

Weed Management in Lawns

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Learn how turfgrass establishment, soil conditions, mowing, nutrition, irrigation, shade, and chemical herbicides affect weed control.

About weeds

Lawn weeds are opportunists that may germinate and establish on bare spots when the conditions are favorable. They are well adapted to meet the rigors of a closely mowed lawn. If left uncontrolled, weeds can thin the turf significantly. Sustainable weed management is a proactive effort to control weeds in lawns by:

- providing good growth conditions for the turf, thereby reducing the opportunities for weed infestation,
- reducing the opportunities for weed infestation, and
- implementing multiple strategies to resolve the weed problem when necessary.

Excessive weeds affect the beauty of a lawn and reduce its ability to control erosion and cool the vicinity. Maintaining a weed-free lawn may require a significant effort and the use of multiple management practices, including herbicides. However, a fully functional turf with few weeds can be maintained sustainably. Occasional use of herbicides may be necessary to bring the weed population to manageable levels prior to initiating or continuing a sustainable weed management program. Maintaining a dense turf that can reduce the emergence of weeds is perhaps the best strategy to minimize weed infestation in home lawns.

Homeowners vary widely in their range of tolerance toward weeds in their lawns. Homeowners who prefer weed-free lawns will require higher levels of effort and resources than those who are willing to exchange a few weeds for easier, less costly lawn maintenance. The goal of all homeowners, however, should be to suppress weeds to a level that prevents them from dominating the lawn.

Common turf weeds are classified as broadleaves, grasses, and sedges according to their leaf shapes and other physical characteristics. Based on the length of their life cycle, they can be further categorized as annuals (one-year life cycle), biennials (two-year life cycle), or perennials (multi-year life cycle). Depending on their season of active growth, annuals can be classified as winter or summer annuals. Plants that regenerate from a single growing point year after year are referred to as simple perennials; weeds that regenerate and spread through stolons, rhizomes,



Dandelions are one of the most commonly found weeds in lawns.

Weed identification and biology

Factors affecting weed control

Establishing turfgrass

or tubers are called creeping perennials. Creeping perennial weeds are usually the most troublesome and difficult to control.

The selection of the grass species and variety is one of the most important factors in determining lawn success. Grass should be chosen based on its performance under the prevailing environmental site conditions. Based on the dominant seasons in West Virginia, cool-season grasses tend to perform best. Consider water drainage (water/drought tolerance) and presence of trees (shade tolerance) when choosing the turf species or cultivar. Additionally, grass varieties differ in their susceptibility to weeds. A lawn of Kentucky bluegrass, for example, is more susceptible to weed competition than a lawn of ryegrass or tall fescue.

Establishing turf in properly prepared soil is also critical to weed management. Turf is commonly established on subsoils or on poor topsoils that are not well suited for plant growth. Lawns seeded in these adverse conditions eventually become prone to weeds and other pests. Instead, establish a new lawn in subsoil containing minimal weed seeds that has been amended with manure or materials high in organic matter. Then, follow with proper fertilization for a lawn with improved soil quality and ground cover, and with decreased competition from weeds. Tilling the site and leaving it idle for a few weeks in summer, followed by the application of a non-selective systemic herbicide, like glyphosate (Roundup®), after weed emergence can also reduce weed competition. This approach also helps prevent previous turf species, such as volunteer Bermudagrass or zoysia grass, from re-emerging in a new or renovated lawn. These grasses can be difficult to manage if not controlled completely prior to establishing the new lawn.

When establishing a lawn from seed, sanitary practices (using pure seed and cleaning any equipment that has been used on other sites) will help reduce future weed infestations. Turf seed should be mixed uniformly, especially if a blend is used. Using higher seeding rates also may enhance the establishment of turf, although excessive seeding rates may trigger the onset of seedling diseases. The use of a bio-organic fiber-seeding mat instead of conventional mulches has been shown to reduce weed populations while establishing the turf.

Soil conditions

Soil pH can dictate both the variety of weeds that dominate a turf and the best method to control them. Red sorrel and broomsedge are indicative of acidic soils; plantains favor soils with a high pH. Raising soil pH (making the soil less acidic by adding lime) may help reduce the emergence of certain weeds like large crabgrass. The presence of weeds like black medic, birdsfoot trefoil, white clover, hawkweed, and broomsedge, typically indicate that soils are low in nitrogen.

Soil compaction also impacts weed prevalence. Hard, compacted soils may provide conditions for weeds that can survive poor soil aeration and structure. Prostrate knotweed, goosegrass, annual bluegrass, spotted spurge, corn speedwell, broadleaf plantain, and common lespedeza, may indicate compacted soils. Aerate compacted soils in late spring or early fall to help prevent these weeds. High earthworm populations in the soil can also help improve aeration naturally.

Mowing

Mowing frequency and height closely govern the presence of weeds in turf. In most cases, mowing the turf too close to the ground increases weeds and decreases turf vigor. For example, Kentucky bluegrass mowed at a height of 1 inch produces

fewer grass roots and rhizomes compared to the same grass mowed at 2.5 to 3 inches. When the mowing height is too low, more fertilizer is required to maintain weed-free lawns and to maximize the shoot density of the turf.

Attempting to eliminate thatch by scalping the turf (mowing it too short, thereby removing the crown tissue) may result in the emergence of weeds, like ground ivy and crabgrass. Using a verti-cut mower improperly and exposing the soil may also provide an opportunity for weeds to germinate, especially during summer months.



Mow grass at an optimal height to discourage weeds.

Turfgrass nutrition

Because lawns are repeatedly mowed, turfgrasses require fertilizers to meet their nutritional requirements. Timing is important for the growth of healthy, weed-free lawns.

The growth rate of cool-season grasses is higher during spring and fall months; therefore, they should be fertilized in spring and fall. A higher dose of fall fertilizer also helps the growth. Fertilizer or lime application during the establishment of turfgrass should be based on the results of a soil test to determine if the soil is deficient in phosphorus and/or potassium.

Irrigation and shade

Irrigation rates have a direct effect on the ability of weeds to invade a lawn. Inadequate water may allow weeds, such as prostrate knotweed, goosegrass, and clover; whereas, excessive irrigation can favor crabgrass, nutsedge, and annual bluegrass. Note that prostrate knotweed and goosegrass are also prevalent in compacted turf.

Light levels impact weeds, as well as the grasses they encroach upon. Certain weeds, such as ground ivy, Japanese stiltgrass, and violets, flourish under shaded conditions. Conversely, most lawn grasses do not. Letting in more sunlight by pruning excessive tree branches may help suppress such weeds and promote the growth of lawns.

Chemical weed killers

While herbicides are effective in reducing weeds, homeowners are encouraged to minimize their dependence on pesticides in favor of a sustainable approach to weed management. Judicious use of these chemicals is recommended to rectify severe pest problems when other measures have failed. Once the problems are corrected, proper management approaches may help delay or prevent additional use of chemicals. Exercise caution while using herbicides close to landscape plantings or near gardens to avoid injury to desirable plants.

Herbicides are grouped into two categories, pre-emergence herbicides and post-emergence herbicides, based on the timing of the chemical's effect.

Pre-emergence herbicides

Most pre-emergence herbicides need rainfall within a week after treatment to trigger their active ingredient. If rainfall does not occur, irrigation may be provided to activate the chemical. These herbicides must be applied before



Post-emergence herbicides

the weed seeds germinate – in spring if summer annuals are targeted, and in fall if winter weeds are the problem. If a pre-emergence herbicide has extended residual activity, a fall application may provide adequate residue to control early-germinating summer annuals. This approach would be useful if the given turf had a history of winter annual weeds and early-germinating summer annual weeds.

Post-emergence herbicides are most effective if applied when weeds are young and actively growing. For grasses (2 to 3 leaf stage) and broadleaf annuals, apply post-herbicides in early summer. To control winter annuals, post-herbicides have to be applied in late fall. For effective control of perennials, a systemic herbicide applied in late summer or early fall is more effective than one applied in spring/early summer, or than a contact herbicide. Post-emergence herbicides should not be applied when rainfall is expected since the chemical has to be absorbed by the foliage to be effective. Temperature and drought also influence the efficacy of post-herbicides. Applying herbicides when plants are under stress usually leads to decreased weed control success, especially if using systemic chemicals that have to be absorbed and translocated to the target site. Some difficult-to-control weeds, like yellow nutsedge or ground ivy, may require sequential applications at 3- to 4-week intervals between treatments.

Herbicide application

Herbicides may be applied either as a spot treatment or over the entire turf as a broadcast application. To minimize costs and chemical use, spot application is recommended when weed infestation is localized. This would be applicable primarily for post-emergence herbicides, since pre-herbicides are often applied as a broadcast treatment. However, with experience and good record-keeping, pre-herbicides may also be applied in areas prone to weeds. This may include lawn edges, compacted regions, or turf areas with a history of weed problems. Do not use clippings from treated areas as mulch or bedding material. Usually, the clippings can be recycled if they are composted for a year (do not compost clippings treated with the herbicide clopyralid).

Always consult the herbicide label to ensure that the grass is tolerant of the herbicide, and that the herbicide is registered for use in the given situation.

For more information

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