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Weed Control for the Garden and Landscape

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This publication contains pesticide recommendations subject to change at any time. Before purchasing any materials, read the label to be sure they are still approved for recommended use.

Weeds are the gardener's enemy because they compete with desirable plants for light, nutrients, water, and space. Weeds can also harbor insect and disease pests that can spread to desirable plants and may pose a health hazard to humans (e.g. poison ivy, ragweed). For the gardener's purposes, a weed is "any plant growing where it is not wanted."

Cultural Weed Control

The best strategies for controlling weeds in the home garden and landscape include mulching, hand-pulling, using tools such as the hoe and rototiller, and preventing existing weeds from going to seed.

Mulching around plants will go a long way toward reducing the ability of weeds to cause problems. Organic mulches tend to cool the soil, as well as conserve soil moisture and reduce weed germination. Materials such as chipped or shredded bark, straw, hay, grass clippings, or pine needles should be applied 2-4 inches deep and replenished as needed. Grass clippings treated with pesticide, especially herbicide, should not be used. Plastic mulch tends to warm the soil and is best used on warm-season vegetables such as tomatoes, melons, squash, and peppers. Fabric weed barriers have been useful for reducing weed growth in permanent landscape plantings. (For more information on mulches, please see the Iowa State Publication on the subject at <http://www.extension.iastate.edu/Publications/SUL12.pdf>.)

Don't underestimate the power of your bare hands (well, make that gloved hands)! Young weeds are very easy to pull, especially during or just after a rain. You want to prevent the weeds from going to seed, as that will bring many more future battles. For example, a single dandelion plant can produce 15,000 seeds in one year, and each seed is capable of surviving for up to six years in the soil. So, it is in your best interest to stay ahead of the weeds!

There are quite a few different designs for weeding tools, including different handle lengths, pointed, arrow-shaped blades, winged blades, and scuffle hoes, which have a twin blade action. For larger areas, shallow cultivation with a rototiller a few times during the season can do wonders.

Chemical Weed Control

In some situations, chemical weed control (herbicides) may be useful to prevent or eradicate certain weeds. Although there are many herbicides approved by the EPA, few of them are available in small packages suitable for the homeowner. Most herbicides are low in risk to people and animals when they are used according to the label.

There are different types of herbicides (see Table 1). Some herbicides work only to prevent weed seeds from germinating, while others must be applied after the weeds are already growing. Some have a greater tendency to volatilize and drift from the intended target. Some herbicides are labeled for use on selected vegetable crops, while some can only be used on certain ornamental plants. No one herbicide can be used on all garden and landscape plants, and no one herbicide will solve all weed problems. Therefore, it is critical to read the product label **before** you buy to be sure the herbicide is effective and safe to use for your particular situation.

When selecting a herbicide for home use, products that are easiest to use are also the safest from the perspective of reduced exposure to the applicator. Some herbicide products come ready to use in a convenient, trigger-spray bottle, while others have to be mixed with water. There are also some specialized application products that can help minimize risk to desirable plants, such as wick and wand applicators that allow you to place the herbicide directly on the weed.

Table 1. Commonly Available Herbicides**A. Pre-emergence, Selective Herbicides**

- Must be applied to the soil prior to weed seed germination and work best if mixed in to the upper 1-2" of soil or watered in.
- Used to kill annual grass and broad-leaved weed seedlings as they germinate, will **not** kill emerged weeds.
- Examples:
 - DCPA (Dacthal, Weed & Grass Preventer, and many others)
 - trifluralin (Preen, Treflan, and many others)
 - bensulide (Betasan, Prefar, Squelch)
 - dichlobenil (Casoron)
 - EPTC (Eptam)
 - simazine (Princep)
 - oryzalin (Surflan)
- Uses may include tree, shrub, and flower beds, and some fruit & vegetable crops -- read the label!

B. Post-emergence, Selective Herbicides

- Applied after weeds are already up and growing.
- They can present a problem by drifting onto non-target plants.
- Examples for broad-leaved weed control, particularly in lawn and in brushkillers:
 - 2, 4-D (sold under many brand names)
 - MCPP (sold under many brand names)
 - dicamba (Banvel and many others)
 - combination formulas (Trimec)
- Examples for grass weed control:
 - fluazifop-butyl (Grass-B-Gon, Fusilade)
 - sethoxydim (Poast)
- Uses may include lawn, tree, shrub, and flower beds, and some fruit crops -- read the label!

C. Non-selective, Post-emergence Herbicides

- Applied after weeds are already up and growing.
- Are circled within the weed plant, giving a better chance of killing the roots of perennial weeds.
- There is danger of drift to non-target plants.
- Some root uptake is possible, but herbicide is generally applied to foliage.
- Examples:
 - glyphosate (Roundup, Kleenup, Killzall, and many others)
 - triclpyr (Brush-B-Gon)
- Uses may include tree, shrub, and flower beds, walks, patios, and driveways -- read the label!

The same herbicide may be available under several names when formulated by different manufacturers or at different concentrations. Combinations of two or more herbicides may be formulated to provide a broader spectrum of activity.

It is easy to see where the home gardener, if not careful, can cause unintended damage to other plants. If you choose to use a herbicide, be sure to read and follow all of the label instructions before you apply. And, if you use sprayers and other equipment for herbicide application, make sure you label them for that use and have a different set that is used for other types of pesticides.

Vegetable Gardens

Herbicides generally are not recommended for weed control in home vegetable gardens. The tolerance of vegetables to herbicides varies greatly. The herbicides must be applied accurately and properly, as well as at the proper stage of development of both the vegetable plant and the weed. Most gardens have different kinds of vegetables close together, and these different kinds will usually be at different growth stages. Some of the herbicides in Table 1, Group A, may be used on certain vegetables. Also, be aware that spray drift from herbicides used in the yard can damage vegetables growing nearby.

The best approach to weed management in vegetable gardens is to use cultural techniques whenever possible (mulches, cultivation, etc.) and only use herbicides for spot treatment or for a specific crop.

Flower, Shrub, Tree, and Fruit Plantings

Due to the large number of species involved, it is difficult to make specific recommendations for herbicide use among herbaceous and woody ornamental plants as well as fruit crops. The herbicides in Table 1, Groups A and B may be labeled for use on some, but not all such plants. As with vegetables, cultural techniques such as mulch, hand-pulling, etc. are your safest bets. But if you choose to use a herbicide, read the label to be sure the product is appropriate for your particular planting as well as the target weeds.

Walks, Patios, and Drives

Some herbicides are available to control all vegetation in areas such as walks, patios, and drives where no plants are wanted. Group C in Table 1 includes materials with little or no soil activity. These kill plants to which they are applied but break down rapidly when they contact the soil. They do not prevent future invasion by surrounding plants or seeds.

Soil Sterilants

Some herbicides are designed to kill all unwanted plants in non-vegetated areas AND remain active in the soil for long time periods, some for 10+ years. These long-residual herbicides, or soil sterilants, have great potential to cause unintentional damage to nearby plants. Soil sterilants are not safe to use in the home landscape due to the close proximity of desirable plants. Homeowners are advised to use other methods of control. Examples of soil sterilant herbicides include prometon (Pramitol), bromacil (Hyvar), and tebuthiuron (Spike).

Never apply soil sterilants in areas where any possibility exists of surface runoff or seepage through the soil, or where soil may contain roots of desirable trees or shrubs. Roots of mature trees often extend a distance of 50 feet or more from the trunk, so it may not always be obvious where roots of desirable plants are growing. Never move soil from treated areas into gardens or where other plants are to be grown.

Label Clearance

For a herbicide to be used among food crops or ornamental plants, it must be tested and receive label registration from the EPA. Each label will list those plants, crops, or conditions in which the material may be used. Labels should be checked carefully before a herbicide is used. Failure to use herbicides as recommended may result in plant damage and is also a violation of the Federal Insecticide, Fungicide and Rodenticide Act.

Plants may be added or others deleted from the label over time, so always follow the current label recommendations as the final authority.

Precautions

Keep all new or unused herbicides in their original containers and locked up where children cannot get to them. Do not eat, drink, or smoke while handling and take care to prevent contact with skin or eyes. After using herbicides, wash skin thoroughly.

Do not pour unused herbicides down the drain or in streams, irrigation channels or drainage ditches. Use up prepared herbicide mixes are directed on the label.

Related Publications

AY-9	Control of Broadleaf Weeds in Homelawns
AY-10	Control of Crabgrass in Homelawns
AY-11	Control of Perennial Weedy Grasses in Turf
AGRY-98-02	Control of <i>Poa annua</i> and <i>Poa trivialis</i> in Lawns
AGRY-98-04	Control of Yellow Nutsedge in Homelawns
HO-218	Poison Ivy
ID-184	Diagnosing Herbicide Injury on Garden and Landscape Plants
PPP-20	Pesticides and Personal Safety
PPP-24	Pesticides and the Label
PPP-26	Pesticides and Their Proper Storage
PPP-29	Pesticides and the Home, Lawn, & Garden
PPP-30	Pesticides and Wildlife
PPP-34	Pesticides and Pest Prevention for the Home, Lawn, and Garden
PPP-38	Pesticides and Personal Protective Equipment: Selection, Care, and Use
PPP-39	Pesticide Safety and Calibration Math for the Homeowner

For more information on the subject discussed in this publication, consult your local office of the Purdue University Cooperative Extension Service.
