

# Weed Control In The Vegetable Garden

**Jeffrey F. Derr**

Extension Weed Scientist

Dept. of Plant Pathology, Physiology and Weed Science  
and

**Diane Relf**

Extension Specialist

Dept. of Horticulture

Publication 427-035  
Revised June 1989

## Weeds Commonly Found in the Vegetable Garden

A weed control strategy should be considered prior to establishing a vegetable garden in the spring. Weeds compete with vegetables for water, nutrients and light. Weeds also harbor insects and diseases, which may then spread to vegetables. Efforts made early in the growing season will reduce the time required for hand-weeding later in the season. The weed control program may require a combination of methods to manage all weed species.

The most common weeds found in the garden can be divided into summer annuals, winter annuals and perennials. Annuals are plants that germinate, flower and complete their life cycle in one season. Perennials are plants that survive for two or more years. There are a few biennial weeds in Virginia, but these are generally not a problem in gardens. Biennials exist as a rosette the first year, then flower and complete their life cycle in the second year.

**Summer Annual Weeds.** Summer annuals are weeds that germinate in spring or early summer and flower in the summer or fall. This is the most common type of weed found in the garden. This group can be further divided into summer annual grasses and summer annual broadleaf weeds. Common summer annual grasses include large crabgrass, goosegrass and giant foxtail. Annual grasses are easy to control if appropriate measures are taken early in the growing season but can quickly become a severe problem if

not controlled when small. Large crabgrass, for example, will root into the soil at the places where the nodes of the stem contact soil, allowing this plant to quickly cover open ground. The fibrous root system of grasses makes them more difficult to pull out of the ground.

Common summer annual broadleaf weeds include smooth pigweed, common lambsquarters, purslane, galinsoga, common ragweed and tall morningglory. Purslane is the same genus and species, *Portulaca oleracea*, as the cultivated ornamental, *Portulaca*. When controlling purslane through hoeing, remove all stems from the garden as purslane can reroot if allowed to remain on the soil surface due to the thick, succulent stems which can survive a period of drought. Galinsoga is often called quickweed, perhaps because it develops quickly and flowers while still a small plant. It seems that most gardens contain purslane, galinsoga or both. Small-seeded broadleaf weeds like pigweed are easier to control than large-seeded broadleaf weeds like morningglory. Larger-seeded weeds can germinate from a greater soil depth and can push through a shallow layer of mulch.

**Winter Annuals.** Winter annuals are weeds that germinate in fall and flower in the spring. These weeds are often present at the time the garden soil is prepared in the spring prior to planting. Tilling the soil will kill existing stands of common chickweed and other winter annuals. Annual

LD  
5655  
A762  
no. 427-035  
VPI  
Spec

## Weed Control Strategies

ryegrass is a common winter annual grass while henbit, common chickweed and wild mustard are common winter annual broadleaf weeds. Weeds in this category are generally not as troublesome in the garden as summer annuals.

**Perennial Weeds.** Herbaceous perennial weeds can be especially difficult to manage in a garden. These plants are killed back to the ground by a hard frost and over-winter through underground plant parts such as tubers or rhizomes. Tilling the garden may spread these weeds by fragmenting and moving root pieces. Each of the root pieces may develop into a complete plant. The most common perennial weeds are bermudagrass and yellow nutsedge. Bermudagrass, often called wiregrass, spreads by creeping stolons and rhizomes. Thoroughly remove all plant parts from the garden when hand-weeding as bermudagrass can reroot into the soil. Yellow nutsedge is often called nutgrass but this plant is a member of the sedge and not the grass family. Yellow nutsedge reproduces by underground tubers, along with seed production.

**Mulches.** Mulches can be divided into "organic", such as grass clippings, and "inorganic" such as black plastic. Mulches can be the easiest and most effective way to control annual weeds in the garden. Mulches may also suppress perennial weeds. Mulches control weeds by preventing sunlight from reaching the soil surface. Light is required for the germination of certain weeds and light is required for growth of all green plants. See VPI & SU Publication 426-326, Mulches for the Home Garden, for detailed information on various mulches.

**Organic Mulches.** Organic mulches include grass clippings, pine bark, straw or similar materials. Organic mulches cool the soil surface which is beneficial during hot summer days but may reduce crop growth in the spring. Do not use grass clippings from a lawn that has been treated with a broadleaf herbicide such as 2,4-D. Tomatoes, peppers and most other vegetables are very sensitive to 2,4-D and could absorb residues of the compound from the treated grass clippings.

Avoid overmulching as this can reduce oxygen levels in the soil. Crop roots require oxygen for growth so limit the mulch layer to a maximum of about 3 inches. Organic mulches provide good control of annual weeds but perennial weeds may be able to push through the mulch layer. Also, annual weeds may germinate and grow in the mulch layer. When utilizing an organic mulch, make sure that the source is not contaminated with weed seed, rhizomes or tubers. Weeds are often spread by contaminated mulch, making weed control harder than if no mulch was used.

**Inorganic Mulches.** Inorganic mulches are man-made and can be divided into black plastic and the newer geotextiles. Black plastic, a solid sheet of polyethylene, effectively controls annual weeds. The disadvantage to black plastic is that water and oxygen cannot pass through this material. The soil should be moist prior to laying this synthetic material. Check the soil under black plastic during the growing season to ensure the soil contains adequate moisture. Black plastic warms the soil which is an advantage in the spring but can be a detriment in the summer. Clear plastic, which increases soil temperature more than black plastic, will not control weeds since sunlight can reach the soil surface. Perennial weeds may be suppressed by black plastic but plants like yellow nutsedge will push through the material in places.

The newer geotextiles (also called geotextiles or weed barriers) are woven or spun-bonded fabrics containing polypropylene or polyester and may come in black or white. These fabrics are more expensive than black plastic but they allow water and gases to pass through the fabric. Research generally indicates good control of annual weeds but annual weeds may be able to germinate above the fabric and send their roots through the fabric. Certain weeds, such as large crabgrass, are able to germinate below these fabrics and push their shoots through holes in the material. Like black plastic, perennial weeds may push through these fabrics.

**Physical Control.** Since mature weeds extract large quantities of moisture and nutrients from the soil, removing the weeds when they are young is beneficial. Hand-pulling suffices for small gardens and raised beds, but a hoe is critical for larger gardens. Manual-powered rotary cultivators do a good job on long rows and pathways, provided the soil is not too wet or dry and the weeds are small. In large gardens with widely spaced rows, a rotary tiller of appropriate size makes the work easy and fast. Manual and powered rotary cultivators are usually unable to turn under weeds close to vegetable plants without damaging the vegetables. Hand-pulling or hoeing are best for removing weeds near vegetable plants. Deep cultivation with any instrument is likely to damage roots or stems of crop plants.

While cultivating, try to move as little soil as possible to limit the amount of weed seed brought to the soil surface which can then germinate. Cultivation is best done when the soil is moist, but not wet. After removing weeds from the garden, a mulch can be applied to control later germinating weeds.

**Crop Competition.** Once vegetable plants become established, their foliage will begin to shade the ground. This shading effect reduces the amount of light available for weed germination and development. Close spacing of vegetables will decrease the amount of time required for the crop canopy to significantly shade the soil. If weeds are controlled initially by other means, crop competition will reduce weed growth once the vegetables become well-established.

### **Chemical Control**

**1. Herbicides.** For most gardens, annual weeds can be controlled using a combination of mulches and hand-weeding, and herbicides are not needed. There exists a number of herbicides for use in commercial vegetable fields. If the size of the garden warrants herbicide use, check the Pest Management Guide for Home Vegetable Gardens, Publication 456-002, or for large blocks of individual

vegetables, consult Commercial Vegetable Production Recommendations, Publication 456-420.

The difficulty with using herbicides in a vegetable garden is that there are few herbicides that are safe on the wide range of species grown in a garden. In commercial fields, one vegetable species is grown on a large area, permitting the application of different herbicides to different vegetable species. Also, herbicides must be applied at precise rates or injury can result. This can be difficult for the homeowner to accomplish.

One herbicide that can be used on a number of vegetable crops is DCPA, sold under various trade names including Dacthal and Garden Weed Preventer. DCPA can be applied at the time of seeding or transplanting broccoli, cabbage, cauliflower, potatoes and turnips and at the time of transplanting strawberries, onions and sweet potatoes. DCPA can be applied 4 to 6 weeks after transplanting tomatoes, eggplant and peppers. DCPA cannot be applied to sweet corn, okra, carrots or beets. DCPA is a preemergence herbicide which means that it controls weeds as they germinate from seed and will not control perennial weeds or emerged annual weeds. DCPA will control annual grasses like crabgrass along with small-seeded broadleaf weeds like chickweed, purslane and pigweed. DCPA will not control large-seeded broadleaf weeds like ragweed, morningglory or galinsoga. DCPA will provide about one to two months of weed control.

Perennial weeds like bermudagrass and yellow nutsedge can be controlled using postemergence applications of glyphosate. Glyphosate is sold under the trade names Roundup, Roundup L & G, and Kleenup, among other trade names. Glyphosate is absorbed by plant leaves and will translocate throughout plant parts, killing the root system of perennial weeds. Injury symptoms in weeds develop in about two weeks after application. Glyphosate is inactivated upon contact with soil. Many vegetables can be planted 7 days after glyphosate application. Do not allow glyphosate to

contact desired foliage or systemic injury could result. Glyphosate must be applied prior to planting the garden or after the final harvest in the fall but prior to the first frost. If a severe infestation of perennial weeds exists in the garden, do not plant in that area. Use repeated applications of glyphosate during the summer to eliminate those weeds. After eradication of perennial weeds, that area can be planted into a garden the following spring. Apply glyphosate to actively growing weeds under good soil moisture. Like DCPA, glyphosate exhibits low toxicity to animals and is readily available for homeowner use.

**2. Fumigants.** Like herbicides, fumigants have greater utility to commercial growers than home gardeners. Fumigants are toxic and must be handled with extreme caution. Many formulations are restricted use, meaning the applicator must be licensed to apply these chemicals. Hence, fumigants could not be used by most homeowners.

Fumigants kill most organisms in the soil, including weeds, insects and disease organisms. Unlike herbicides, fumigants will kill dormant weed seed. Fumigants such as methyl bromide and metham are applied prior to planting and usually covered with a plastic cover. Fumigants move through the soil as a gas. After a period of time, the cover is removed to allow the fumigant to dissipate. Vegetables can then be planted after the fumigant has degraded.

**Combination of Methods.** A combination of two or more of the methods listed above may be required for weed management in the garden. A combination of mulching and hand-weeding will probably be the best system for most homeowners. Herbicides could be used for special situations, such as for the control of perennial weeds. Early season weed control will greatly reduce the time required for hand-weeding later in the growing season. Once vegetable plants are established, they will shade the soil if closely spaced. This shading of the soil will suppress weed growth.

Some gardeners are experimenting with various types of no-till gardening to prevent erosion and moisture loss. One method is to plant a fall cover crop and then kill it with a postemergence herbicide such as glyphosate. Vegetables can then be planted in the killed sod after a waiting period. Another alternative is the use of a mowed, living sod. The use of cover crops over several seasons can reduce weed problems. However, this method requires leaving that part of the garden uncultivated, reducing growing space. Use of cover crops and no-till gardening should be tried in small sections of the garden prior to extensive use.

**Disclaimer.** Commercial products are named in this publication for informational purposes only. The Virginia Cooperative Extension Service does not endorse these products and does not intend discrimination against other products which also may be suitable.

Virginia Cooperative Extension Service programs, activities, and employment opportunities are available to all people regardless of race, color, religion, sex, age, national origin, handicap, or political affiliation. An equal opportunity/affirmative action employer.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, and September 30, 1977, in cooperation with the U. S. Department of Agriculture. James F. Johnson, Acting Director, Virginia Cooperative Extension Service, and Acting Vice Provost for Extension, Virginia Polytechnic Institute and State University, Blacksburg, Virginia; Clinton V. Turner, Administrator, 1890 Extension Program, Virginia State University, Petersburg, Virginia.