

# Pest Management



The Vermont and New York Master Gardener Programs, supported by the University of Vermont and Cornell Extension and Lake Champlain Sea Grant, support the objectives of the Lake Champlain Management Plan and Basin Program. This factsheet is intended to help prevent or reduce pollution coming from residences within the Lake Champlain Basin.



Pests are organisms that harm our gardens and landscapes. Many people think of insects when they think of pests, but fungi, bacteria, viruses, weeds, rodents, and other animals can be as troublesome. They compete with us for food, injure plants, and are a general annoyance. Pests can be controlled without damaging the environment, but gardeners need to become observant, knowledgeable, and patient.

A totally pest-free garden, though seemingly desirable, is unattainable. In fact, a small pest population is helpful in attracting and maintaining a population of natural predators.

When pests must be controlled, the integrated pest management (IPM) approach is the ecologically sound choice. IPM uses multiple control methods and seeks the solution with the least harmful impact. IPM also reduces the risk of toxic compounds entering local waterways and Lake Champlain.

## IPM steps

- determination of tolerable weed or pest level
- prevention
- accurate identification of the pest
- selection of the most accurate treatment (timing, quantity, frequency, targets) that offers the least toxicity

## Know the garden

Do you know what is going on in your garden? Inspect the plants for insect and disease damage on a regular (at least weekly) basis. Look at the underside of leaves and go out at night as well as daytime. Observe the behavior of insects and use reference books or Extension literature to identify the insects, weeds, and diseases present, remembering that many are beneficial and helpful predators. Beneficial insects include

ladybugs, spiders, bees, wasps, and some beetles and flies.

When you use pesticides, you are probably killing beneficial insects along with your target pests, so such choices should be made only when the pest has been identified and the damage is severe. When you do identify a pest problem, the first question is not what to spray. Rather, ask whether the pest is really a problem. If needed, use the least toxic method of control; that is, pull the weed, remove the diseased leaf, or squash the harmful insect. Sometimes natural predators will discover the pest. Using “biological” pesticides with selective toxicity helps conserve beneficial organisms. Broad spectrum pesticides are toxic to most insects, both to pests and beneficials. The more often broad-spectrum garden chemicals are used, the greater the risk of endangering human health and the environment.



- Rotate the planting of similar groups of plants where practical, to reduce insect and disease problems.
- Keep the garden free of debris (particularly dead plants that may be infested) and weeds.
- Time plantings to avoid known insects/pests.
- Encourage the build-up of beneficial insects and mites by avoiding harsh broad-spectrum pesticides.
- Properly identify the problem before control measures are activated.
- Estimate potential damage and decide if it is necessary to control insects and mites. If given a chance, perhaps natural predators will take over.
- Select the least toxic, or least chemical, approach to control the problem.
- Record the results of action taken. A decision not to spray is an action taken.

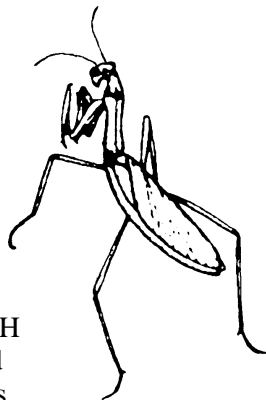
### **By looking at the pest problem realistically, it is possible to:**

- Save money by buying fewer pesticides.
- Save time by addressing only what needs to be controlled.
- Save Lake Champlain and other water bodies by introducing fewer chemicals into the environment.

## **Wise gardening prevents problems**

To make the garden a healthy place for preferred plants and an undesirable place for pests:

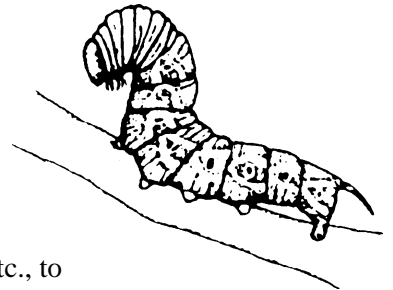
- Select appropriate species or varieties that are insect- and/or disease-resistant.
- Provide proper moisture levels to maintain healthy plants and thus conserve water.
- Maintain proper fertility and pH levels by having the soil tested and applying only the nutrients needed. Soil amended with compost or other types of organic matter will help with fertilizer and water retention, as well as provide a home for beneficial earthworms.



## **Non-toxic control methods**

### **Insects**

- Prune heavily infested parts of the plant. This method is used against localized infestations of the scale insects.
- Protect crops with floating row covers, etc., to prevent insects from laying eggs or migrating from nearby areas. The covers must be removed when insect-pollinated crops come into flower.
- Use insect traps where appropriate, such as the red sticky trap for apple maggot, or the sticky yellow cards to measure or catch whiteflies or some gnats and aphids.
- Remove insects and mites with a spray of water.
- Hand pick insects and slugs, and destroy egg masses.
- Use companion planting combinations that control insect pests by repelling, confusing, or attracting beneficial insects, and avoid monocropping.



### **Diseases**

- Plant disease-resistant varieties.
- Rotate annual and vegetable plants where practical, and avoid using plants especially prone to disease attacks.
- Space plants to improve air circulation.
- Time overhead irrigation early in the day to allow the foliage to dry before nightfall.
- Prune out diseased plant parts to avoid infecting other plants. Discard badly diseased plants.
- Be meticulous about fall cleanup, and do not compost or mulch diseased debris.

## Slugs

- Use shallow containers of beer or yeast solution to monitor for slugs.
- Provide hiding places (overturned pots, citrus or melon rinds, boards, burlap). Check them frequently and kill slugs.

## Weeds

- Use mulches to prevent weed germination.
- Hand weed and/or cultivate weekly.
- Till properly to minimize stirring up weed seeds. Till only to incorporate residues or kill weeds. Avoid bringing up deeply buried weed seeds with unnecessary tilling.
- Use cover crops or intercropping to block weeds.

## Pesticides

Pesticides (insecticides, miticides, herbicides, etc.) are chemicals used to control pests. If used improperly, they can have an impact beyond their intended target. The continual accumulation and combination of small amounts of toxic substances can create problems. If misused, small quantities of toxic chemicals can disrupt the environment. Even botanical pesticides can kill beneficial insects.

A pest population can become resistant to pesticides when only one or two products are used repeatedly against a specific pest. Pesticides should be the last defense to control a pest.

### If pesticides are used

Chemical controls should be applied only when the pest is present or if weather conditions are favorable for the outbreak of a regularly occurring disease (scab on an apple). Spraying should not be set by the calendar. Schedule treatments to be most effective and least disruptive to naturally existing pest predators (e.g., before dawn or after dusk to protect bees).

### Choose the right chemical

Seek good advice when in doubt about a problem. Choose the least toxic alternative: insecticidal soap, horticultural oils, and biologicals, such as *Bacillus thuringiensis* (B.t.). Buy only what you need for one season. Some pest control products lose their effectiveness while sitting on the shelf. Some will also require specific storage conditions. Reread the label each time you use the pesticide. Make sure the pest and plant or site is listed. Labels change and newer restrictions could have been added.

### Mix correctly

Do not guess when mixing. Measure and follow the label recommendations carefully, mixing only the

amount that you will use that day. Misused chemicals can damage plants, and harm people and the environment.

### Be prepared for spills

Clean up spills right away. Mix your chemical over a nonporous floor to facilitate cleaning spills. Avoid floors with a drain. Prepare materials, such as cat litter, to contain the spills. Do not flush spilled material down a drain. Carefully sweep up spilled powders and dusts. Place all contaminated material in a plastic bag, seal, and dispose of properly at a household hazardous waste collection facility.

### Apply chemicals properly

Read and follow all safety precautions on the label. Do not apply pesticides in the following situations:

- It is windy or raining.
- There is a possibility they will enter a stream, lake, or drain.
- The temperature is above 85°F.

### Dispose of leftover pesticide concentrate

Use the pesticides as directed on the label. Record how much was actually needed for future reference. Do not pour unused portions down a drain, because they could flow into the ground water and end up in streams and the lake. If the pesticide is no longer effective or wanted, call the town solid waste office for information on household hazardous waste disposal programs in your area. Triple-rinse empty containers and use the rinse water for the spray.

### Store properly and safely

Store all pesticides in their original, labeled containers. Keep them on secure, strong shelves in a locked cabinet away from heat and moisture. Always keep them away from children, pets, and irresponsible adults. Be sure to follow all personal safety instructions when handling the product.

For more information on pest management, IPM, mulches, green manures or beneficial insects, contact your local Master Gardener or Extension office (see contact information below).

#### Remember:

- Pest control choices can impact water quality.
- Good garden management is the best means of controlling pests.
- Most insects are not harmful; many are beneficial predators. So using pesticides may kill your best ally.

## ***Master Gardener Program***

**University of Vermont Extension:** (800) 639-2230; [pss.uvm.edu/mg/mg/](http://pss.uvm.edu/mg/mg/)


Burlington area: (802) 656-5421

**Cornell Cooperative Extension:** Clinton County: (518) 561-7450; Essex County: (518) 962-4810

Adapted for local use from *Lake Champlain Gardening Fact Sheets*, produced by Cornell Cooperative Extension with partial funding from the Lake Champlain Basin Program. *Lake-friendly Gardening* factsheets prepared and adapted by Nancy Hulett and the UVM Extension Master Gardeners; Jurij Homziak, Vermont Coordinator for Lake Champlain Sea Grant; Amy D. Ivy, Cornell Extension Educator; and Charles Howard, Cornell Master Gardener. Artwork by Susan Stone. Editing and design by Communication and Technology Resources, University of Vermont Extension.

Visit UVM Extension on the World Wide Web at [ctr.uvm.edu/ext/](http://ctr.uvm.edu/ext/)



 Printed on recycled paper

**FS 174:9**

**February 2001**

**\$0.50**

Issued in furtherance of Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Lawrence K. Forcier, Director, University of Vermont Extension, Burlington, Vermont. UVM Extension and U.S. Department of Agriculture, cooperating, offer education and employment to everyone without regard to race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or familial status.

4C-UGP-2/01