Crabgrass, *Digitaria*

Large or Hairy, *Digitaria sanguinalis*, (L.), Scop. AND Small or Smooth, *Digitaria ischaemum*, Schred ex Muhl
Southern, *Digitaria ciliaris*, (Retz.) Koeler.

Synonymous Latinate binomials:
for *D. sanguinalis*: *Panicum sanguinale*,L., *Syntherisma sanguinalis*,(L.), Dulac
for *D. ischaemum*: *D. humifusa* Pers., *Syntherisma ischaemum*, Nash

**Common names that end in “grass”:**
for all: Summer/ Finger/Crowfoot/ Pigeon/ Crop/ Dew grass, Crab finger-grass, Purple crabgrass
for *D. sanguinalis*: Hairy finger-grass, Redhair/ Northern crabgrass.
for *D. ischaemum*: Smooth finger-grass, Southern crabgrass
for *D. ciliaris*: Henry’s/ Smooth/ Tropical crabgrass, Finger-grass

**Other common names:** Polish millet

**Geography:** Worldwide import from Europe, fully naturalized here, except in North Dakota.
**USDA Plant Hardiness Zones:** 4-9

Truly a grass to make the gardener crabby! Despite their differences, these Crabgrasses indicate similar soil conditions, cause similar weedy problems for the gardener, and respond to the same controls. For simplicity I am covering all of these subspecies in this same article.

**What’s in its names?**
*D. sanguinalis* grows larger and hairier, while *D. ischaemum* grows smaller and smoother. While *D. sanguinalis* roots at its stem nodes, *D. ischaemum* usually does not. Another close look-alike, cousin Southern crabgrass, *D. ciliaris*, populates the South, has hairs on sheaths but not blades, and grows to about the same size as *D. sanguinalis*.

Large or Hairy crabgrass, *Digitaria sanguinalis* got its name from the Latin for vigorous or bloody, “sanguine”, and fingers, “digits”. Small or Smooth crabgrass, *Digitaria Ischaemum*, got its name from the Greek “ischaimon” or “ischaemos”, meaning “styptic”, for its ability to STOP bleeding, though some believe “sanguinalis” refers to the same power. “Ciliaris” means hairy. Any of its Latinate binomials aptly describes the sanguine health and rapid growth of Crabgrass; the bloody reddish color that leaves and stems acquire with age; the many fingered flower spikes; and the bloody fingers that zealous weeding of Crabgrass has caused many a gardener. These same branching flower spikes that inspired “finger” names, also inspired “crab” names (since crabs have many legs), and inspired “crowfoot” names (since they resemble the splayed out foot of a crow). Some etymologists believe its “crab” names evolved from the word “crop”, since it likes to invade and grow with crops that germinate at the same time.

I think its names all describe the bloody, crabby mood of the gardener who deals with it.

While its early green color may at first blush appear a welcome sight, especially in a broken, poorly-tended, recently-acquired, or drought-stricken lawn, once its full effects materialize, it turns lawns patchy and wears out its welcome. By mid-Summer, especially in drought, shaggy Crabgrass overtakes the lawn, just as many cultivated perennial grasses go dormant. As a “C4” photosynthesizer with 2 rings or wreaths of cells (“Kranz anatomy”)*, Crabgrass blades outcompete “C3” grass cultivars in heat and drought.* Then Crabgrass turns to brown patches as it dies back with first frost. At the same time, other cold-hardy, perennial, cultivated grasses come out of dormancy and green up. The result: an uneven green and brown lawn. In frost free areas of the South, you can choose to beat Crabgrass at its game and use “C-4” type grasses such as Zoysia or Bermuda grass. But further North, where frosts occur, “C-4” lawns will turn brown in early frost season instead of keeping a green sheen through
much of the fall and early spring. In Virginia, I think we need a “C- 3 ½” hybrid … but alas it doesn’t exist … yet.

As a C-4 photosynthesizer Crabgrass photosynthesizes at higher temperatures, with rates that are 2 to 3 times higher than those of C-3 cool season plants. When both grow in a hot droughty environment, cultivated cool season C-3 Grasses lose almost 3 times the amount of water, per carbon dioxide molecule fixed, than Crabgrass does. C-4 plants require less nitrogen, a key lawn fertilizer, in its process. The C-4 plants theoretically evolved as Grasses moved to more sunny and droughty plains and out from the shady richer floors of forests.

Most gardeners and farmers consider Crabgrass a serious weed. Crabgrass and Dandelion have accounted for much of the growth in the application of herbicides in residential garden lawns--those lawns where homeowners apply 10x the percentage amount of herbicide per acre than farmers apply—its own special danger. Here are some organic methods to help control it in the lawn.

1. **Set the mower at a 3” high level to control it mechanically.** Crabgrass levels decrease 95% when you increase mowing height to 3” from 1 ½”. Why? Cool season perennial grass cultivars are its main rival for sun, water, and nutrients. If you leave choice grass to grow to 3” tall, it keeps low-sprawling young Crabgrass in enough shade to prevent it from flowering and reduces the ability of Crabgrass seeds to germinate. Crabgrass usually grows lower than 2” high mower blades. When you mow low, oh no, you throw a blow at what you’re trying to grow and give the advantage to the weed. The sturdier, faster-sprouting, ever-present, drought-resistant, annual Crabgrass seeds that lie in wait in the soil seedbank will, in warmer weather and with exposure to full sun, pop up, and overtake slower-growing, more sensitive, perennial grass cultivars. Crabgrass gives a shaggy, patchy, and uneven look to the lawn, until you mow the lawn again.

2. **Irrigate less frequently and more heavily.** Perennial roots grow stronger, when watered deeply, and will grow longer to reach into subterranean water if allowed to dry out between irrigations. It takes young annual upstarts more time to develop long enough roots to access deeper water, which gives perennials the timing advantage. Frequent surface watering plus alternating temperatures that become common as soil begins to warm up, inspire the continually replenished seeds of Crabgrass to germinate and form its usual shallow roots. If cut off from water for too long, these vulnerable, new, annual seedlings die back since they can’t reach the water consumed by the hardened old perennial grass cultivars that have long, strong roots. Cultivated grasses will also shade out any annual seeds lurking in the soil seed bank, just waiting for enough food, light, and warmth to germinate.

3. **Avoid planting grass seed during the warmest season when Crabgrass germinates.** Even perennial grass seeds benefit from shallow frequent watering, as much as Crabgrass seeds do, so wait to start or renovate lawns until the cooler early spring or fall, when Crabgrass won’t germinate. One apt common name, “Summer grass”, describes the disinclination of Crabgrass to germinate until soils reach 74 degrees F. Its smoother cousin, *D. ischaemum*, requires soil temp of 58F to germinate, so it may populate lawns over a longer period with greater ease. As a C4 photosynthesizer, Crabgrass thrives in heat and once established in warm seasons withstands drought that may daunt struggling new C3 cultivars.

4. **Avoid fertilizing lawns in the early warm-up season.** This encourages seedlings, especially those warm annual weed seedlings to germinate. Fertilize lawns in the fall. Cool season perennial grasses develop strong roots even during winter and so, meet fledgling annual weed seedlings well-prepared.
5. **Aerate your soil.** Crabgrass thrives in compact soil, and receives a loud genetic call when cultivars starve for air, die back and leave the competitive field open. On lawns with heavy foot traffic, use top dressings from continuous grass cuttings or other organic sources. This helps feed the underground microbe community, and that in turn, opens up some airways so cultivar roots can breathe. Aeration, especially core aeration followed by a rich feeding of organic matter, also encourages air to reach the roots of your cultivars.

6. **Be careful when edging,** since lawn close to a hardscape receives less air and nourishment than lawn surrounded by other lawn. Just imagine a 180 degree half of a rootball exposed to air and water, especially when it grows close to a hotter, harder edge. Now imagine a 360 degree whole rootball that can access a whole field of air, water, and similar plants without the reflected heat of the hardscape. The larger, less stressed rootball survives the best.

7. **Improve the fiber content of the soil in your lawn.** If you don’t change the underlying condition of your lawn’s soil, the Crabgrass will return every year, since its seeds populate most soils, fly in from everywhere, and require little to pop up as an annual each year. Even when you kill the current Crabgrass, the battle still remains lost, unless you strengthen the force of your cultivated grasses.

Organic fertilizers that encourage grasses, but discourage Crabgrass include corn gluten and turkey litter. I’ve tried corn gluten and it seems to help, but I haven’t tested it scientifically. Weed scientists debate this point back and forth. Current organic weed deterrent sold in big box stores often feature corn meal as a main ingredient. Corn gluten will not harm your soil, your animals, or your kids.

**Corn gluten theory**

--Theoretically, corn gluten helps to dry out seeds just as they begin to sprout, to keep annual weed seeds from germinating well. As it dries fledgling seeds, it should deter Crabgrass, which depends on this year’s seeds to germinate. If you apply corn gluten, avoid seeding your lawn with your good perennial cultivar seeds, since corn gluten will keep those chosen new perennial seeds from germinating too.

--Wait till soil warms up to apply corn gluten, and wait till soil cools down in early autumn to plant perennial cultivated grass seeds.

--Use it all up at once, since mice like to eat it if they find it in a garage.

--At the very least, corn meal enriches the soil with nitrogen and adds fiber and organic matter in general, which in itself helps deter any poor-soil-seeking weed. A well nourished, moist, fertile, aerated, dense turf provides the best defense. Weeds don’t make passes at grass that surpasses.

Crabgrass has its benefits too. Seeds feed songbirds, get ground into flour by man (long before it got dubbed a “weed”), and plants provide forage for cattle. Farmers both past and present:

- Grind seeds into long-keeping fine white flower, hence its “Polish millet” name
- Grow it as a nutritious hay for forage
- Use it in strawberry patches, as its dead growth forms a winter protection to keep plants warm and later keeps the berries that bloom in the spring off the ground.

Folk medicine has deemed it useful as an emetic, a remedy for cataracts and gonorrhoea and as a styptic to staunch blood flow. Crabgrass protects airless or recently broken soil from erosion and keeps micro-arthropods and microbes in the soil alive and free from the effects of exposure to too much sun and drought. Its rapid life cycle provides fiber to infertile soils and its widespread root system brings up nutrients from compacted, dry soil. As a pioneer, early succession, annual invader, it
easily falls prey to stronger perennial invaders and their arsenal of “take over the territory” chemical emissions.

Europeans inadvertently introduced Crabgrass to the U.S. Now it grows commonly throughout the world. Crabgrass belongs to the Monocot division, and the Poaceae, or Grass family. Two salient features of the Monocot division: leaves that display parallel veins and flower parts that form in threes or multiples of three. It easily blends in and hides in plain sight in your lawn.

**To help you recognize Crabgrass:**

--- It tends to sprawl, then, as it begins to flower, it reaches upwards, which optimizes seed dispersal in the wind. It doesn’t require showy petals to attract pollinators.
--- “Flowers” form in a “whorl”, or more than 2 spikes or flower stalks per stem, usually a spiral of 3-6 spikes (but as many as 12), and nubby florets assemble in chains that resemble braids.
--- Sheaths fold over stems at bases of leaves, to form a distinct “collar”, at the back of the sheath, and a jagged “ligule”, on the front of the sheath.

Read its message. It indicates warm, airless, sunny, dry, unmulched, or uncovered soil lacking in humus. Take action to improve your soil and toss the advantage back to the grass cultivars you have chosen.

**Tips to Control Crabgrass**

Crabgrass doesn’t like calcium, but grass does, so apply organic lime. Crabgrass seeds won’t germinate if you apply corn gluten just as the soil begins to warm up. Wait till the season grows colder to plant new seeds of desired grasses and fertilize lawns, when Crabgrass won’t germinate (some like it hot). Cool season cultivated grasses will grow long roots and tall shoots over the winter to shade out Crabgrass seedling upstarts that attempt to sprout as soils warm up. A longish lawn cut to 3” also deters Crabgrass by shading it before it grows tall and spreads. Water deeply and less frequently to starve out shallow Crabgrass roots and favor perennial lawns. Aerate and add fiber to lawns to encourage cultivars. Vigilance and hand-pulling help keep its numbers in check.

**Picture 1:** Crabgrass with reddish “fingers” sprawls out in full sun between pavement cracks, a typical environment where weeds have the competitive edge. It forms short annual roots quickly to take advantage of mere drops of soil and moisture.
Picture 2: Easy for the mower to miss this inaccessible and neglected sunny spot and permit its crab fingers to really spread out and achieve some height. Mid-season Crabgrass has formed enough “tillers”, or adventitious roots that form from nodes on culms or stalks, to sprawl into a community.

Picture 3: Young Crabgrass forms tillers, which help this clump to expand to the 2 plants shown here, and others, just outside the picture. Close up, the blade of this D. sanguinalis has a hairy ligule on one side and a wraparound collar on the other side that attaches the blade to the culm (leaf to stalk) like a sheath. Blades have parallel veins, and a distinct in-folding midrib that helps channel water to roots.
Picture 4: *Spikelets*, or floret-covered flower stalks, resemble the braids on Pippi Longstocking, the children’s book heroine. Tiny florets are barely noticeable and need not attract pollinators.