



WEED CONTROL IN VEGETABLE GARDENS

David W. Monks and Larry Bass
Extension Horticultural Specialists



Weeds are unwanted plants in gardens that reduce available moisture, nutrients, sunlight and growing space needed by crop plants. Their presence can reduced crop growth, quality and yield. In addition, they can make harvest difficult. Weeds also provide cover for diseases, insects and animals (rodents, box turtles, snakes, etc.). Garden weeds are hard to control because they grow rapidly, produce vast numbers of seeds, and spread aggressively by vegetative structures and/or seeds. There are several methods that should be used in a combined, coordinated effort to control weeds. They include cultural, mechanical and chemical methods.

Cultural Methods

Fast growing vegetable crops can effectively suppress weeds by shading. Thus, one method of weed control is to select a crop that is capable of suppressing (shading) weeds. The following vegetable crops are listed according to their ability to suppress weeds.

Suppression of weeds by crops works best when the crop germinates quickly an gets a head start on weeds. To achieve this, plant crops at the proper depth, with adequate moisture and fertility. Also, it is important to purchase high quality vegetable seeds or transplants that are free of weed seeds or seedlings. Garden soils should be tested and soil test recommendations followed to stimulate rapid crop growth capable of weed suppression.

Fast growing ‘smother’ crops can be used to reduce weed germination in succeeding crops. For this purpose, smother crops are usually planted in the fall and killed by tillage or chemicals the following spring prior to planting vegetables. The straw residue from smother crops (i.e. rye, ryegrass, etc.) can inhibit early season germination of weeds such as common lambsquarters, common purslane and redroot pigweed by 75% or more. NOTE: Avoid planting smother crops where small seeded crops such as lettuce will be seeded the following year or reduction in germination can occur. Smother crops are

Ability of Crops to Suppress Weeds			
Good		Poor	
Squash	Beans	Lettuce	Carrot
Pumpkins	Peas, southern	Pepper	Greens
Cucumbers	Corn, sweet	Onions	Peas, garden (English)
Melons	Potatoes, Irish	Broccoli and	Radishes
Sweetpotatoes	Tomatoes	Cabbage	

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also effective in suppression of many winter annual weeds such as henbit and chickweed. Rotate crops to different areas of the garden, so a specific crop is never planted in one area for two years in a row, to prevent the increase in weeds.

Mulches can be used to prevent weed germination and growth, and ultimately reduce time and labor required to remove weeds. Mulches fall into two categories — **organic mulches** are derived from plant material and decompose naturally in the soil, and **inorganic mulches** which do not decompose and therefore must be removed from the soil after serving to increase soil moisture retention, to enhance soil warming, and to reduce weeds.

Organic Mulches: Some of the most commonly used organic mulching materials are manures, bark chips, ground corncobs, sawdust, grass clippings, leaves, newspapers (shredded or in layers), and straw. Organic mulches allow some flexibility in fertilizing and watering since they can be raked back from the plants. They should normally be applied uniformly three to four inches deep around the base of the vegetable plant. Do not mulch with straw containing weed seeds. If straw contains weed seeds it should be moistened throughout, kept moist until the weed seeds germinate, and then air dried several times to kill germinating seedlings.

Inorganic Mulches: Black plastic is the most frequently used inorganic mulch. Clear plastic is not recommended because it does not exclude the light that weed seeds need to germinate. Gardeners should make sure there is adequate moisture in the soil before any mulch is applied, especially plastic films. It is also necessary to apply most of the fertilizer required by the plants before the plastic is installed. There are also several durable weed fabrics that are very effective in weed suppression. They are capable of lasting up to 20 years or more when covered with soil.

The decision of whether to use an organic or inorganic mulch really depends on the season of the year and what the gardener is trying to accomplish. Organic mulches should be applied after the soil temperature has warmed in the spring. If applied to cold soils, the soil will warm slowly and the growth rate of most vegetables will be reduced. Inorganic mulches can increase the soil temperature by at least 6-8 °F. Therefore, their greatest value is early in the growing season when soils are naturally cool.

Mechanical Methods

Since emerged weeds present at seeding or transplanting are capable of growing rapidly, it is important to kill all weeds prior to planting. Weeds that emerge after planting should be removed early before they are past 3 inches tall. Large weeds are difficult to remove without uprooting vegetable plants. Early season competition which may reduce crop growth, yield, and quality may also occur if weeds are allowed to remain past the 3-inch stage. Removal by hand or cultivation can be used to rid the garden of weeds.

With removal by hand, weeds can be hand pulled or removed using hand tools. Several small hand tools are available that are very effective on small weeds and for working near garden plants. They include the springtooth hand cultivator and the trowel. These tools limit the gardener to working solely on their knees.

There are a variety of effective tools that allow the gardener to stand while removing weeds. They include the scuffle hoe, the Warren hoe, the onion hoe, and the Garden Weasel. **Scuffle hoes** come in several shapes and are “push-pull” weeders that require no lifting. Perhaps, the most popular is the Dutch version, an open stirrup with a blade. Others consist of triangular plates. Most scuffle hoes are very light weighted and are effective on small weeds. The **Warren hoe** has an arrowhead shape. It is effective in removing small weeds. It can be used to scratch a furrow with one end and when turned upside down the two shoulder points fill in the furrow. The **onion hoe** is a thin bladed hoe that is recommended when removing weeds near vegetable plants. It is easier to handle than large, heavy hoes. Onion hoes can be made by simply grinding a common hoe so the blade is thin. This will allow more precise maneuvering near vegetable plants. The **Garden Weasel** has three sets of wheels with spikes that you “push-pull” to cultivate weeds. It is recommended where numerous small weeds are present. The Garden Weasel is also useful in breaking soil crust to aid vegetable crop emergence.

Several implements can be used to cultivate weeds. Push plows, also called push cultivators, are inexpensive and also very effective in killing small weeds. The large wheel versions are usually easiest to push. For large weeds, a garden tiller or small tractor is most effective. Regardless of the implement,

cultivate no deeper than 2 inches deep to prevent root damage to vegetable plants. Cultivators should normally be adjusted to throw soil around the base of crop plants and over any emerged weeds that are present in the row. Row spacing can be adjusted to allow close mowing near the soil surface to control weeds. Self-propelled rotary or sicklebar mowers and/or mowers with large rear wheels are easiest to maneuver. Weedeaters fitted with plastic string can also be used to cut weeds near the soil surface. Extreme care should be used for crop and personal safety. See manufacture's warnings prior to operating all equipment.

Chemical Methods

Herbicides are another weed control aid that some gardeners employ. Gardeners should be aware that *no single herbicide will do the entire job* of controlling weeds in all vegetable crops. There is also a problem of applying relatively small amounts of the herbicide evenly to the garden surface. Miscalculation of rates or miscalibration of application equipment can cause some areas of the garden to get too much or too little of the herbicide. Under-application will result in poor weed control while over-application will result in damaged plants.

For small areas, several chemical manufacturers (e.g. Ortho, Scott, Southern States, Security, and others) sell a variety of herbicides in small quantities which are ideal for this job. These chemicals are usually formulated to make them more convenient and easier for the homeowner to apply. For larger areas, several products can be purchased at farm chemical retail stores.

For all purpose weed control when no crop is present (either in the fall, later winter, or early spring), use Roundup (Ortho's Kleenup). This material, applied over the top of weeds, will kill all weeds. Do not use this material when crops are present or serious injury will occur.

To control germinating weed seedlings before the crop emerges, only one major herbicide is available to choose from. This material is trifluralin (Treflan). The trade name (listed in parentheses) is the more commonly marketed forms of this herbicide. However, this herbicide may be marketed using other trade names and the buyer should read the ingredients list to be sure that the common name of the herbicide,

which is listed before the trade name, appears on the label. Weed control chemicals are available as concentrated liquids, (2 to 8 lb/gal) which need to be mixed with water before applying; as wettable powders which are from 50 to 100% active ingredient and need to be dispersed in water for uniform application, or as granules which are from 1 to 10% active ingredient and which are applied dry with granular applicators. See the label for all instructions on labeled crops and timings

Emerged grasses can be controlled using hand removal, cultivation (see previous discussion) or sethoxydim (Poast) herbicide. It is usually effective when applied to grasses that are no larger than 4 inches tall. Consult the chart at the end of this section and the herbicide label for specifics on use, labeled crops and timings. Never exceed the recommended rate, as severe plant injury may occur.

Herbicide Use Chart for Vegetable Gardens		
Crop	Treflan (G) Treflan (L)*	Poast (L)
Asparagus	R	
Beans, Lima	R	R
Beans, snap	R	R
Broccoli	R	R
Brussels sprouts	R	
Cabbage	R	R
Cantaloupes	R	R
Carrots	R	
Cauliflower	R	R
Collard greens	R	
Cucumbers		R
Eggplants	R	
Garlic		R
Lettuce		R

(continued on the next page)

Herbicide Use Chart for Vegetable Gardens

(continued)

Crop	Treflan (G) Treflan (L)*	Poast (L)
Kale	R	
Cauliflower	R	R
Collard greens	R	
Cucumbers		R
Mustard greens	R	
Okra	R	
Onions		R
Peas, garden (English)	R	R
Peas, southern	R	R
Peppers	R (TR)	R
Potatoes	R	R
Pumpkin		R
Squash		R
Tomatoes	R	R
Turnip greens	R	
Watermelon		R

Length of control (weeks): 12 to 16

- R = The herbicide is registered on this crop
 (post) = Apply this chemical only after the plants have 4-6 true leaves and are not under stress
 (TR) = Do not use this chemical on newly seeded crops or small seedlings. Use only on transplants or direct seeded plants that are at least 6 inches tall.
 * = This chemical must be incorporated into the top 2 to 3 inches of soil before seeding or transplanting.
 L = Liquid
 G = Granular