
CRABGRASS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Crabgrass is a common weed that almost everyone knows. (The “great philosopher” Pogo said, “Work is the crabgrass in life.”) There are two species of crabgrass common in California: smooth crabgrass, *Digitaria ischaemum* (Fig. 1), and large or hairy crabgrass, *D. sanguinalis* (Fig. 2). Both species were introduced from Eurasia and are widespread throughout the United States. Crabgrass is found in turfgrasses (mostly smooth crabgrass) and in ornamental landscapes (primarily large crabgrass). Large crabgrass is also found in orchards, vineyards, and other agricultural areas. Crabgrass also has many other names including crow-foot grass and summer grass. It is found in most parts of California, except at high elevations and in areas that receive no summer water.



Figure 1. Smooth crabgrass, *Digitaria ischaemum*.



Figure 2. Large crabgrass, *Digitaria sanguinalis*.

IDENTIFICATION AND LIFE CYCLE

Smooth crabgrass is a low-growing, summer annual plant that spreads by seed and from rootings of the culm nodes (joints) that lie on the soil. When unmowed it will grow upright to about 6 inches, but it will tolerate mowing in turf at $\frac{1}{4}$ inch and will still produce seed at this height. Seedling leaves are light green and smooth. True leaves are dark green and smooth, and the leaf blade is from $\frac{1}{4}$ to $\frac{1}{3}$ inch across, up to 5 inches long, and pointed. Crabgrass often forms patches in lawns, and plants can grow together to form large clumps. The ligule (collar) is small and inconspicuous without prominent appendages or auricles. The leaf sheath and upper leaf surface are smooth, but a few hairs may be found on the lower leaf surface. There may be a reddish tint at the base of the leaf. The inflorescence (flower stalk) has branches that

originate from the main stem at $\frac{1}{8}$ to $\frac{1}{4}$ inch intervals. The branches are $\frac{1}{2}$ to $2\frac{1}{2}$ inches long at the end of the stalk.

When found in turf, large crabgrass is a low-growing summer annual that spreads by seed and from rootings of nodes that lie on the soil. When unmowed it may grow upright to a height of 2 feet. It will not tolerate close mowing as well as smooth crabgrass. Seedling leaves are light green and hairy. True leaves are generally 3 inches long and hairy on the upper surface of the leaf and leaf sheath. The collar region and flower stalk are similar to that of smooth crabgrass, but the branches are longer, about 2 to 5 inches, at the end of the stalk.

The flowering stems of crabgrass are similar to those of bermudagrass

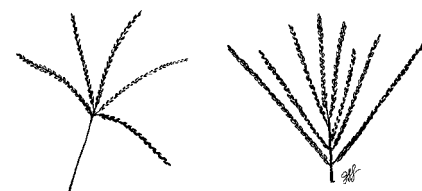


Figure 3. Flowering stems of bermudagrass (left) and crabgrass.

(*Cynodon dactylon*), but the spikelike branches on the flowering stems of bermudagrass originate at the same point whereas those on crabgrass originate about $\frac{1}{8}$ to $\frac{1}{4}$ inch apart at the end of the stem (Fig. 3).

In southern California, the major germination period for both crabgrass species is from January 15 to early April, depending on the temperature,

and seeds continue to germinate throughout spring and summer. While germination is early in warm winter areas, growth is slow during spring months until mid-May. In June and July the plants produce tillers and shoots, and flower in late July and August. In the absence of a frost, crabgrass may overwinter in warm areas or during warm winters and produce new growth and a second crop of seed in spring or early summer.

In the central and northern parts of the state, crabgrass begins germination around March 1 to 15 when soil temperatures reach 50° to 55°F for at least 3 days. Germination continues throughout summer and into fall.

MANAGEMENT

Crabgrass is easily managed using a variety of cultural and chemical controls.

Cultural Control in Turfgrass

Because crabgrass spreads and reproduces primarily by seed, any cultural operation that reduces seed production will decrease crabgrass. There are also a number of cultural operations that increase the vigor of turfgrass, thus decreasing the potential for a crabgrass invasion. These include using the proper mowing height for turf, applying fertilizer at the correct time of year, selecting the best turf species for your

Table 1. Proper Mowing Height for Turfgrass Species.

Turf species	Mowing height (inches)
bentgrass, colonial	0.5–1
bentgrass, creeping	0.5 or less
bermudagrass, common	1–1.5
bermudagrass, hybrid	
Santa Ana	0.5–0.75
tifgreen	0.25–0.5
tifway II	0.5–0.75
bluegrass, Kentucky	1.5–2.5
dichondra	0.5–0.75
fescue, fine	1.5–2.5
fescue, tall	2–3
kikuyugrass	1–1.5
ryegrass, annual	1.5–2
ryegrass, perennial	1.5–2.5
St. Augustinegrass	1–2
zoysiagrass	0.5–1

Table 2. Periods of Active Growth of Cool- and Warm-season Turf Species.

Turfgrass species	Period of active growth
<i>Cool-season turf</i>	
annual ryegrass (for overseeding)	October–May
bentgrass	March–June and September–November
fine fescue	March–June and October–December
Kentucky bluegrass	end of February–end of May and October–December
perennial ryegrass	February–June and October–December
tall fescue	March–June and October–December
<i>Warm-season turf</i>	
bermudagrass	April–end of September
dichondra	April–October
kikuyugrass	February–November
St. Augustinegrass	March–October
zoysiagrass	April–October

area, overseeding to keep the turfgrass thick, and properly irrigating turf.

Mowing at the optimum height for turf increases turfgrass vigor and reduces the germination and establishment of crabgrass. Select the proper mowing height from Table 1 for the dominant turfgrass species in your turf. After mowing turf that is infested with crabgrass, thoroughly rinse mower to remove seeds, to avoid transferring them to uninfested sites.

Fertilization can also be used to increase turfgrass vigor and reduce the possibility of a crabgrass invasion. The best time to fertilize is when the turf is actively growing, which depends upon the turf species grown (see Table 2). Because crabgrass is not very competitive, a vigorously growing turf will crowd out crabgrass seedlings.

Selecting a turfgrass that is adapted to your local conditions will also help produce vigorous turf. Cool-season species (bentgrass, bluegrass, perennial ryegrass, and tall fescue) are most competitive in coastal and northern regions of California; some of the newer cultivars of perennial ryegrass, Kentucky bluegrass, and tall fescue, however, are even more competitive and grow better than the older cultivars. For example, tall fescue cultivars used for turf vary in their competitive ability with both smooth and large crabgrass. The older fescue varieties (Fawn and Kentucky 31), which grow in an open, upright

manner, tend to become invaded by crabgrass. The slower-growing, dwarf-type tall fescue varieties (especially Bonsai) are also easily invaded. Warm-season species (bermudagrass, St. Augustinegrass, zoysiagrass, and dichondra) are most competitive with weeds in interior valleys and desert regions; kikuyugrass is more competitive in south coastal regions.

Irrigation timing and amount can also affect crabgrass germination and growth. Turf that is overwatered or has frequent (daily) light irrigations becomes weak and vulnerable to invasion by this weed. Irrigating infrequently (once a week) will improve turf vigor. Crabgrass is often found first in open areas where there is no turf, along sidewalks where the soil may be warmer, or around sprinkler heads where turf is mowed closer.

Cultural Control in the Landscape

In the landscape, crabgrass can easily be controlled with mulching, hoeing, hand-pulling when the plants are young and before they seed, or with solarization.

In shrub beds, bedding plants, or around trees, mulching with wood products (wood chips, nuggets), composted yard waste, or synthetic landscape fabrics covered with a mulch will control the germination and establishment of crabgrass by blocking sunlight needed for its germination and

growth. The depth of a mulch depends on the size of the particles: coarse mulch may need to be 3 to 6 inches deep to control all weeds, whereas a finer mulch may need to be only 2 to 3 inches deep.

Mulch that has been on the soil for a while can provide an adequate growth medium for weeds to germinate and grow in. If seedlings are germinating in the mulch, move the mulch about with a rake to reduce their establishment. Hand-pull escaped crabgrass plants before they seed. Flaming with a hand-held burner will control crabgrass seedlings, but be careful not to set fire to the mulch if it is composed of wood chips or compost.

Clear plastic mulching (solarization) is effective for eradicating crabgrass plants and seed if it is applied during periods of high solar radiation. In California's Central Valley, this means during June to August, whereas in coastal areas the best time may be August to September or May to June when fog or wind is most likely to be at a minimum. Before applying the plastic, closely mow the crabgrass, remove the clippings, and water the area well. It is not necessary to cultivate before solarization, but a shallow cultivation may improve control. Place clear, ultraviolet (UV)-protected polyethylene over the area for 4 to 6 weeks. Shade will reduce the effectiveness of solarization because it limits the amount of radiation. Solarization works most effectively when there is no slope in the land or if there is, the slope has a south or southwest exposure. Temperatures are not as high under plastic placed on a north-facing slope; consequently, control is not as

effective. After solarization, do not cultivate the area deeper than 3 inches to avoid bringing weed seed into the upper soil layer. (See the soil solarization publication listed in Reference.)

Chemical Control

Crabgrass is easy to control in both turfgrass and ornamental beds with herbicides that are applied before it germinates (preemergent herbicides) or after it germinates (postemergent herbicides). Read the label to make sure the product can be used on your turf type and around the ornamentals in your landscape.

Turfgrass. Preemergent herbicides that are available for the home gardener for crabgrass control in warm-season (bermudagrass, zoysiagrass) and cool-season grasses (perennial ryegrass, Kentucky bluegrass, tall fescue, fine fescue) include pendimethalin, bensulide, benefin, and trifluralin. (Professional pesticide applicators may also use dithiopyr, oxadiazon, and prodiamine.) Oryzalin is also available to the home gardener, but it is for use in warm-season turf only. Preemergent herbicides must be applied before the crabgrass germinates (usually from mid-January in southern areas of the state to early March in cooler areas).

Use postemergent herbicides when the crabgrass is small (i.e., in the 1- to 3-leaf stage). If the crabgrass is larger, it takes more herbicide to control it and there is a greater chance of injury to the turfgrass. The postemergent herbicide (MSMA) is effective on young crabgrass. When in the 1- to 3-leaf stage, crabgrass can be controlled with one application. If it is larger, more than one application will be required. If

temperatures are over 85°F, reduce the rate of the herbicide or the turf may be injured. If temperatures are higher than 95°F, do not make an herbicide application. Dithiopyr can also be used for postemergent control if the crabgrass is young and has less than five leaves.

Ornamental Beds. In landscape areas, crabgrass can be controlled chemically in the home garden with the selective preemergent herbicides oryzalin, trifluralin, and benefin. (Landscape professionals may also use oxadiazon, pendimethalin, and prodiamine.) These materials can be used before crabgrass germinates or after the crabgrass is removed by hoeing or hand-pulling and before crabgrass germinates again.

Crabgrass can be controlled with a postemergent selective herbicide (sethoxydim plus oil, fluazifop, or clethodim) that can be used over or around most broadleaved ornamentals, or with nonselective herbicides such as glyphosate, pelargonic acid, or glufosinate-ammonium. All of these herbicides except clethodim are available for use by the home gardener. Use nonselective herbicides with care to prevent them from contacting desirable shrubs. Control crabgrass before it sets seed; seeds of crabgrass can remain viable at least 3 years in soil.

REFERENCE

Elmore, C. L., J. J. Stapleton, C. E. Bell, and J. E. DeVay. 1997. *Soil Solarization: A Nonpesticidal Method for Controlling Diseases, Nematodes, and Weeds*. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 21377.

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

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WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash nor pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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