

Integrated Pest Management - A Homeowner's Guide

BayScapes are environmentally sound landscapes benefiting people, wildlife and Chesapeake Bay. BayScaping advocates a "holistic" approach through principles inspired by the relationships found in the natural world.

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What is Integrated Pest Management?

Integrated Pest Management (IPM), as the name implies, is the *integration* of various management strategies-including biological, cultural and chemical methods-into a comprehensive program of pest control for the home landscape.

For the weary homeowner who is confronted with a multitude of pests throughout the year, an effective IPM program offers a wide variety of choices to manage pests. IPM encourages you to choose methods that best suit your local landscape. In the Bay region, this approach minimizes impacts on non-targeted species, are wildlife and the waters of the Chesapeake Bay.

With IPM comes the opportunity to use alternatives to chemicals as a means of controlling pests. Many natural and biological controls exist in the landscape to ward off insects, disease and other pests. While IPM does not totally eliminate chemical pesticides as a control measure, it can help reduce the volume of

pesticides used on the land.

With more than 13 million people currently living in the Bay watershed and another 3 million expected by the year 2019, nonpoint source pollution from toxic substances has become a problem for living resources in the Bay ecosystem. Nonpoint source pollution is pollution coming from disparate sources. Runoff from urban streets, farms and construction sites are examples. When containing traces of toxic elements, this pollution can affect the entire food chain—from the smallest organisms to the fish and waterfowl inhabiting the waters of the Bay. Reducing chemical use in the home landscape (and thus the risk of associated runoff), reduces the potential risk of toxins reaching non-targeted organisms and local creeks.

The IPM Program

Practicing IPM begins by implementing a sound pest management program in your landscape. By using preventive techniques, certain pests may never become a problem. The first step involves monitoring pest outbreaks to determine if the pests are actually causing a problem, whether they increase or decrease in number and whether control mechanisms are really needed. If you decide to control a pest outbreak, various measures should be first be considered. Cost of application, impacts on non-targeted organisms, residues, risks to nearby water supplies and chemical toxicity all have to be evaluated. Depending on the pest, the control strategies vary, but may include: taking no action physically removing the pest (i.e., by hand or with tools), using less toxic means such as biological or natural compounds, or as a last resort, using pesticides. In the IPM system, pest elimination is not necessarily the goal or outcome of pest control.

Prevention

Pest prevention is fundamental to IPM. By initially preventing the problem,

control mechanisms may not be necessary later on. Pest prevention begins with plant selection. The most suitable varieties and species of plants should be chosen for your site. Proper plant selection involves not only your own personal preferences, but also careful consideration of a plant's ability to live and thrive in your location.

When evaluating the site, consider the degree of sun exposure, slope, drainage, amount of shade, wind, volume of foot traffic, soil type, temperature variations and other environmental factors. Plant species should also be selected for their ability to resist pest infestations. This should be one of the most important considerations when selecting plants for your landscape. For example, in a heavily infested gypsy moth area, a poplar tree may be the tree of choice when compared to a red oak, since gypsy moths prefer oaks to poplars. Many plant species are well adapted to the Chesapeake Bay region; some are more susceptible to pests than others. A good IPM practitioner will see disease and insect-resistant varieties, species that meet the sun or shade requirements for your site, and species that will out-compete common weeds. Refer to the BayScapes beneficial plants list for recommended species.

Management (or cultural) Practices

Proper management plays a key role in pest prevention. Your efforts to maintain healthy populations of plants will go a long way toward preventing pest outbreaks. For lawns, cool-season grasses (grasses that grow better in cooler weather) should be mowed to no less than approximately 2.5 inches in height. Take care not to remove more than one-third of a leaf blade at a cutting. Warm-season grasses (grasses that grow well in warmer weather) should be mowed to no less than 1.5 inches in height. Proper mowing height helps to suppress weed populations. Potential weed populations in tall fescue, for instance, can be reduced by more than 50 percent with proper mowing height.

A balanced fertility program will improve the vigor of all species. Soil testing should be a standard practice, and samples should be taken at least every

three years. Fertilize cool-season grasses in the autumn and warm-season grasses in early and mid-summer. As a rule of thumb, no more than 3.5 pounds of nitrogen per 1,000 square feet should be applied to a lawn per year. Do not exceed a pound of nitrogen per 1,000 square feet during a single application. Trees and shrubs need to be periodically pruned, and tools should be sanitized before use. Dead and diseased limbs should be pruned and discarded. Mechanical injury is a major cause of landscape plant decline, so use care when you prune.

Here are some other management tips to keep in mind:

- Aerating compacted soils is an important practice that allows water penetration. Earthworms are nature's way of performing aeration; introduce them to your soil if they are not currently at work.
- Rotating crops in your vegetable garden will reduce pest populations over time.
- Returning clippings to the lawn restores the nutrients.
- Removing weeds by hand is not only good exercise, but also good for the environment. Certain plants, such as annual rye, exhibit traits that suppress specific weeds. Experiment with these varieties in your home landscape.

Biological Controls

Your landscape is home to many beneficial creatures that naturally prey on pests. Nature controls large insect populations through other insects and through animals that feed on insects. Spiders, lady beetles, wasps, big-eyed bugs and praying mantises are a few that depend on other insects for food. Birds, bats, frogs, lizards, certain snakes and toads also feed on insects. By encouraging these wildlife friends in your landscape, other controls may not be necessary.

Natural agents control diseases as well as insects. Milky spore disease will kill grubs in the lawn, and *Bacillus thuringiensis* (commonly referred to as BT) is a product that controls small moth larvae. For weeds, options include mechanical control, good management practices, mulches, or in some cases, simply accepting a few weeds in the landscape, which will greatly reduce your

dependence on chemicals.

Thresholds

An important part of IPM involves decision-making. You must first decide whether or not you actually have a pest that needs controlling. Perhaps with time, the pest will just naturally disappear before significant economic or aesthetic damage occurs. While you may consider the pest a nuisance, is it actually threatening any living thing in your landscape? Sometimes pests can be physically removed. Many pest populations will reach their threshold at a certain point, and control after this peak is usually not necessary. One of the most important pest management practices involves monitoring pest populations. Through monitoring, wise control decisions can be made.

<i>NATURAL PREDATORS & THEIR PREY</i>	
Lacewings (<i>Chrysopidae</i> family)	Prey on aphids, scale, whiteflies, mites, mealybugs, other lacewings and the eggs of mites, thrips and other insects.
Spiders (<i>Arachnida</i> order)	Feed on anything that gets stuck in their webs.
Bee flies (<i>Bombyllidae</i> family)	Feed on locust eggs, parasites of the larvae of flies, wasps, bees, beetles and ants.
Praying mantises (<i>Manteodea</i> family)	Eat any insect they catch, including beneficials.
Dragonflies (<i>Odnata</i> order)	Eat small flying insects, including midges and mosquitoes.
Soldier beetles (<i>Cantharidae</i> family)	Prey on cutworms, gypsymoth larvae, cankerworms, slugs and snails.

Timing

Accurately timing control measures means that you need to be aware of pest population levels, weather conditions and the population dynamics of various pests. As an example, many pests are more susceptible to control measures at particular points in their life cycle. Weeds should be controlled in the fall. When

chickweed becomes a noticeable problem in the spring, it is usually too late for effective control. Insects are better controlled at the point where the population is doing the most economic or aesthetic damage. If a frost or cool weather is near, simply waiting for this change may be the only control you need.

Do not use chemical sprays just before a rainfall. They may not have time to work before washing into nearby waters. Likewise, avoid the use of pesticides on windy days or when honeybees and other beneficial insects might be in the area. Honeybees are most active during daylight hours, so evening insecticide applications pose less danger to them.

Pesticide Use

Use of a pesticide should be considered only after alternative controls have been exhausted. First, be sure that you have properly identified the pest, and select a product labeled for use on it. Because pesticides pose a difficulty in terms of storage and disposal, purchase the minimum amount of product needed. Second, choose the least toxic chemical. The signal word on the label indicates the product's toxicity level: Products marked CAUTION are less toxic than those that have a WARNING on the label. By using the less toxic chemical, risks to wildlife and other natural resources are diminished.

Always store pesticides in a secure area away from children and foodstuffs. Because some products become ineffective when subjected to freezing temperatures, pesticides should be stored in a temperature-controlled location. The label contains important information about target pests, environmental safeguards, rate of application, poisoning and more. Always read and follow label directions carefully. Remember, a violation of label usage directions is against the law.

Be cautious when using any pesticide. Be careful not to get any pesticide product on your skin or in your eyes. Do not breathe pesticide vapors. Wear protective clothing, including rubber gloves, protective eye glasses, a long-sleeved shirt and long trousers. Do not apply pesticides on a windy day or when

rain is expected. Be careful to avoid drift or runoff during application. When mixing pesticides, more is *not* better. Measure accurately. Prevent spills and back siphoning. Do not apply pesticides near water resources such as wells, streams, ponds, and bird baths. Because of the difficulty in disposing of excess pesticides, do not mix any more product than you actually need. These practices are safer for you, more economical and better for the environment. When IPM is adopted both philosophically and practically in the landscape, it acts as an effective pest control system. IPM minimizes environmental impacts, while enabling you to maintain an attractive landscape at a reasonable cost. Most important, it represents a significant way for you to contribute to the health of local waterways and, ultimately, the Bay without leaving home.

IPM Mail Order Suppliers

- Alternative Garden Supply, Inc.
297 North Barrington Road
Streamwood, Illinois 60107
(800) 444-2837 - free catalog
- Gardens Alive!
P.O. Box 149
Sunman, Indiana 47041
(812) 623-3800 - free catalog
- Nature's Touch
11150 W. Addison Street
Franklin Park, Illinois 60131
(312) 455-6900
- Necessary Trading Company
8311 Salem Avenue
New Castle, Virginia 24127
(703) 864-5103 - \$2 catalog, refundable with order
- Pest Management Supply Company
P.O. Box 938
Amherst, Massachusetts 01004

(800) 272-7672

General Information/Newsletter

- Bio-Integral Resource Center (BIRC)
P.O. Box 7414
Berkeley, California 94707
(415) 524-2567

Suggested Reading List

Kowik, Robert. *Designing and Maintaining Your Edible Landscape-Naturally*. Santa Rosa, Calif.: Metamorphic Press, 1986.

Olkowski, William, et al. *Common Sense Pest Control: Least toxic solutions for your home, garden, pets and community*. Newtown, Conn.: The Taunton Press, 1991.

The University of Maryland Cooperative Extension Service. *Effective Lawn Care With Reduced Pesticide and Fertilizer Use*. Fact sheet #637.

Virginia Cooperative Extension. *Ecological Turf Tips to Protect the Chesapeake Bay: Classic Agronomic Principles Can Reduce Pesticide Need*. Publication #430-396, 1991.

Virginia Cooperative Extension. *The Virginia Gardener Year Round Guide to Pest Management*. Publication #426-615, 1990.

Daar, Sheila. *Least-Toxic Pest Management for Lawns, Common Sense Pest Control*. Berkeley, Calif.: Bio-Integral Resource Center, 1986.

Fitzpatrick, Neal. *Have a Healthy Lawn Without Using Toxics*. Chevy Chase, Md.: Audubon Naturalist Society of the Central Atlantic States, 1987.

For More Information

For detailed instructions for the safe use of fertilizers and pesticides in your community, contact your local or area Cooperative Extension office. The Cooperative Extension is a service of the land-grant university systems in the

District of Columbia, Maryland, Pennsylvania and Virginia.

BayScapes is an environmental education initiative developed by the Alliance for the Chesapeake Bay and the U.S. Fish and Wildlife Service, Chesapeake Bay Field Office.

For more information on BayScapes, contact:

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