



# Large Crabgrass

*Digitaria sanguinalis* (L.) Scop.

Also known as: hairy crabgrass, hairy finger-grass, Polish millet, crop grass

Large crabgrass (crabgrass) is a grass weed originally from Eurasia but now widespread across the United States. It is a major problem in row crops (corn, soybean, cotton, wheat), rice, vegetables, turfgrass, and lawns. Crabgrass is highly competitive and reduces crop yield by capturing light, water, and nutrients early in the season. It also exhibits allelopathic effects, which means it releases chemical compounds that suppress crops and other plants near it.



Crabgrass plant showing typical flat leaves and clumping growth habit. Photo credit: Sirwan Babaei, Southern Illinois University



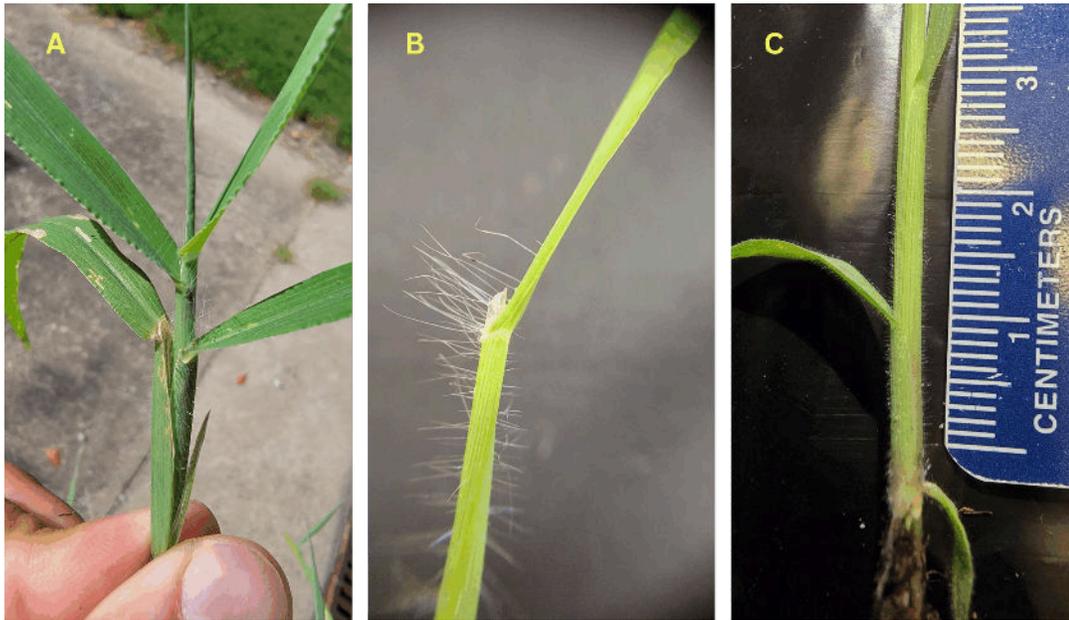
Figure 1. A crabgrass before flowering stage with roots at the nodes (A), developed in the absence of competition (B). Photo credit: Sirwan Babaei, Southern Illinois University–Carbondale.

## Identifying Features

Large crabgrass is a summer annual that begins germinating once soil temperatures reach about 55 °F and continues to emerge in multiple flushes throughout the season. The plants form low, spreading mats with stems that often root at the lower nodes, giving the species its fast, aggressive growth habit. Leaves are flat, narrow, and typically hairy, and the plant produces several finger-like seed heads, usually three to ten, each lined with paired spikelets during mid- to late-summer. Because several *Digitaria* species occur in the United States, key features that distinguish large crabgrass from look-alikes such as smooth or southern crabgrass are summarized in Table 1, with large crabgrass characterized mainly by its dense leaf hairiness and node-rooting growth form.



## Identifying Features, con't.



**Figure 2. Vegetative features of crabgrass. (A) Whole plant showing the typical flat leaves and clumping growth habit. (B) The junction of the leaf and stem, highlighting the thin membrane (ligule) with a fringe of long hairs, is a key trait for identifying this species. (C) Close-up of the stem and leaf sheath showing dense hairs along the surface. A ruler (in centimeters) is included for scale. Photo credit: Sirwan Babaei, Southern Illinois University–Carbondale.**

COMMON NAME	LATIN NAME	HABIT	# OF STATES	KEY DIFFERENCES
smooth crabgrass	<i>Digitaria ischaemum</i> (Schreb.) Schreb. ex Muhl.	Annual	50	Leaves and stems feel mostly smooth with very few hairs; plants grow in smaller, tighter clumps and stay lower than large crabgrass
Large/hairy crabgrass	<i>Digitaria sanguinalis</i> (L.) Scop.	Annual	49	Leaves and stems are noticeably hairy; plants spread outward and often root at the lower joints; forms wide, open patches in fields
southern crabgrass	<i>Digitaria ciliaris</i> (Retz.) Koeler	Annual	33	Bigger, heavier plants with thicker stems; spreads into large mats in warm regions and often outgrows other crabgrasses
slender crabgrass	<i>Digitaria filiformis</i> (L.) Koeler	Annual/ Perennial	32	Very thin, fine leaves; forms loose clumps in sandy soils; does not root at the nodes like large crabgrass does
fall witchgrass	<i>Digitaria cognata</i> (Schult.) Pilg.	Perennial	32	Fine, hair-like leaves and an open, airy seed head that looks more like a small witchgrass than a typical crabgrass
violet crabgrass	<i>Digitaria violascens</i> Link	Annual/ Perennial	16	Smaller plants; seedheads may show a slight purple tint; less common and usually scattered in fields or lawns
Asian crabgrass	<i>Digitaria bicornis</i> (Lam.) Roem. & Schult.	Perennial	11	Low-growing with stems that creep along the ground; has fewer seed-head branches (often only 2-3), making it look simpler than others
dwarf crabgrass	<i>Digitaria serotina</i> (Walter) Michx.	Annual	10	Very low-growing and forms tight "blanket-like" mats; tiny stems and leaves give it a flat, compact look
sourgrass	<i>Digitaria insularis</i> (L.) Mez ex Ekman	Perennial	8	Tall, upright perennial (not an annual); coarse stems, bunch-grass look, and regrows from the crown each year instead of forming mats
pangolagrass, digitgrass	<i>Digitaria eriantha</i> Steud.	Perennial	6	Perennial pasture grass; grows in strong clumps with creeping stems; usually seen in forage systems, not a major crop-row weed
Indian crabgrass	<i>Digitaria longiflora</i> (Retz.) Pers.	Annual	4	Short leaves and smooth stems; grows in flat mats in dry or sandy areas; looks cleaner and less hairy than most crabgrasses
velvet crabgrass	<i>Digitaria velutina</i> (Forssk.) P. Beauv.	Annual	1	Slender stems and a soft, velvety feel on the seedheads; can root at lower nodes but stays more upright than large crabgrass
African couchgrass	<i>Digitaria abyssinica</i> (Hochst. ex A. Rich.) Stapf	Perennial	1	Perennial with long underground runners (rhizomes); forms dense sod-like patches; spreads differently than annual crabgrasses

**Table 1. U.S. Distribution and Key Differences Among Digitaria Species in the United States, with Emphasis on Large Crabgrass (D. sanguinalis)**



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## Seed Production

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Crabgrass is an aggressive grower, setting anywhere from 150 to 700 tillers per plant, and an individual plant's seed production (which can reach 150,000 seeds over the course of a season) starts soon after it flowers in mid- to late summer. Because new flushes of plants occur throughout the season, seed drop can continue for weeks, but the earliest plants to establish usually contribute the most seed to the soil. Most seeds end up in the top 2 inches of soil, where they can easily sprout. Seed persistence is generally short: about 55% of buried seed survived one year, and none survived beyond three years in a burial study under turf; in contrast, when seed remained on the soil surface in no-till conditions, more than 95% germinated or died within 9 months. This steady buildup of seeds in the soil is a big reason why crabgrass is so tough to control.



**Figure 3. Flowering structures (inflorescence) of crabgrass showing the typical “finger-like” seed head with several branches. Along each branch, seeds form in pairs, with one attached directly and the other on a short stalk. (A) Close-up showing the paired seeds and the visible pink stigmas and yellow anthers during flowering. (B) Whole seed head showing the overall branching pattern. (C) Dissected view of a seed pair, highlighting the direct vs. stalked arrangement. Photo credit: Sirwan Babaei, Southern Illinois University-Carbondale.**

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## Herbicide Resistance

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Crabgrass has confirmed cases of resistance to (Group 1 herbicides) in Wisconsin (in carrots and onions) as well as in Georgia (in turfgrass).

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## Integrated Weed Management Options

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### Cover Crops

By shading the soil surface and limiting light penetration, stem and leaf materials from dense cover crops can inhibit crabgrass germination and establishment, though the effectiveness varies depending on the cover crop species, amount of cover crop biomass, and time of year. Consider cover crops that are fast-growing and generate significant biomass, such as cereal rye, when aiming to compete with crabgrass.



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## Integrated Weed Management Options, con't.

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### Harvest Weed Seed Control

Large crabgrass has some characteristics that make it a good target for harvest weed seed control, including an annual lifecycle, high seed production, and relatively short-lived (mostly less than three years) seed. However, large crabgrass loses about half of its seed prior to soybean harvest, reducing potential effectiveness of harvest weed seed control. Seeds are produced relatively close to the ground, so capturing the seeds with the combine header is also challenging in certain crops.

### Crop Rotation

Compared to wide-row systems like corn and cotton, rotating crops that achieve rapid canopy closure, like soybean or small grains, decreases crabgrass competitiveness. Perennial crops that actively compete during large crabgrass' emergence and growing season can also aid in managing this weed.

### Tillage

While shallow tillage or no-till encourages higher densities of seeds close to the surface, deep tillage can hinder emergence by burying seeds below their ideal germination depth (>2 inches).

### Predictive Tools

Simple field indicators, such as the spring blooming of forsythia bushes, can be used by farmers as a consistent indicator of when to apply pre-emergence herbicides to prevent crabgrass from sprouting.

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## Herbicide Control Options

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Crabgrass germinates in waves once soils warm, so effective control almost always requires:

1. A residual (PRE) herbicide at or before planting to catch the first flushes; and
2. A timely POST herbicide on small plants ( $\leq 2-3$  leaves) to control plants missed by the preemergence herbicide.

Rotating and layering different herbicide modes of action slows herbicide resistance development and improves consistency across weather and soils. See state crop guides for exact products, rates, and restrictions.

Multiple U.S. populations of crabgrass are resistant to Group 1 (ACCase) grass herbicides, with cross-resistance across the FOPs and DIMs (sethoxydim, fluzafop, fenoxaprop, etc.); always diversify modes of action and avoid repeat solo use of the same POST grass killer.



## Herbicide Control Options, con't.

Corn	Preemergence	Group 15 residuals (S-metolachlor, acetochlor, dimethenamid-P, pyroxasulfone), often with atrazine or Group 27 premixes (e.g. mesotrione, isoxaflutole, etc.); pendimethalin (Group 3)
	Over the top postemergence	glyphosate (Roundup) in glyphosate-tolerant corn; Group 27 + atrazine; Group 2 grass herbicides <sup>1</sup> (nicosulfuron, rimsulfuron)
Soybean	Preemergence	Group 15 residuals (S-metolachlor, pyroxasulfone, dimethenamid-P), often with Group 14 (flumioxazin); clomazone (Group 12); pendimethalin (Group 3)
	Over the top postemergence	glyphosate in glyphosate-tolerant soybean; clethodim or quizalofop <sup>2</sup> (Group 1)
Spring Wheat	Postemergence	pinoxaden (Group 1); ALS herbicides <sup>3</sup> (mesosulfuron, pyroxsulam)
Cotton	Preemergence	pendimethalin (Group 3); acetochlor, S-metolachlor (Group 15); fluometuron, diuron (Group 5)
	Directed postemergence	clethodim (Group 1); add residuals to POST programs
	Preemergence	cyhalofop (Group 1); quinclorac (Group 4)
Rice	Over the top postemergence	Clearfield: imazethapyr (Newpath), imazethapyr + quinclorac (Clearpath), imazamox (Beyond); FullPage: imazethapyr (Preface), imazamox (Postscript); Provisia: quizalofop (Group 1)
Sorghum	Preemergence	Group 15 residuals (S-metolachlor, acetochlor premixes); atrazine (where labeled); Concep seed treatment required with S-metolachlor
	Over the top postemergence	Conventional: quinclorac (Group 4) + atrazine (Group 5); Trait-based: Inzen/Zest (nicosulfuron, Group 2), iGrowth/IMIFLEX (imazamox, Group 2), Double Team/First Act (quizalofop, Group 1)

**Note:** These are examples of effective active ingredients; this may not be a comprehensive list. There may be other tradenames of these active ingredients, and these active ingredients may be a component of premixes, as well. Always check with your local Extension weed specialist for recommendations for your region. Always read and follow the label.

**Trait and system limitations:** Some herbicide options are limited to specific crop traits or systems, including: Liberty - LibertyLink crops only; Glyphosate - glyphosate-tolerant crops only; Clearfield rice - imidazolinone-tolerant rice systems; Provisia rice - ACCase-tolerant rice systems; Inzen sorghum - ALS-tolerant sorghum; iGrowth sorghum - ALS-tolerant sorghum; Double Team / First Act sorghum - ACCase-tolerant sorghum

<sup>1</sup>Group 2 (ALS) herbicides in corn (e.g., nicosulfuron, rimsulfuron) are effective only on susceptible crabgrass biotypes and should not be relied upon where ALS resistance is present.

<sup>2</sup>Group 1 (ACCase) herbicides in soybean (e.g., clethodim, quizalofop) should be used only where resistance has not been documented, as resistance to ACCase inhibitors is widespread in some regions.

<sup>3</sup>ALS herbicides in spring wheat (e.g., mesosulfuron, pyroxsulam) may provide variable control of crabgrass, depending on application timing, species present, and local resistance patterns.

Herbicide control option examples for large crabgrass. Chart credit: Sirwan Babaei, Southern Illinois University-Carbondale.



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**CITE AS:** Babaei, S., Unglesbee, E., Gage, K., VanGessel, M., Flessner, M., Curran, W. (2026). Large Crabgrass. Getting Rid of Weeds (GROW) Through Integrated Weed Management. [www.growiwm.org/crabgrass-large/](http://www.growiwm.org/crabgrass-large/)