

## Weeds: Clover: *Trifolium spp.*



Photo by: R. Parker

**Use IPM (Integrated Pest Management) for most successful weed management.**

Family: Fabaceae (Leguminosae)

Cycle: Various

Plant Type: Broadleaf

### **Biology**

**Description:** Clovers, depending on species, may be annuals or perennials. Typically, clovers are fairly low-growing, herbaceous plants. The leaves are divided into three leaflets which are attached to the petiole at or near the same point. Blossoms usually occur in ball-like clusters (sometimes in clusters of just a few flowers) and may be pink, red, white, or yellow, depending on the clover species. In lawns, clovers can form dense patches, crowding out turfgrasses. They do not withstand traffic well. Clovers can also be desirable plants in lawns due to their nitrogen-fixing ability. Increases in clover may indicate soils are low in nitrogen. Bees are attracted to the blossom.

**Habitat:** Clovers commonly grow in fields, meadows, and other sites on well-drained soils. They may be included in seed mixes for lawns, but are sometimes considered to be lawn weeds.

### **Management Options**

Fertilizing the grass will help it outcompete clover, which produces its own nitrogen.

## **AN INTEGRATED APPROACH TO WEED MANAGEMENT**

### **What is Integrated Weed Management?**

An integrated approach to weed management uses a combination of cultural, physical, biological, and chemical methods to provide the best possible weed management in each situation. Integrated weed management is more environmentally sound and more effective than complete reliance on chemical management (i.e., herbicides). While not all management methods are useful for all weed species, taking an integrated approach to weed management can greatly increase the effectiveness of your efforts while reducing the expense associated with herbicide use.

### **The first step--weed identification.**

The first step of any weed management program is to IDENTIFY THE WEED SPECIES. With a positive identification of the plant in question, and a little knowledge about that species, you can identify weaknesses which will help you manage the weed quickly and effectively. Knowing the common and scientific names of the plant species will let you answer key questions such as (1) does the plant have an annual, biennial, or perennial life

cycle, (2) does the plant spread aggressively, (3) which management methods are best suited to this species, and (4) which herbicides will manage it safely and effectively?

HortSense Weeds is not designed to be a complete reference for weed identification. It is intended solely to make management recommendations for weeds which have been identified. Many references are available to help with weed identification. If you have a weed species you cannot identify, you may contact your local WSU Master Gardeners or Cooperative Extension Office for assistance.

### **Realistic goals.**

Regardless of the number and species of weeds in our yards, it is not realistic to attempt to eradicate all weeds, and the goal of weed management (except in the case of certain noxious weed species) should not be 100% control. Rather, the goal is to reduce the number of weeds to an acceptable level. This level may be the number of weeds which begin to interfere with yields in the vegetable garden, or the number of weeds we can aesthetically tolerate in the flower beds. Setting this "threshold" level is a decision which must be made by the gardener.

### **Weed management methods.**

The following weed management methods are discussed in general terms: Weed Prevention, Mechanical Weed Management, Cultural Weed Management, Biological Weed Management, and Chemical Weed Management. In all cases, preventing seed production is an important part of the management process.

### **Non-chemical Methods**

## **WEED PREVENTION**

Weed management is much simpler if weeds do not become established in the landscape. Exclusion of weed species is by far the best preventative measure available to the home gardener. Since weeds can be introduced in topsoil, compost, with other plants, in irrigation water, and via seed-contaminated clothing, equipment, and pet hair, a little attention can prevent a lot of trouble. Do not introduce soil contaminated with weed seeds or plant parts, and don't plant ornamental species which are potentially weedy (i.e. Japanese knotweed, Scotch broom, and other aggressive perennials) unless you are willing and able to control them.

## **PHYSICAL WEED MANAGEMENT**

Several methods of physical weed management exist. Among these are handweeding, hoeing, cultivating, and mulching. These methods have advantages and disadvantages which vary with the type of weeds to be managed, making awareness of the weed's life

cycle and growth habits essential for effective management. Physical management methods must be used very regularly to have any appreciable effect on spreading or perennial weeds. The root system of perennial plants must be starved by frequent pulling, hoeing, or cultivation for these methods to be effective.

### **Handweeding.**

Most annual and biennial weed plants can be easily managed by handweeding. For these types of weeds, handweeding can be an ideal method of management since the soil is not disturbed, new weed seeds are not brought to the surface, and the seeds will not be encouraged to germinate. Infrequent handweeding is seldom effective on spreading or perennial weeds, however, since it is very difficult to remove all parts of the plants.

### **Hoeing.**

Hoeing is intended to cut weeds off at or just below the soil line with minimal soil disturbance. Hoeing can give good management of annual broadleaf weeds and biennial plants in their first growing season. Grasses may be more difficult to manage by hoeing, as the growing point is frequently below the soil line and may not be affected by the shallow cuts used in proper hoeing. As with handweeding, hoeing may not be effective on spreading or perennial weeds unless it is performed frequently enough to starve the roots.

### **Cultivation.**

Cultivation (rototilling and similar methods), while effective for annual and biennial weeds, can actually contribute to the spread of perennial weeds. For instance, cultivating wild morningglory will result in a garden full of the weed by cutting the roots and shoots into small sections which can grow many new plants.

### **Mowing.**

In waste areas (uncultivated sites such as along roadsides, etc.), mowing may provide adequate management of tall-growing weeds simply by reducing seed production. It will also help reduce the fire hazard posed by dried weeds. Few weed species are killed by mowing, but mowing to prevent seed production may be a very effective means of management of certain species, including biennials and some annuals. In lawns, mowing regularly at the proper height for the grass species may help minimize weed growth and invasion, but will seldom provide adequate weed management. Many lawn weed species will, when mowed, simply continue to produce flowers and seeds at the reduced height.

### **Mulching.**

Mulching relies on preventing weed growth rather than directly attacking the growing weeds. Mulches work by preventing sunlight from reaching the plants underneath the mulching material. Without sunlight, the plants cannot grow, and seeds (of some species) are not encouraged to germinate. In addition to weed management, mulches can aid in conserving water and preventing erosion. Several mulching options exist for the home landscape, where they can be very effective in gardens and ornamental plantings.

**Organic mulches**, such as bark, compost, grass clippings, straw, and other materials,

typically need to be applied in a layer from two to several inches thick to be effective, and must be renewed periodically because of natural decay. Organic mulches used alone will probably be only partially effective against many perennial weeds which have sufficient food reserves to grow through the mulch.

**Inorganic mulches** include plastic, commercial "weed barrier" fabrics, and other materials such as roofing paper. Gravel and volcanic rock can also be considered inorganic mulches, since they do not degrade over time. Most plastic or fabric inorganic mulches will need to be covered, either with soil or with a thin layer of organic mulch or gravel, rock, or similar material. This additional layer will help prevent breakdown of the barrier layer by sunlight and weather, and can be more aesthetically pleasing than a sheet of black plastic. Planting holes must be made in plastic or fabric layers if you wish to plant in the mulched areas. It is important to keep in mind that water and air movement into and out of the soil will be hampered by use of plastic or fabric mulches. Special care must be taken when irrigating in areas mulched with these materials.

## **CULTURAL WEED MANAGEMENT**

Cultural weed management methods can be effective in reducing the number of weeds in a landscape and also reducing the likelihood of new weed invasions. In the home landscape, cultural weed management methods may include use of drip irrigation systems to minimize water availability to weeds, selective fertilizer applications (rather than broadcast) in plantings, and maintaining healthy plantings to provide competition for weed species. In vegetable gardens, competition can be provided by timing plantings carefully and interplanting slow-growing vegetables with fast-growing types to minimize the open areas where weeds thrive. In lawns, a dense, healthy stand of grass can help prevent weeds from becoming established. In ornamental plantings, useful cultural techniques include maintenance of healthy plants to shade out weed seedlings and use of drip irrigation to minimize water availability.

## **BIOLOGICAL WEED MANAGEMENT**

Biological weed management (biocontrol) relies on the action of one or more natural enemies of a weed species. These enemies may include diseases, insects, or other organisms. Biological methods will help manage weeds, but do not eradicate them. In Washington, biocontrol has had some success in managing tansy ragwort (cinnabar moth larvae), St. Johnswort (leaf-feeding beetles and a seed midge), and some other species. Biocontrol probably has little applicability in the home landscape primarily because of the relatively small numbers of weeds involved. In larger areas such as pastures, roadsides, waste areas, woodlands, etc., biocontrol is more viable and may significantly contribute to the management of some weed species.

## **CHEMICAL WEED MANAGEMENT - AN OVERVIEW**

In an integrated weed management program, herbicides are typically considered to be the least-preferred management option. Reasons for this include expense and the potential for these chemicals to be used contrary to the label directions. Herbicides are designed as chemical weed management tools but, as with many other kinds of tools, the user must become proficient in their proper use or suffer the consequences. Some simple precautions will help you minimize the risk of chemical use, while maximizing the effectiveness of herbicides as part of your integrated management strategy.

### **Identify the weed.**

Since not all products are effective on all weed species, it is important to identify the weed species to be managed and to check the herbicide labels to determine which product(s) will be effective.

### **Read the label.**

Because of the variety of plants and planting situations in the home landscape, it is impossible to find one herbicide that is suitable to manage all weeds in all situations. It is very important to ***ALWAYS READ THE LABEL*** before you buy a product in order to find an appropriate product for your situation. When selecting a product, check the label to be certain that the site (i.e. vegetable garden, lawn, etc.) where you want to use the herbicide is listed and that the product will be effective on the weed in question. The label will also give usage rates and precautions for your safety and to protect desirable plants.

### **Selecting an herbicide--contact vs. translocated herbicides.**

There are two main types of herbicides: Contact herbicides, which only kill tissues that are directly contacted by the spray, and translocated herbicides, which are taken up by the plants and moved throughout the plant tissues. Contact herbicides can provide adequate control of annual and biennial plants, but will only give "top-kill" of perennials and other weeds which can resprout from the roots. Translocated herbicides, when used correctly, are typically the better choice for controlling perennial weeds.

### **Proper timing.**

To get the best results from an herbicide application, it is important to time it properly in relation to the weed's life cycle. This requires some familiarity with the weed and its life cycle. All weeds are most easily managed when they are seedlings. It is essential to manage annual weeds before they produce flowers and seed. Biennial weeds are most easily managed in the first season, when they are seedlings or small rosettes and have not produced flowers or seeds. Timing of chemical management of perennial weeds often depends on the species. The best time to manage perennial weeds is when they are seedlings, but chemical applications just prior to blooming, during early stages of flowering, and during the fall regrowth period (when sugars are being translocated to the root system for winter storage) can also be effective. In all cases, read and follow label instructions in order to get the best, and safest, results.

**Spray with care.**

Herbicides will damage or kill ornamentals just as easily as they damage or kill weeds. Damage can result from direct contact as well as from physical drift of spray, runoff of treated soil, and vapor drift (drift of fumes of the herbicide). Always use caution when applying herbicides around desired plants. Do not spray in windy conditions. In some cases it may be necessary to screen desirable plants with plastic to protect them from the herbicide. To minimize risk to desired plants, use a separate sprayer for applying herbicides. Do not use the same equipment that you will use for application of insecticides, fungicides, fertilizer, etc., as traces of herbicide can remain and cause damage to desirable plants. If the herbicide label directs you to apply a specific amount of the product per unit area (e.g. 5 oz./100 square feet), calibrate your sprayer or spreader to make sure you are using the right amount of herbicide. Too little herbicide will be ineffective and may contribute to a weed developing resistance to an herbicide, while too much herbicide will waste money and could cause damage to surrounding vegetation.

**More information.**

For more information on proper pesticide application techniques, sprayer calibration, pesticide safety and disposal, and related topics including weed identification, you may wish to consult some of the publications available through Cooperative Extension. A free catalog of publications may be requested from your local Cooperative Extension office or from the Bulletins Office, Cooperative Extension, Cooper Publications Building, Washington State University, Pullman, WA 99164-5912.