

Resources

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Non-Toxic Weed Control, 1999. Common Sense Pest Control Quarterly. XV:3 (Summer). BIRC, PO Box 7414, Berkeley, CA 94707.

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Perennial Ground Covers, 1997. MacKenzie, D. 379 pp. Timber Press. www.timberpress.com

Pest Management around the Home, Parts I & II, 1999-2000. Part II, Chap. 15 on weed management includes herbicide recommendations. Cornell Resource Center, resctr@cornell.edu; 607.255.2080.

Pest Management Guidelines: Trees and Shrubs, 2001. Cornell Cooperative Extension. See pp. 143–156 for information on glyphosate and other herbicides registered for ground covers and woody ornamentals. Cornell Resource Center, resctr@cornell.edu; 607.255.2080.

Using Organic Matter in the Home Garden, 2001. Cunningham, S., E. Harrison, and C. Mazza. www.hort.cornell.edu/usingom/

Weeds of the Northeast, 1997. Uva, R., J. Neal and J. DiTomaso. 398 pp.; describes 299 weeds with text and photographs. Cornell University Press, 607. 277.2211.

The New York State IPM Program

 We encourage people to adopt a sustainable approach to managing pests, using methods that minimize environmental, health, and economic risks. For more information: NYS Integrated Pest Management Program, 800.635.8356; NYSAES, Geneva, NY 14456; <www.nysipm.cornell.edu>. For additional copies of this brochure (IPM No. 610) contact us or your local Cooperative Extension office.

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Weeds and your garden

The dreaded weed...

A weed is any plant you don't want in your garden or landscape. It might be welcomed by another gardener, but to you it's a pest.

You can learn to recognize weeds that thrive under many conditions and compete with neighboring plants. Managing weeds in your garden or landscape does not have to be back-breaking and tedious. Start by removing as many weeds as possible, prevent new weeds from getting established in your garden, and, when weeds arrive, dig in!



Purple deadnettle—a winter annual with distinct purple leaves and flowers. Germinates in the fall and flowers in early spring.

Prepare garden beds carefully

Prepare your garden or landscape beds in ways that prevent weed growth.

New beds

If you're creating a new bed on top of established turf, try a method that is easy but requires patience. Lay down two or more thicknesses of heavy cardboard or 10–20 thicknesses of newspaper. The paper will block most weeds from emerging through the bed; those that do will be weakened by the effort. (Alternatively, you can yank up the turf, shake out and reserve the soil, and compost the grass.)

Now pile organic matter onto the paper. Put the coarsest on the bottom. For the top few inches,

Start with tidy garden beds, prevent new arrivals, and when weeds happen, dig in!

use compost mixed with topsoil. In weedy areas, the deeper the bed, the better! You can plant into this bed, or better yet, sow a cover crop and use the bed next year.

Established beds

If you're preparing an established bed for planting, decide if more than 30 percent of the garden is covered with weeds. If so, your best bet might be to remove perennials and prepare the bed like a new one. If weeds are scattered, dig out the toughest root systems by loosening and removing the entire root. Pull by hand the medium-sized weeds that will cooperate. Then till.



Mugwort—a perennial with foliage that resembles a chrysanthemum. Rhizomes can spread by tillage and topsoil disturbance. A major problem in nurseries.

Tilling: a mixed blessing

Tilling the soil—either mechanically or by hand—destroys some weeds, but also allows some weed seeds to germinate. The timing and depth of tillage determines how many weed seeds are exposed to light, air, and water. Many gardeners recommend only light tillage (2 inches deep), to bring fewer weed seeds to the surface.

Two weeks before planting an established bed, loosen the top 3 inches of soil to be planted. A



Chickweed—a winter annual that thrives in cool weather. It is often introduced to the landscape in container-grown ornamentals.

day (or less) before you plant, till the top 3 inches again to prevent weeds from getting ahead of new plantings. Mulch after planting to further reduce potential weed problems.

When working around existing perennials or shrubs, the rules are the same: don't loosen any soil areas you aren't planting; keep the soil layers intact where possible; and, if the soil is worked, rake shallowly to disturb emerging weed seedlings.



Quackgrass—a perennial grass that reproduces by seed or underground rhizomes. Can establish in dense mats and is often introduced to the garden by rototillers or soil movement.



Annual. Creeping woodsorrel or oxalis has shamrock-like foliage. Produces small capsules that can eject seeds a long distance when it matures.

Perennial. Yellow nutsedge has triangular stems and leaves. Reproduces by underground tubers that can remain viable for years.

One-year weeds? Or two? What to do.

The life cycles of weeds differ, and you should tailor your weed-management strategies to fit.

Annuals complete their life cycles in a year and reproduce by seed. *Summer annuals*, such as redroot pigweed and ragweed, complete their life cycles during the growing season. *Winter annuals*, such as shepherd’s purse, can overwinter as seedlings and flower the following spring. To decrease these weeds: pull them (it’s okay if some roots stay in the soil); apply a 4-inch mulch; deadhead (cut off flowers before they set seed); and consider using a flame thrower.

Biennials, such as burdock, set seed in their second year of growth, then die. They can be tough to remove. Try deep digging, regular mowing, and heavy mulching.

Perennials, such as Canada goldenrod and ground ivy, live for more than two years. Many reproduce from roots or rhizomes (underground stems), as well as by seed. They can be difficult to control. Repeatedly mow perennials or carefully remove pieces of rhizomes and roots (which can sprout new plants). A “once-over” tillage is not recommended, but repeated tillage, followed by deep mulching, may reduce infestations in your garden.

Fall renovation

In the fall, till or loosen the top 7 inches of beds with a shovel. Incorporate soil amendments, such as compost. Two weeks later, rake the surface to defeat any weed seedlings.

Watch out for weed sources

Weed seeds drift in on breezes or are transferred by animals from nearby weedy areas. Keeping sites adjacent to your landscape fairly tidy will reduce the number of weed arrivals.



Field bindweed—a perennial with deep underground rhizomes; spreads by mowing or soil disturbance. Flower resembles a small morning glory. Can damage garden plants by twining around them.

You can inherit such perennial pests as bindweed and yellow nutsedge in root balls of transplants. Take care to remove weeds when you bring plants into your garden. Water in the landscape, such as streams or ponds, can promote the growth of grasses, sedges, and other weeds. By staying vigilant, you can prevent these sites from creating problems for the rest of your landscape.

Some areas are so overgrown with large, established weeds that pulling them isn’t feasible. Before you mow or till them under, however, identify them. The rhizomes and tap roots of some perennials can create thousands of sprouts if you chop them and leave them in the soil. To manage these weeds, you’ll need to repeatedly mow, dig, or mulch.

Block weeds with plants and mulch

You can prevent light from reaching weeds for a season, while your plants get established—or, in severely weedy situations, for a year or more.

Advantages of living plants and mulches

The leaves of living plants prevent light from reaching the soil. Try wide-canopy plants—such as closely planted broccoli—or dense ground covers (for example, woodruff or drifts of daylilies or hostas).

Cover crops or “living mulches,” such as clover, have many benefits. Some interfere chemically with weed growth; sorghum sudangrass, winter rye, and fescues, for example, excrete substances from their roots and shoots that suppress weeds. Many gardeners recommend a season or more of cover crops to minimize weeds in newly planted sites. A dense canopy of buckwheat blocks weeds and is pretty, too. Tilling under cover crops also increases the organic matter content of the soil.

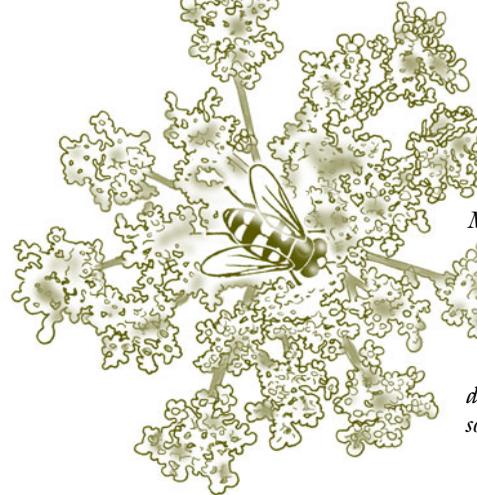
Organic mulch

A 4-inch thick layer of shredded bark, straw, leaves, wood chips, or several other organic choices can prevent seeds from germinating. You might also consider laying down sheets of newspaper beforehand.

Plastic or black landscape fabric

You can lay black plastic or landscape fabric around established flowers, shrubs, or vegetables to prevent

Preparing beds with cardboard or black plastic can thwart quackgrass and other plants that reproduce by underground runners, but these weeds are persistent.



Many wildflowers and native plants are attractive to beneficial insects, making them a desirable addition to some home gardens.

weeds from emerging near them. Alternatively, lay down the sheeting on newly prepared beds and poke holes into which you’ll plant. Try to prevent weeds from emerging from the edges of those holes. When planting shrubs or trees with root systems that will expand outward, beneath the sheeting (versus straight down), use landscape fabric that allows water—but not light—to penetrate. Certain synthetic fabrics can be expensive and difficult to install and remove, especially once weeds have rooted into them or sunlight has degraded them. They also separate the decomposing mulch from the soil organisms.

Some gardeners place chopped leaves or other organic material under the plastic. Once the plastic is removed, the soil generally has better tilth, or texture, from the activity of soil organisms and the decomposition of organic matter.

Pulling weeds—not pulling teeth

When it comes to maintaining a garden, even the most experienced gardener eventually has to pull weeds. Weeding is part of gardening. Here are a few ways to simplify the task:

- **Tools.** A variety of garden tools, available at garden supply stores, make weeding easier.
- **Timely watering.** Deep roots are easier to remove in damp (or wet) soil than in dry soil. You can dampen the area to be weeded yourself, or do your weeding right after a heavy rain. In either case, don’t compact wet soil, as doing so damages the soil structure.

Balanced weed management

IPM—or integrated pest management—means balancing your hopes for a weed-free garden with society’s need for a healthy environment. People who practice IPM consider many sustainable strategies that work together to keep pests in check. Once you’ve educated yourself about the options, the standards you set and the methods you use are your choice.

A word about herbicides

As shown in this brochure, it’s possible to manage weeds without herbicides. If you do decide to use herbicides, consult the Cornell Guidelines in the Resource section and consider the following:

- **Effectiveness.** Are weeds at the right growth stage? Most herbicides are designed to work within a specific time frame. For example, preemergence products are effective only before germination, not on established weeds. Do you have the proper equipment, and if so, is it properly calibrated? Is the product appropriate for your weeds? Check the label.
- **Environment.** Valuable plants can be harmed or killed if they come into contact with nonselective herbicides. Water and wind carry herbicides, reducing their effectiveness in your garden and polluting the environment. Avoid applying herbicides when it’s windy or just before a heavy rain. Reduce your risk of exposure by wearing protective equipment, as indicated on the label.
- **Economics.** What is the cost? Number of applications? Many persistent weed problems can be solved by using alternative strategies.

Common groundsel—an annual with deeply lobed leaves and small yellow disk flowers—contains alkaloids that make it poisonous to horses and cattle.

