



Planning for a Healthy Garden

Today's gardeners, homeowners, and pet-lovers are looking for ways to garden without using toxic materials. Many are relying on a system based on Integrated Pest Management, or IPM. The principles of IPM are used throughout this booklet and are referred to as Healthy Gardening – healthy for you, your children and pets, and the environment.

IPM allows us to look at and deal with pest problems in a new way that can ultimately lead to longer lasting suppression of pests while using fewer harmful chemicals. This is accomplished without sacrificing comfort in the home or beauty and productivity in the garden.

A major part of an IPM program is determining the number of pests that can be tolerated without causing unacceptable damage or annoyance. Pests are treated only when they reach that level. Then, many different treatment methods are mixed (integrated) to produce the best results.

First and foremost, IPM is a decision-making process that helps people determine whether, when, and how to treat a pest problem.

Whether or Not to Treat

The mere presence of a pest insect or weed does not necessarily indicate a problem. Try asking yourself these questions:

- Is real damage taking place? The problem of cosmetic blemishes on fruit caused by certain plant diseases is very different from damage done by termites chewing on rafters.
- How many pests are present and will that number cause serious damage? Many shade trees can support huge numbers of aphids without much damage other than a few yellowing leaves that drop prematurely. On the other hand, one flea on a highly allergic dog will cause great suffering.
- Are any natural enemies of the pest present? There are many kinds of beneficial insects, spiders, and other organisms that feed on pests and thus provide free pest control. Learn to recognize common predators such as ladybugs, syrphid flies, and lacewings. If you see them, you may want to postpone any treatments to see if these natural enemies will solve problems for you.

- How many pests can you tolerate? People differ in the number of pests they are willing to tolerate, and this tolerance level varies depending on the factors discussed above. IPM encourages people to think about their tolerance levels and experiment with tolerating a greater number of pests, especially in situations where damage is not serious.

When to Treat

Proper timing of treatments is very important for good pest management. Regular monthly or bi-monthly spraying wastes pesticides and unnecessarily exposes humans, pets, and the environment to toxic chemicals. In addition, during many of these treatments, pests may not be present or present in numbers so small that they are causing no problem.

For some pests, treatments must be timed to coincide with a period in their lives when they are most vulnerable to the treatment. Many scale insects can only be successfully controlled during the 'crawler' stage when the tiny, immature insects come out from under the hard, protective covering of the mother scale.

How to Treat

IPM emphasizes combining or integrating a number of treatment methods into a comprehensive plan for managing the pest. Because of the complexity of the natural world, it is seldom possible to effectively control a pest with one treatment method.

Pesticides are only one kind of treatment. IPM does not prohibit the use of pesticides. Pesticides are a very useful tool, but they are chosen carefully to be the least-hazardous to people, pets, and the environment. Pesticides are only used in 'spot' treatments, where and when they are needed. Spot treating with a pesticide is like weeding your garden with a hoe instead of a bulldozer.

There are a number of different treatment methods or controls available to the IPM gardener. They come under the general categories of physical, cultural, biological, and least-toxic chemical controls.

- **Physical controls** are barriers such as copper strips to keep slugs and snails away from plants, caulk to plug pest entry holes into buildings, or sticky barriers that keep ants out of hummingbird feeders. Fabric row covers exclude insects and birds from rows of vegetables, and special weed control fabric suppresses weeds. Your own hands are a physical control when you use them to squash bugs or pick snails off a plant. The humble vacuum has proved very useful in pest management. You can

use it to capture white flies and other pests outdoors and ants, spiders, fleas, and cockroaches inside.

- **Cultural controls** include designing the garden to minimize pest problems and doing routine maintenance in ways that keep plants as healthy as possible. For example, concrete mow strips between the lawn and fence allow the mower to edge the grass, eliminating the need to use herbicides under the fence. Mowing your lawn at the proper height and fertilizing at the right times contribute to a more vigorous lawn that can out-compete weeds and resist pests. Cultural controls also include choosing plants that resist pests and that will grow well in the kind of soil in your garden and the amount of sunlight available.
- **Biological controls** enlist other living creatures to attack pests. You can probably find many biological controls, such as ladybugs, spiders, soldier beetles, green lacewings, birds, toads, lizards, and many others thriving naturally in your garden. There is a lot you can do to attract these beneficial organisms to your garden, including planting insectary plants and not using pesticide sprays that kill beneficial organisms along with the pests. You can also buy a wide variety of beneficial organisms from special insectaries. *See the list of insectary plants at the end of this article.*
- **Least-toxic chemical controls** are a last-resort option, after all other methods have failed, and only when a pest is causing an unacceptable level of damage. If you use chemicals, consider their safety for humans, pets, and the environment. Always read the label and use all protective gear mentioned on the label, such as gloves and safety glasses. Look for environmentally friendly products that, when used properly, are less disruptive to beneficial organisms and are less likely to cause water pollution. These include products such as insecticidal soaps and oils, desiccating dusts (diatomaceous earth and silica aerogel), boric acid and borates, and some botanical pesticides such as neem oil and orange oil that are derived from plants. (Note that the widely available pyrethroid pesticides, whose active ingredient usually ends in *-thrin*, may be as toxic or even more toxic than the organophosphate pesticides they replaced.)

Successful IPM Relies on Monitoring

IPM strongly emphasizes monitoring, or gathering information on, pests and the problems they cause. Regular inspections of your house, garden, or pet provide you with information to help you decide whether you have a pest problem, if the problem needs treatment, and how the problem should be treated.

The more you understand about pests, their habits, their life cycles, and the factors that affect their growth, the better you can prevent pest problems or deal with infestations

that occur. Monitoring keeps you in touch with the workings of your garden, the condition of your house, or the health of your pet. This knowledge allows you to anticipate conditions that trigger pest problems, and thus prevent them from occurring or catch them before they become serious.

At first, using IPM methods may seem more difficult than just spraying a pesticide whenever you spot a pest. But as you become more familiar with IPM, the process will become easier and you can feel confident that you are creating and improving the natural balance in your garden and making your home and garden a safer place for the people and pets in your household.

Insectary Plants

This is a partial listing of plants, including native plants, that attract beneficial insects. Beneficial insects are good for your garden! Besides pollinating flowers, they eat or kill pests. Include insectary plants in your garden and most importantly, don't spray. Your garden will soon be buzzing with tiny helpers.

Alyssum (*Lobularia maritima*)
Do not plant near the coast – can be invasive

Angelica (*Angelica gigas*)

Aster (*Aster spp.*)

Baby Blue Eyes (*Nemophila menziesii*)

Basil (*Ocimum basilicum*)

Beebalm (*Monarda didyma*)

Bergamot (*Monarda fistulosa*)

Borage (*Borage officinalis*)

Butterfly Bush (*Buddleia davidii*)

Butterfly Weed (*Asclepius tuberosa*)

Calendula (*Calendula officinalis*)

California Lilac (*Ceanothus*)

California Poppy (*Escholzia californica*)

Caraway (*Carum carvi*)

Carrots (*Daucus carota*)

Chamomile

Chervil (*Anthriscus cerefolium*)

Chrysanthemum – many kinds

Cilantro (*Coriandrum sativa*)

Clover – many kinds

Coneflower (*Rudbeckia spp.*)

Coreopsis (*Coreopsis spp.*)

Cosmos (*Cosmos spp.*)

Coyote Brush (*Baccharis pilularis*)

Coyote Mint (*Monardella villosa*)

Daisy – many kinds

Dill (*Anethum graveolens*)

Elderberry (*Sambucus mexicana*)

Feverfew (*Chrysanthemum parthenium*)

Fleabane (*Erigeron*)

Goldenrod (*Solidago spp.*)

Holly-Leaved Cherry (*Prunus ilicifolia*)

Lavender – many varieties

Lemon Balm (*Melissa officinalis*)

Lupine (*Lupinus spp.*) Some lupines are invasive on the coast

Marguerite – many varieties

Marigold – many varieties

Mexican Sunflower (*Tithonia*)

Monkey Flower (*Mimulus*)

Mustard (*Brassica juncea*)
(*B. nigra* can be invasive)

Native Buckwheat (*Erigonum*)

Oregano (*Origanum spp.*)

Parsley (*Petrosilenum crispum*)

Penstemon – many varieties

Pincushion Flower (*Scabiosa spp.*)

Rosemary (*Rosemarinus officinalis*)

Rudbeckia (*Rudbeckia spp.*)

Salvia (Sage) – many kinds (*S. aethiopsis* or *Mediterranean sage* can be invasive)

Sunflower (*Helianthus annulus*)

Thyme (*Thymus spp.*)

Tidy-Tips (*Layia platyglossa*)

Toyon (*Heteromeles arbutifolia*)

Verbena (*Verbena spp.*)

V. bonariensis can be invasive

Yarrow (*Achillea spp.*)

Zinnia – many kinds

