

## PREVENTING WEED INVASION IN LAWNS THROUGH CULTURAL MANAGEMENT

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Nearly all weeds which infest lawns in California can be controlled by currently-available herbicides. While chemical weed control should not be totally ruled out, proper lawn management can prevent a significant portion of weed problems and should be considered the foundation of weed control.

Weeds are generally defined as "plants growing where they are not wanted." Thus a tall fescue lawn is perfectly acceptable, while a few tall fescue plants growing in a bluegrass lawn will be objectionable weeds. Generally, weed growth in a lawn is encouraged by inadequate turf cover--i.e., a thin lawn with bare spots. Environmental conditions, including excessive traffic, and poor management practices are the primary causes of thin lawns. Long periods of drought, temperature extremes, over-irrigation, inadequate fertility, and poor mowing practices can all lead to thinning of a turf stand. Small animals, insects and turf diseases, misuse of herbicides, and heavy foot traffic can also destroy sufficient turf to leave a stand vulnerable to weed invasion.

The information most valuable for lawn weed control is knowledge of the most appropriate grass for a given situation, and the prevailing weed species found in the geographical area where this grass will be grown. Armed with such data, a turf manager/home owner can create an environment and a management program which favor the desired grass over the weeds.

Selecting a lawn grass adapted to one's locality is a good first step toward insuring a healthy, dense lawn which can resist weed invasion. Lawn grass selection should be based on cultivar evaluations conducted at local universities over a number of years. It is always advisable to use a blend of adapted cultivars rather than a single cultivar, since monostands (i.e., a turf stand composed of a single cultivar) are more limited in the range of conditions under which they perform well. At least three cultivars of one turf species should be used in a lawn grass blend.

Areas of lawn management which affect lawn performance are irrigation, fertilization, mowing and aeration.

**Irrigation.** Established lawns benefit from deep but infrequent watering. On clay soils in most areas of California, 1 to 1 ½ inch irrigation once a week is sufficient. If a lawn is sloped, or soil is too impermeable to accept this much water in one

irrigation, applying half as much every three days should be considered. It is always best to let surface soil dry between irrigations; this practice helps reduce weed seed germination and survival.

**Fertilization.** Most California soils are deficient in nitrogen, the nutrient required in largest quantity by lawn grasses. Nitrogen fertilization is therefore necessary, and should occur during the optimum period for lawn grass growth: spring and fall for cool-season grasses like tall fescue; and monthly during the active growing period (mid-spring to mid-fall) for warm-season grasses like bermudagrass. Cool-season grasses need 4 to 6 pounds of nitrogen per 1000 ft<sup>2</sup> per year, while bermudagrass benefits from ½ to 1 pound of nitrogen per 1000 ft<sup>2</sup> per growing month. Both cool- and warm-season grasses benefit from annual application of 1 to 2 pounds per 1000 ft<sup>2</sup> of each of phosphorous and potassium. Irrigating after any fertilization is recommended to move nutrients into the grass rootzone for efficient uptake. Nitrogen should not be applied to cool-season grasses during hot summer months, or to warm-season grasses during cold winter months; applying nitrogen at these times will encourage weed growth.

**Mowing.** Mowing grasses to the correct height helps them compete against weeds. The recommended mowing height for Kentucky bluegrass and perennial ryegrass is between 1 ½ and 2 ½ inches. Tall fescue can be mowed to 1 ½ to 3 inches. Bermudagrass lawns should be mowed between 1 and 2 inches. Most annual weed seeds require considerable light to germinate. The above mowing heights allow each variety to maintain a dense canopy that restricts light penetration to the soil surface and thus inhibits weed germination. It is also important to mow weekly or even more frequently. Lawn scalping due to infrequent mowing is highly conducive to weed invasion.

**Aeration.** Highly trafficked lawns, especially those planted on clay soils, are prone to compaction. Soil compaction reduces air, water and nutrient penetration into the root zone, creating an unhealthy environment for lawn grass growth. Several weeds (e.g. goosegrass) actually thrive in such conditions. Core aeration once or twice per year will reduce the effects of compaction by increasing air and water movement into the rootzone. However, timing of core aeration is critical in terms of weed management. As mentioned above, a dense turf canopy is an effective barrier to weed seed germination. Because core aeration opens the canopy, it should be avoided when annual weeds are germinating. In most of California, late spring and early fall for cool-season grasses, and summer months for warm-season grasses, are the best times for core aeration. Although some weed seeds germinate at all times of the year, these periods coincide with the period of most vigorous lawn grass growth, and thereby offer the greatest likelihood that the

grasses can win the competition with weeds.

In summary, the best lawn management program tailors irrigation, fertilization, mowing and core aeration to minimize weed germination and maximize the competitiveness of lawn grasses. Locally adapted lawn grass species and cultivars, sound cultural practices and a judicious use of herbicides will contribute to a clean environment and produce healthy, vibrant lawns for all to enjoy.