pest populations may be resistant to the pesticide used or they may not be in the best life stage for control. Always chose the least toxic pesticide (signal word of Caution or Warning) that will do the job and time the application for the best effect on the pest and the least effect on the environment.

Good recordkeeping including when the pest occurred, what tactics were used and the evaluation and assessment of the results is always a good idea when using integrated pest management. This information can be essential for future management tactics if the pest should occur again.

Home Study Quiz 1 – The Label and the Applicator

The following questions refer to the article on pages 2 thru 5. Fill out the information on the back of this completed quiz and mail it to the Vermont Agency of Agriculture to receive **(1) one pesticide recertification credit**.

1. T____ F____ It is OK to copy what the previous applicator did when mixing the pesticide for application to the same site.
2. T____ F____ The first thing you come to on the label that answers your question is the right answer, and there is no need to read any further.
3. T____ F____ The label may refer you to a website or other outside source that has additional information that must be taken into account when applying the pesticide.
4. What is the best way to determine the Vermont classification of a pesticide?
5. KOOROC stands for
 - a. Kool Oldies Obviously Reach Our Citizens
 - b. Krusty Old Oval Raisins Offend Chefs
 - c. Kabul Ordinarily Offers Relaxation On Cruises
 - d. Keep Out Of Reach Of Children
6. List the three signal words and give the toxicity level that each represents.
7. T____ F____ It is OK to write the EPA Est. number instead of the EPA Reg. number on records as they are interchangeable.
8. Please write an example of an "Environmental Hazard Warning."
9. Why are the Physical or Chemical Hazards of concern not only during the actual application of the pesticide but at other times as well?
10. Why would you want to consider how much of a product you will use in a season before buying it?

Fill out the following information and mail the completed quiz to the Vermont Agency of Agriculture to receive one (1) pesticide recertification credit.

Name:		
Certificate #:		Please check: <input type="checkbox"/> Commercial <input type="checkbox"/> Non-Commercial <input type="checkbox"/> Government <input type="checkbox"/> Private
Street Address:		
City/State/Zip		
Company/Farm:		
Signature:		Date:

Mail to:

**Vermont Agency of Agriculture
Attn: Matthew Wood
116 State Street
Montpelier, VT 05620-2901**

Home Study Quiz 2 – Integrated Pest Management

The following questions refer to the article on pages 7 and 8. Fill out the information on the back of this completed quiz and mail it to the Vermont Agency of Agriculture to receive **(1) one pesticide recertification credit**.

1. What is IPM?
2. In your area of expertise, name a pest, weed or disease you have had to manage and give 3 methods of prevention.
3. How can you use IPM in an organic system?
4. Explain how the IPM pyramid works.
5. Name 2 benefits of an IPM program.
6. What is the first essential step in an IPM program?
7. When can you justify using a chemical control for a pest?
8. Where can you go for help to identify a pest or disease problem?
9. If you chose to use a pesticide, which signal words should you look for to find the least toxic pesticide?
10. What is always a good practice when implementing and evaluating an IPM program?

Pesticide Applicator Report
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Agriculture Resource Management & Environmental Stewardship
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Street Address:		
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Company/Farm:		
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