



# Maine Organic Farmers and Gardeners Association

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## MOFGA FACT SHEET # 6

### Garden Weeds

by Eric Sideman, PhD

MOFGA's Organic Crop Specialist

Garden weeds are simply plants that are growing where you do not want them. Any plant species may be a weed, but in gardens in New England, there are some species that are very common. And, in some gardens, very common is an understatement. Why do some gardeners have great success controlling weeds while other lose control?

The answer to that question is not that difficult to predict. It really comes down to the answer to a similar question I hear often, "Why is this weed growing in my garden?"

A particular weed is growing where it is because:

- 1) A seed germinated there (or some other reproductive structure produced a new plant).
- 2) The environmental conditions in the garden are suitable for the particular species.
- 3) Conditions in the garden are such that the weed species is more competitive than other plants at that site.
- 4) The gardener has not interfered with the weed's success.

The means of weed control success are now obvious. Simply stated, they are:

- 1) Do not allow weed seeds to enter the garden and control other means of reproduction such as runners or rhizomes (underground stems).
- 2) Maintain environmental conditions in the garden that favor the desired plant species.
- 3) Interfere with the success of the weeds that do get by.

Lets look at each of these tactics in a bit more detail.

#### Weed Reproduction

There are three basic strategies of weed reproduction: annual, biannual, and perennial.

Annual weeds live only one growing season. They tend to produce very large numbers of seeds that potentially will germinate the following season and grow into a new weed. Biennial weeds grow for two seasons after seed germination. The first season the plant forms a good root system and stores up food, and the second season it produces seeds. Perennial weeds can live for many years. In addition to producing seeds, many perennial weed species can produce by vegetative means such as underground stems (rhizomes) that can grow horizontally and send up new plants along the way.

Preventing new weed seeds from entering the garden is a major step towards control. The majority of new seeds, believe it or not, come from plants already in the garden. So, the first step is not to allow any of the weeds in the garden to produce seeds. Many species can produce thousands of seeds per individual, so it is important to get them all. Even if you let them grow all season, don't let them produce seeds. Pull them or mow them, or get them with a weed whacker before they ruin next year for you.

Seeds, or course, can come from outside the garden but this is much less likely. Keeping a 25-35 foot border mowed around your garden will go a long way in reducing seed introduction. Even a 10-foot border will help.

Keeping new seeds out is only part of the problem. There is a reservoir of old seeds in the soil that in some cases can survive 15 or more years before germinating. Each time you cultivate, you will bring some new ones to the surface and stimulate them to germinate. This seed bank must be eliminated before you will have an easy time of control. Similarly, you will have to get rid of the perennial weeds. Green manures are my recommendation for these tasks, especially when starting a new garden.

A green manure is a crop growers turn back into the soil in order to add organic matter or nutrients, or out compete the weeds. A season or two of a very competitive green manure will go a long way toward reducing the seed reservoir by competing with any germinated weeds and keeping them from reproducing. I recommend oats and buckwheat as green manures for gardens. Plant oats in the spring or fall and turn under in the summer or spring respectively. Oats will not winter over so spring tilling will be easy, but by mid-summer a spring planting will be quite tall so make sure you have the equipment to handle it. Plant buckwheat when the soil is warm (late May – June). Remember, whatever you grow for a green manure, kill it before it produces its own seeds or you'll have a new weed problem. See MOFGA Fact Sheet #10 for details on green manures.

Another way that weed seeds are brought in is through the addition of manures. Many weed seeds pass right through animals' digestive tracts. I recommend composting manures before you use them. See MOFGA Fact Sheet #5 on composting for details.

#### Maintaining Conditions to Favor Crops not Weeds

This can be successful but only in certain situations. Some weeds are better nutrient scavengers than the average garden plant and will be the best competitor in nutrient poor soils. You may be able to get rid of some weed problems by maintaining proper pH and nutrient balance. On the other hand, many weeds do very well under optimal gardening conditions.

#### Interfering with Weed Success

Dealing with the weeds in your garden may be easier if you can

envision a weed free garden in the future. Keeping new weed seeds out, maintaining proper fertility, and good use of green manures are the keys to that future. Here are some ways to deal with weeds in the meantime.

#### Hoe Them

The old fashioned hoe is still probably the best way for a home gardener to control weeds. It is most effective when used on weeds less than three inches tall, and when it just slices the surface of the soil. Deep hoeing brings up thousands of new weed seed to germinate and may injure the shallow roots of nearby crops.

If thoughts of hoes give you a backache, try a scuffle hoe. Instead of the solid blade of the usual garden hoe, it has a thin, open blade that undercuts weeds on the push as well as the pull. It is much less jarring than the traditional hoe.

#### Rototill Them

There's nothing more satisfying than standing back and looking at a freshly rototilled garden full of straight rows of vegetables and nary a weed between. But such beauty is only soil-surface deep – and so ephemeral.

Three problems with frequent rototilling for weed control are: first, new weed seeds are continuously brought to the surface, second, the roots of crop plants may be broken; and third, rototilling breaks down soil structure. A little breakdown is okay, but too much will turn a soil into fine powder that is easily eroded, crusted and compacted.

#### Pull Them

Perennial weeds that regenerate from the root are gone once and for all if they are pulled, root, stock and flower. Pull them after a rain when the soil is more yielding.

#### Mulch Them

Plastic mulches do a great job of controlling weeds, and they warm the soil and conserve moisture as well. But they are difficult to put in place, and impossible to dispose of properly.

Organic mulches, especially if applied over newspaper mulch, control weeds as well as plastic does, and they add organic matter and nutrient to the soil. But they can keep a soil too cool if applied too early in the season, and they provide a haven for slugs, and, in the case of hay, for mice.

#### Mow Them

One of the most carefree methods of gardening is to establish the rows of vegetables, to mulch within the rows and then to mow between the rows.

Mowing will work well for annual weeds but most perennials will thrive. In order to get rid of perennials, only methods that deprive the roots of food will work.

#### Know Them

Knowing the biology of your enemy weeds is the key to knowing where to start your battle. Here is an introduction to some very common weeds in New England:

**Dandelion** (*Taraxacum officinale*) – A perennial herb with a deep, thick taproot. It is mainly a lawn weed. It can be controlled by persistent tillage in gardens. Flowers may be used to make wine and the leaves are edible.

**Witchgrass** (*Agropyron repens*) – Commonly called quackgrass. It is prevalent in old fields and gardens that were made in old fields. It is a perennial that reproduces by seeds and rhizomes. Once in a field or garden, it is difficult to get rid of. Tillage just breaks up the rhizomes and each piece will send up a new plant. If you till it, you will need to keep at it – don't let new plants get longer than a few inches. Green manures can work if they are very competitive. It will probably take a few seasons to get control.

**Oxeye** – Daisy (*Chrysanthemum leucanthemum*) – A perennial herb producing by seed and creeping rhizomes often forming wide patches. Easier to control by tilling than quackgrass.

**Buttercup** (*Ranunculus acris*) – A perennial herb that reproduces by seed. It does not persist under cultivation.

**Evening Primrose** (*Oenothera biennis*) – A biennial or short lived perennial. The first year it forms a deep root and a rosette of leaves. The second year it sends up a tall (4-6 feet) stalk. It does not spread vegetatively, so if kept from flowering will eventually be controlled. The rosette is edible.

**Curly Dock** (*Rumex crispus*) – A perennial herb that reproduces by seeds. It has a large taproot that can resprout even after severe hoeing. You need to starve it out by repeated cultivation. The tender leaves are edible.

**Pigweed** (*Amaranthus retroflexus*) – An annual herb that produces thousands of seeds by the end of the season. Pigweed is most common in fertile soil. It has a shallow taproot that is relatively easy to pull out. But even if only a small piece has good soil contact after pulling and dropping on the ground, it will reroot. It is easy to control by cultivation or hoe but get it when it's young, or mow it before it produces seeds and then till under.

**Lambs Quarters** (*Chenopodium album*) – An annual herb that reproduces by seeds. Similar to pigweed, it is a very common weed in fertile gardens. Control is the same as pigweed. Young plants make good greens.

**Ragweed** (*Ambrosia artemisiifolia*) – Shallow rooted annual herb reproducing by seed. It is common in abandoned pastures. It is easy to control by cultivation or mowing before seed production. Ragweed is bitter and no one would eat it, except for cows whose milk then becomes off-flavor.

**Yellow Foxtail** (*Setaria glauca*) – An annual that reproduces by seeds but produces many branches from the base. Very common in the Midwest cornfields but also found here in New England. It is a fast growing weed that should be controlled by early cultivation. It is not a good food for humans or livestock.

**Black Mustard** (*Brassica nigra*) – An annual or sometimes a winter annual (the seed germinates in the fall, the young plant becomes dormant for the winter and then resumes growth to flower in the spring). It is easy to control by cultivation but often seed production gets by early in the season and it becomes a major pest. The wild mustards pass on some diseases to the garden brassicas such as broccoli or cauliflower. The seeds may be used for table mustard.

**Chickweed** (*Stellaria*) – An annual or winter annual that reproduces similarly to mustard. The creeping stems root at the nodes and spread over the ground quickly, early in the spring when there is little competition. Very difficult to control in lawns. Early cultivation is the best control in the garden.

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