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FACT SHEET #31

Cornell University Program on
Breast Cancer and Environmental Risk Factors
in New York State (BCERF)

Integrated Pest Management Around the Home and Garden

Health and safety issues regarding the use of pesticides in the home and garden are of concern to New York State (NYS) residents. Even in the absence of conclusive scientific research concerning the relationship of pesticides to certain types of cancer, it makes sense to take precautions that protect ourselves and our children from unnecessary pesticide exposure. The intent of this fact sheet is to provide you with the necessary tools needed to reduce risk from pesticide use.

Integrated pest management (IPM) is an approach to pest control that can be used in a variety of settings to reduce unnecessary pesticide use and minimize pesticide exposure. Pest management is important because some pests can also pose health risks for our families if they are not properly managed. This fact sheet will help you select and communicate with a commercial landscaper/pest control professional if you decide to work with one on a regular or occasional basis. Definitions of the terms commonly used by IPM practitioners and your role as the consumer in an IPM program are also covered.

Background on IPM

What is a pest?

Pests can be insects, rodents and other animals, unwanted plants (weeds), fungi, or microorganisms like bacteria and plant viruses.

What is a pesticide?

The US Environmental Protection Agency (EPA) defines a pesticide as any substance or mixture of substances intended for preventing, destroying, repelling or mitigating pests. Pesticides are useful to society because of their ability to kill disease-causing organisms and control harmful insects, weeds, and other pests. By their very nature, some pesticides present potential risk of harm to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms. Pesticides include insecticides, insect and plant growth regulators, fungicides, herbicides, rodenticides, and many other household products. Some are specific to certain pests while others are broad spectrum in their mode of action.

What is integrated pest management (IPM)?

The IPM approach is very simple: practice prevention, treat only when necessary, and use the safest available alternative to do the job. The key to IPM is accurate pest identification and the knowledge of the pest's life cycle and vulnerability. IPM involves careful monitoring for pests, and the use of a wide range of methods to exclude, remove, drive away, or kill pests with the least possible hazard to people, property, and the environment. A combination of cultural, mechanical, biological, and other techniques is used; chemical controls are a last resort.

Cultural management

Cultural methods are often overlooked in conventional pest control programs. They provide many ways to reduce the amount of pesticides used in the home and garden. Here are some examples:

- Practice good sanitation by removing infested and diseased plant parts or food sources.
- Remove and destroy overwintering or breeding sites of pests.
- Select disease- and insect-resistant plant varieties.
- Cut turfgrass at the correct mowing height.
- Use the appropriate amount of water for irrigation of flowers, trees, shrubs, and turfgrass.

- Mulch landscape-planting areas. Mulches can be very useful for the suppression of weeds, insect pests, and some plant diseases. If heavy enough, mulch can also conserve water and prevent germination of many annual weed seeds.

Mechanical management

Examples of mechanical (physical) controls are barriers and traps to exclude pests, hand picking of insects, and hand pulling or hoeing of weeds. Although some of these methods may not always be practical on a large scale, they can generally be used in small or localized situations.

Biological management

Biological control is the use of living organisms such as parasites, predators, or pathogens. They may occur naturally or be applied. Biological control results when naturally occurring enemies maintain pests at a lower level than would occur without them. Birds, bats, insects, fungi, and bacteria all play a role as predators or parasites in the web of life.

Chemical management

The decision to use chemical controls should be made only when other measures, such as biological or cultural controls, have failed to keep pest populations from approaching damaging levels. When chemical pesticides must be used, it is to the advantage of the applicator to use the lowest labeled rate of the least toxic pesticide that will manage the pest. Always read the product label: signal words concerning toxicity such as CAUTION, WARNING, and DANGER (restricted) can be found there. For the product to be used legally, the target pest and target site must be listed on the label. Follow label directions for correct use, storage, and protective clothing to be worn during application.

What are some of the alternatives to synthetic chemical pesticides?

Botanical pesticides

Because botanical pesticides are derived from natural plant material, they are perceived to be safe. However, "natural" does not mean "nontoxic." It is important to be aware that they are still pesticides and fall under the same federal and state regulations as synthetic or chemical pesticides. All pesticides require an EPA pesticide registration number that can be found on the product label. Some examples include ryania, sabadilla, rotenone, neem, pyrethrum, and pyrethrins.

Microbial insecticides

These products combat insects with microscopic living organisms: viruses, bacteria, fungi, protozoa, and nematodes. Most affect a single species or group of insects, often with minimal impact on beneficial insects and other nontarget organisms. One example is *Bacillus thuringiensis* (Bt), a bacterium that is used to kill the larval stage of the gypsy moth. Another example is *Beauveria bassiana* (Naturalis-O®, Botanigard®) a fungus used to control aphids, whiteflies and other pests. New research in this area looks promising for the future of pest control.

Insecticidal soap

Similar to other soaps, insecticidal soap is generally considered to be among the least toxic pesticides available. Soaps are used to control soft-bodied pests such as aphids and mealybugs. Soaps are effective only against those insects that come in direct contact with the spray before it dries. Once the spray has dried, walking over the soap residue will not harm a moving insect.

Horticultural oil

Horticultural oil has gained wide acceptance in recent years in pest management programs because of its environmental safety and effectiveness in controlling many types of insect and mite pests. Dormant and summer oil applications interfere with the pest's respiration and membrane function. For oil to be effective, it must come in direct contact with the pest or egg; therefore, thorough coverage is essential for proper control. Some plants may be sensitive to horticultural oil, particularly when under stress.

Selecting and Communicating with a Professional

What qualifications and practices should I look for when selecting a commercial landscaper/pest control professional?

Is licensed.

- √ New York State Department of Environmental Conservation (NYSDEC) Pesticide Applicator Business Registration. Look for a triangular decal on the company vehicle (see page 6).
- √ NYSDEC Certified Pesticide Applicator License (see page 6). All licensed applicators must meet state educational and testing requirements to ensure competency.
- √ Certificate of Insurance.
- √ A valid Home Improvement Contractor's License (check with your county to see if a Home Improvement Contractor's License is required for professional application of pesticides).

Is recommended. Ask for referrals from family members, neighbors and friends. It is likely that someone you know may have had a similar pest problem in the past and can recommend a reliable company.

Affiliates with professional organizations. Affiliation with professional organizations such as Cornell Cooperative Extension is a good sign that the company is established and has access to up-to-date technical and management information**.**

Promotes truth in advertising. Beware of a company that says "don't worry, it's safe." A trained certified applicator should be able and willing to discuss your concerns about pesticides and discuss various options. Many certified arborists will use the phrase "Plant Health Care" instead of IPM to describe their tree care programs. The terms are similar in practice.

Monitors the site. The contracted site should be monitored during each visit. Monitoring or scouting is used to determine the number of pests present. If the monitoring program indicates that the pest outbreak is confined to a particular location, spot treatment of only the infested area will save time and money, and will conserve natural enemies located in other parts of the landscape. The applicator should also time treatments to be least disruptive to other nontarget organisms. Monitoring can also be a useful tool for determining the stage of pest development and the type of damage that is being done. Some of the monitoring equipment used by IPM practitioners includes pheromone traps, sticky cards, sweep nets, a soil probe, and a 10x-magnifying lens.

Keeps records. Recordkeeping is a systematic approach to learning from experience and goes hand-in-hand with monitoring. Records should not only provide information about when and where pest problems have occurred; entries should incorporate information about cultural practices (irrigation, cultivation, fertilization, mowing, etc.) and the effect on pest and beneficial populations. The effects of non-biotic factors, especially weather, should also be noted.

Provides contracts. Article 33, Title 10 of the Environmental Conservation Law requires lawn care companies in NYS to provide customers with written contracts specifying the approximate date or dates of pesticide application, number of applications, and total cost for the service to be provided.

Posts signs. All pesticide applications made in NYS by commercial applicators require the posting of a sign. A posted sign alerts the public that a pesticide application has been made. The posted sign should be removed after a 24-hour time period has elapsed or as required on the label. Signs that are left posted longer may raise unwarranted alarm. Homeowners are not required to post a sign.

What questions should I ask when hiring a commercial landscaper/pest control professional to manage pests in my home and garden?

Q. Does your company employ NYS Certified Applicators to make applications or supervise the applications that are being made?
Many landscape maintenance firms may not be licensed to apply pesticides. Under these circumstances it will be necessary to hire a separate licensed company to make pesticide applications if pest damage reaches intolerable levels.

Q. Who will be doing the monitoring (scouting) and how many visits will be made to my home?
Find out the name of the IPM practitioner and inquire about his/her training and experience. The number of visits will be determined during the initial property inspection.

Q. When will chemicals be used?
Traditionally pesticide applicators relied on preventive applications (preventing damage by applying chemicals before a pest was seen). Although preventive applications may be justified in some cases (e.g., when there is a very low tolerance for damage or infestation, when conditions are favorable for an outbreak, or when late treatments are ineffective), chemicals should not be applied until the pest has been properly identified and all other methods of control have been considered.

Q. Will you provide manufacturer's labels for all pesticide products applied to my property?
The company that you hire should provide you with the pesticide label for each pesticide product used. Look for any warnings that appear on the label that pertain to the protection of humans, animals, or the environment.

Q. What is the cost of your services?
When choosing a commercial landscaper/pest control professional employ the same care and thought that you would in choosing a family doctor or lawyer. Although the price is always an important factor in determining who gets the job, the cost should not be the number one consideration. Pay attention to the value and the service you expect for the price you pay. What appears to be a bargain may require a second look. Remember that your family's health is at stake. Don't necessarily put it in the hands of the lowest bidder.

What is my role in the IPM program?

- Have realistic expectations when establishing your pest tolerance levels; remember that one of the goals of the IPM program is to reduce the amount of pesticides used. Determine how much pest damage you can tolerate. Is it necessary to have a totally weed-free lawn? Most plants have a higher tolerance for pest damage than their owners do. A few insects or leaf spots do not usually threaten the health of a plant.
- Have patience when starting the IPM program. In situations where conventional pesticides have been frequently used, things may seem to look worse before they get better. It takes time for beneficial organisms to become established and create a natural balance. Give the program adequate time to show desired results.
- Consider planting varieties that are adapted to local conditions and have few or no serious pest problems.
- Use good cultural practices, as described above.
- A good working relationship between company and customer is needed for the success of an IPM program. Provide information about any pests that you have seen and where they are located on your property. Communicate your concerns about pesticides.
- Follow the directions provided by the applicator after pesticide applications have been made. Ask questions about what you can do to prevent future pest problems.
- Adhere to re-entry posting and remove signs when the time period has elapsed.

- Make sure pests have been properly identified by a certified pesticide applicator. You can contact your local Cooperative Extension office if you need help and are planning to manage the pests yourself.

References

Most of the references used to prepare this fact sheet are contained in:

Reducing Pesticide Exposure in the Home and Garden: Alternatives and Proper Legal Use Resource Sheet, BCERF Fact Sheet #4, August 1997 (Updated October 1999).

Please see other BCERF fact sheets on pesticide-related issues such as:

Avoiding Exposure to Household Pesticides: Protective Clothing, BCERF Fact Sheet #21
Safe Use and Storage of Hazardous Household Products, BCERF Fact Sheet #22
Resources for Information on the Health Effects of Pesticides and Response to Pesticide Poisonings, BCERF Fact Sheet #30

Other references used:

Cornell Cooperative Extension of Suffolk County publications:
Scott Clark, Dan Gilrein, *Horticultural Oils,* Cornell Cooperative Extension Suffolk County Fact Sheet, 1992.
Dan Gilrein, *Using Insecticidal Soap in Your Home Garden of Landscape,* Long Island Gardening, July 1989.
Thomas Kowalsick, *Selecting a Pest Control Operator,* Cornell Cooperative Extension Suffolk County Fact Sheet, 1992.

Carolyn Klass, *Nature's Botanical Insecticide Arsenal,* Cornell University Fact Sheet #7, 1993.

NYSDEC *Article 33, Title 10 of the Environmental Conservation Law, 21*, June 1997.

Web sites:

Appropriate Technology Transfer for Rural Areas
http://www.attra.org/attra-pub/ipm.html

New York State IPM Program
http://www.nysaes.cornell.edu/ipmnet/ny/urban/

Pesticide Management Education Program (PMEP)
http://www.pmep.cce.cornell.edu

Radcliffe's IPM World Textbook
http://www.impworld.umn.edu/

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly, and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in NYS must be registered with the NYS DEC. Questions concerning the legality and/or registration status for pesticide use in NYS should be directed to the appropriate Cornell Cooperative Extension specialist or your regional DEC office.

Read the Label Before Applying Any Pesticide

The ID cards are valid for a six-year period. However, they must be renewed after three years. The sample card shows certification in several categories.

The triangles are valid for one calendar year and they change color every year similar to an automobile registration sticker.

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We hope you find this Fact Sheet informative. We welcome your comments. When reproducing this material, credit the Program on Breast Cancer and Environmental Risk Factors in New York State.

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