



Organic Weed Control for the Home Garden



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What are weeds?

A weed is any plant that is growing where it is not wanted. A primary reason weeds are unwanted in our gardens is that they compete with our garden plants for water, light and nutrients. They can also be thorny or even poisonous.

There are a lot of reasons why weeds are good competitors with our garden plants. Two of the most important ones are 1) They grow more rapidly, and 2) they quickly produce a lot of seed, which stays alive in the ground for a long period of time.

Shifting perspective.

Weeds can cause problems, but some people consider plants weeds just because they didn't plant them. These "spontaneous" garden plants can actually be helpful in some ways, including:

- Protecting topsoil from erosion,
- Providing food and shelter for beneficial organisms, and
- Supplying food and medicine for people (Table 1).

In other words, if we don't view the plants as weeds, then we don't have a problem.

Table 1. Some weedy plants used around the world for food and medicine.

Plant	Use
Amaranth	Leafy vegetable, grain
Spanish needle	Leafy vegetable, tonic, anti-inflammatory
Purslane	Salad green, grain, high Omega-3
Galinsoga spp.	Sap a first-aid wound treatment

Managing weeds organically

Organic food production prohibits the use of most synthetic chemicals, including some of our most effective herbicides. Organic growers must integrate multiple strategies to manage their weeds in their gardens. These strategies include:

- Cultivation
- Mulching
- Cultural Practices
- Flaming
- Organic herbicides

Cultivation

Cultivation is the use of tools or machinery to physically uproot weeds to kill them. Most gardeners will use a hoe or similar cultivator to do this. Make sure the hoe is sharp because this makes things easier. Other tricks that may help include: cultivating when weeds are small; weeding on hot and dry days to help keep the weeds from re-growing; avoid weeding when soil is wet. A standard hoe works best if weeds have grown quite a bit or if the soil is hard. In addition to the

standard hoe there are several specialty hoes available to the home gardener that are very effective on small weeds in loose soil including oscillating and collinear hoes.

Mulching

Mulching is a very important weed management strategy for organic gardeners. Black plastic mulch is one of the most effective types of mulch that can be used and is acceptable for use in organic systems if it is removed after use. Some potential down-sides to plastic mulch include its tendency to warm the soil (an issue with cool season crops in the tropics), reduced penetration to water and oxygen and relatively high cost. Several types of plastic mulch are available from garden centers, and differ primarily in the thickness of the plastic. Generally the thicker the plastic the longer lasting and more expensive it is.

Many gardeners prefer organic mulches such as leaves, grass clippings, straw and wood chips over plastic. These are very good choices and there are several tips to keep in mind to maximize the effectiveness of these mulches:

- Watch out for weed seeds in grass and straw.
- If using leaves, grass or straw, put down at least 4 inches, and make sure to compact the mulch as much as possible to reduce light penetration.
- If using wood chips, use 2-4 inches and make sure the soil is well fertilized. As the wood chips break down, they may “rob” nitrogen from the soil, causing plants to turn yellow.

Cultural practices

Cultural practices refer to the way in which the plants are grown. The best cultural practices for weed control are designed to close the crop canopy as soon as possible, and to provide adequate nutrition and water to the crop but not the weeds.

Use transplants whenever possible. If directly seeding into the garden, make sure to use fresh seed with good germination rate and rapid early growth. Space plants relatively closely. Do not over- or under-apply water or fertilizer. Apply fertilizers and water within the crop row; avoid watering and fertilizing in between rows where you are not growing plants.

Flaming

Flaming is commonly used by many organic farmers and some home owners. Simple hand-held assemblies using a 3-5 gallon propane tank are commercially available. The basic principles of flaming are relatively simple. High temperatures burst cells, not burn plants. Weeds should be small (< 3”). Plants should be well-watered, but with a dry leaf surface because well watered plants have cells easy to burst and wet leaves increase the amount of time it takes for cells to heat up. Broad leaf weeds are easier to kill than grasses.

Organic Herbicides

There are some commercially available herbicides that are acceptable for use in organic agriculture. The most common active ingredients for these are clove oil (eugenol), citric acid and acetic acid. Some herbicidal soaps (potassium salts of fatty acids) are available, but these are frequently derived from synthetic sources, and are not strictly “organic.” The primary disadvantage to organic herbicides is that they are contact herbicides and do not move within the plant to kill the roots, so only kill the smallest of weeds. Some of them are also very expensive relative to synthetic herbicides, and all of them are less effective on grasses. Some tips to help improve the effectiveness of organic herbicides include spraying right after weeds emerge, thoroughly coating the leaves and spraying on hot, dry days.

For more information please visit: <http://www2.hawaii.edu/~theodore/Links.htm>

Some Common Weeds in Hawaii

Photo Credit: Jari Sugano, UH CTAHR, UH Botany Department, HEAR



Nut Grass
Cyperus rotundus



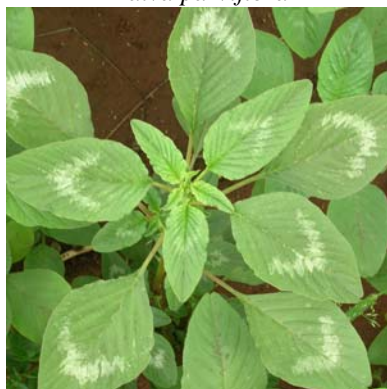
Cheese Weed
Malva parviflora



Ivy Gourd
Coccinia grandis



Spanish Needle
Bidens pilosa



Spiny Amaranth
Amaranthus spinosus



Chinese Violet
Asystasia gangetica



Morning Glory
Ipomoea obscura



Sandbur
Cenchrus echinatus



Swollen Finger Grass
Chloris barbata



California Grass
Brachiaria mutica



Johnson Grass
Sorghum halapense



Guinea Grass
Panicum maximum