

Carefully read the disposal directions

Be sure you can properly dispose of any unused or unwanted pesticide and the pesticide's container according to the manufacturer's recommended method.

Compare costs

If all else is equal, compare the cost per unit of active ingredient before making your final selection.

Good cultural practices will help reduce the need for pesticides

Use these guidelines to keep your plants healthy:


- Select plants adapted or native to your area.
- Control weeds—use mulches and hand-pulling where possible.
- Water adequately—overwatering and underwatering can be equally damaging.
- Do not crowd plants—planting too close weakens plants and increases disease.
- Fertilize properly—inadequate fertilization causes weak plants susceptible to insects and disease; too much fertilizer can damage plants and pollute ground water.
- Add organic matter such as compost to the soil—rich soil leads to healthier plants.
- Control pests before they become established—hand-remove insects or diseased leaves as soon as you see them.

Pesticides can be valuable gardening tools, but they must be selected with personal and environmental safety in mind. As with other tools, it is important to use the right pesticide for the job. Care and planning before pesticides are purchased can ensure safe and proper use.



For more information on selection, planting, cultural practices, and environmental quality, contact your local Iowa State University Extension county office. If you want to learn more about horticulture through training and volunteer work, ask your Extension office for information about the Extension Master Gardener program.

Originally produced by the Department of Horticulture at Virginia Polytechnic Institute and State University, in cooperation with the Chemical, Drug, and Pesticide Unit, the Virginia Cooperative Extension Service. Funded by ES USDA Smith Lever 3(d) National Water Quality Initiative Funds. Adapted for use in Iowa by Iowa State University Extension horticulturalists and communication specialists.

 . . . and justice for all

The Iowa Cooperative Extension Service's programs and policies are consistent with pertinent federal and state laws and regulations on nondiscrimination. Many materials can be made available in alternative formats for ADA clients.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Nolan R. Hartwig, interim director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.

Choose Pesticides Wisely



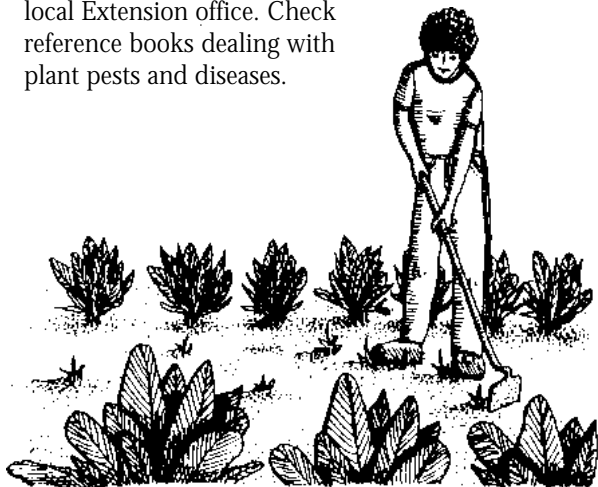
Healthy plants are less susceptible to attack by pests. Good cultural practices can reduce pest outbreaks.

Do you really need a pesticide?

Before you purchase any pesticide, you should answer some important questions.

- Is the damage actually being caused by a pest? Could it be the weather or a cultural practice, such as over- or underwatering, fertilizer, or herbicide damage?
- If it is a pest, what kind is it? Insect? Disease? Animal? Rodent?
- Are there non-chemical ways to control it? Is the damage severe enough to warrant chemical control?
- Is pesticide use cost-effective? Or would the chemical treatment cost more than the plant is worth?
- Can the pest be controlled by a chemical at this stage of its life cycle, or would application at a different time be more effective?

Just because you see insects does not mean that insects are a problem. Identifying the real problem is essential before selecting any type of control. Many excellent resources are available to help you identify pests or pest-caused problems. Talk to trained professionals at nurseries, garden centers, and your local Extension office. Check reference books dealing with plant pests and diseases.



Which pesticide will meet your need?

If you decide a pesticide is needed, read the pesticide labels carefully. You must choose a product that is specifically labelled for use on the plants you wish to protect and effective against the pest you want to control.

Never use a pesticide on a food-bearing plant unless the label directs such use.

The general term pesticide includes insecticides, fungicides, herbicides, rodenticides, etc. You must determine which product is appropriate to combat your problem. For example, an insecticide is effective only against insect pests. Some insecticides target only a certain type of insect. An insecticide alone will not solve a weed or disease problem, but some pesticide products contain two or more active ingredients; for instance, a formulation for rose care can contain an insecticide and a fungicide.

Which pesticide is best for your situation?

Avoid problems by taking the time to carefully study your pesticide needs. Your local Extension professional or a certified nursery employee can help with pesticide recommendations, as well as help you tailor the application to the site intended. Personal and environmental safety are prime concerns.

Consider the site

Read the label of each product under consideration to be sure that it can be used in the place and the manner you intend. For example, if the label indicates that the material is toxic to fish, do not use it on plants along the border of a pond. If the label requires that you wait two weeks from the time that you spray until you harvest, it should not be used on vegetables or fruits that are almost ripe. Consider all uses of the site to which the pesticide will be applied. Protect children, pets, and wildlife by careful pesticide selection and use.

Consider the equipment needs

What application equipment and personal protective equipment does the label require? Do you have the gear? If not, are you willing to purchase, use, and

If you must use a pesticide...

read the label carefully to be sure that it is intended for use on

the type of plant

you wish to

protect, to

control the type

of pest you've

identified.

Pesticide users

are legally

bound to

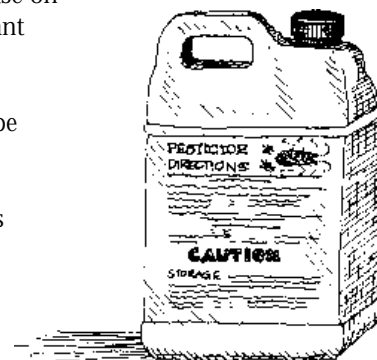
follow label

directions.

You should

read a pesticide label thoroughly before purchase, before each use, and prior to storage or

disposal.



maintain it? Do you want a pesticide that must be mixed and loaded into a sprayer, or will a pre-mixed, "ready-to-use" product in a spray bottle be more appropriate to your needs?

Minimize waste

Buy only the amount of pesticide you anticipate using in one season. Most pesticides have a limited shelf life. If pesticides are stored, they must be protected from extreme heat and cold, and must be kept in a secure, locked place. Read the storage section of the product label before purchasing, and do not buy a product that you can't store as directed. Also, remember that pesticides must be kept in their original containers with the labels intact.

Choose the least toxic product

Compare pesticides based on how hazardous they are. The signal word on the label indicates a product's toxicity. For example, products marked CAUTION are less toxic than those marked WARNING, and should be considered first. Environmental hazards are reported on the label. Be especially cautious with pesticides containing warnings regarding impact on water.