

Grassbur/Sandbur Management in Turf

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Grassbur (also known as field sandbur, sandbur, grass bur, sticker weed, etc.) is a problematic grassy weed that can disrupt the quality of any turf setting. The burs, part of the plant's inflorescence, are painful upon contact and can be carried by animals, clothing, tires, and lawn maintenance equipment. The bur contains one to three seeds, which remain dormant until favorable germination conditions arise. This begins when soil temperatures reach an average daily temperature of 52 degrees F. Germination generally peaks at average daily soil temperatures of 75 degrees F, and germination at further temperatures is possible. This results in two germination periods annually, in spring and fall, with seed production occurring in both seasons.

Although grassbur is often considered a warm-season annual, some species can perennialize. During winter, above-ground foliage ceases to grow and will die back, but the root system can survive to resume growth the next season. The perennial variants will begin producing green above-ground tissue sooner in the year, compared to seedlings germinating, and therefore can produce seed earlier in the year. Their extensive root systems and rapid spring green-up can make them more difficult to control.

Grassbur is adapted to areas characterized by sandy, dry soils with poor fertility, though it is not limited to these areas. Effective cultural control includes maintaining a well-watered, healthy, and dense turf to compete with and reduce grassbur numbers and growth.

As the season begins and soil temperatures reach the germination range, seedlings can be identified in areas with previous years' plants or burs near the soil surface. Seedlings typically have hairless leaves with sheathed stems that may have hairs along the margin. As the plant grows, the sheaths may grow hairs, and

the stems become somewhat flattened, often with maroon to purple coloring at the base of the plant (Fig. 1). Early tillering of seedling plants contributes to their competitiveness against nearby turf.

To tell whether a plant will return as a perennial, inspect mature plant carcasses in winter by slicing open the crown/root area where it meets the above-ground foliage to look for green tissue. Though this area is often small and faded, if green tissue is present, the plant is still alive (Fig. 2).



Figure 1.



Figure 2.

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The foundation for control of this species is a healthy turf stand. Once established, applying a preemergent herbicide is crucial for controlling grassbur germinating from seed. The choice of herbicide depends on the turf species and whether a Pesticide Applicator License is required (find more information at <https://texasagriculture.gov/Regulatory-Programs/Pesticides>). Products and rates of suggested products can be found in Table 1. Active ingredients such as dithiopyr, pendimethalin, indaziflam, and others can be found at big-box retail stores, while others such as a prodiamine+imazaquin+simazine pre-mix may require a pesticide distributor tailored to professional applicators.

Preemergent products should be applied and receive at least ½ inch of rainfall or irrigation before soil temperatures enter the germination window. Split applications are important for providing sufficient residuals for both germination seasons. Historical and current soil temperature data are available from sources such as:

- www.texmesonet.org,
- www.soiltemperature.app, and
- www.greencastonline.com/tools/soil-temperature.

Even with healthy turf and preemergent applications, perennial plants and sandburs germinating from seed may occur. Those that germinate regardless of the preemergent application may appear to be resistant, defined by “the inherited ability of a plant to survive and reproduce following exposure to a dose of herbicide normally lethal to the wild type” (WSSA, 1998, p. 789) to the herbicide applied. However, it is important that all matters of proper application techniques are followed according to the product label.

For managing these emerged plants, consider hand removal or a post-emergent herbicide (Table 2). The herbicide selection should again be based on the turf species and whether a Pesticide Applicator License is required. While retail options are available to purchase certain active ingredients, more specific solutions, including pre-mixes, can be found through pesticide distributors tailored to professionals. Another consideration for post-emergent herbicide use is selectivity, defined as “a chemical used in such a manner that it will kill weeds in a growing crop without damaging the crop, or will eliminate only the unwanted vegetation” (Jones et al., 1963, p. 55). It is necessary to read the product label for what turf species are tolerant to the chosen product. Herbicides such as glyphosate and glufosinate are nonselective and can injure or kill any plants they contact. Selective post-emergent herbicides that will not cause significant turf injury are limited and may only provide suppression of weeds, defined by a reduction in weed growth resulting in a reduction of the plant’s ability to compete with surrounding vegetation. Always read the product label for specifics about what vegetation it will control, where it is safe to use, and how to make the most effective application for specific situations.

References

- Jones, G. E., Anderson, G. W., Waywell, C. G., Switzer, C. M., & Bibbey, R. O. (1963). *Guide to chemical weed control*. Ontario Department of Agriculture Publication 75.
- WSSA. (1998). Technology notes. *Weed Technology*, 12(4): 789-790.



Table 1. Preemergent herbicides

Preemergent Herbide	Commercial Name Examples	Vol./ Application	Max Vol./Year	Max Applications/ Year	Area	Length of Residual ^A	Application Timing: 2nd Application Interval	Tolerant Turf Species
Prodiamine + imazaquin + simazine	Coastal	48–64 oz.	113 fl. oz.	3	acre	4 month/ max rate	6–10 weeks	Warm season: St. Augustinegrass, Bermudagrass, Zoysiagrass, Centipedegrass Cool Season: N/A
Isoxaben + dithiopyr	Crew	150–200 lb.	600 lbs. product	4 (@ 150-lb. rate), 3 (@ 200-lb. rate)	acre	3 months/ max rate	5–10 weeks	Warm season: St. Augustinegrass, Zoysiagrass, Buffalograss, Bermudagrass, Bahiagrass Cool season: Fine Fescue, Tall Fescue, Perennial Ryegrass, Kentucky Bluegrass
Dithiopyr	Dimension 2EW	0.73 fl. oz.	2.2 oz.	Not listed	1,000 sq. ft.	4 months/ max rate	3–4 months	Warm season: Bahiagrass, Bermudagrass, Buffalograss, Carpetgrass, Centipedegrass, Kikuyugrass, Seashore Paspalum, St. Augustinesgrass, Zoysiagrass Cool season: Bentgrass, Kentucky Bluegrass, Fine Fescue, Tall Fescue, Ryegrass Perennial
Dithiopyr	Dimension .25G	3.6–4.6 lbs.	13.8 lbs.	Not Listed	1,000 sq. ft.	Not listed	6–10 weeks	Warm season: Bahiagrass, Bermudagrass, Buffalograss, Carpetgrass, Centipedegrass, Kikuyugrass, Seashore Paspalum, St. Augustinesgrass, Zoysiagrass Cool season: Bentgrass, Kentucky Bluegrass, Fine Fescue, Tall Fescue, Ryegrass Perennial
Pendimethalin	Pendulum AquaCap	1.1–1.6 fl. oz. (3.1–4.2 pts.)	Not listed	Not listed	1,000 sq. ft. (acre)	2–4 months/ max rate	5–8 weeks	Warm season: Bahiagrass, Bermudagrass, Buffalograss, Centipedegrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass Cool season: Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bentgrass

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Pendimethalin	Pendulum 2G	1.7-2.3 lbs. (75-100 lbs.)	Not listed	Not listed	1,000 sq. ft. (acre)	2-4 months/ max rate	5-8 weeks	Warm season: Bahiagrass, Bermudagrass, Buffalograss, Centipedegrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass Cool season: Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bentgrass
Indaziflam	Specticle Flo	6-10 fl. oz.	18.5 fl. oz.	Not listed	acre	Not listed	45-90 days	Warm season: Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustinegrass, Buffalograss, Bahiagrass, Seashore Paspalum Cool season: N/A
Indaziflam	Specticle G	2.9-4.6 lbs. (125-200 lbs.)	9.2 lb. (400 lb./ acre)	Not listed	1,000 sq. ft. (acre)	Not listed	30-45 days	Warm Season: Bermudagrass, Zoysiagrass, Centipedegrass, St. Augustinegrass, Buffalograss, Bahiagrass, Seashore Paspalum Cool Season: N/A
Benefin-oryzalin	XL 2G	2.3-3.4 lbs. (100-150 lbs.)	200-300 lbs.	Not listed	1,000 sq. ft. (acre)	2-3 months	2-3 months	Warm season: Bahiagrass, Bermudagrass, Buffalograss, Centipedegrass, St. Augustinegrass, Zoysiagrass Cool season: Tall Fescue

^AResidual length will depend upon rate used and environmental factors.

Table 2. Post-emergent herbicides

Post-emergent Herbicide	Commercial Name Example	Vol./ Application	Max Vol./Year	Max Applications/ Year	Area	Control or Suppression	Application Timing: 2nd Application Interval	Tolerant Turf Species
Fenoxaprop-p-ethyl	Acclaim	0.08–.90 fl. oz. (3.5–39 fl. oz.)	2.75 fl. oz. (120 fl. oz.)	Not listed	1,000 sq. ft. (acre)	Control	28–35 days	Warm season: Zoysiagrass Cool season: Kentucky Bluegrass, Perennial Ryegrass, Fine Fescue, Tall Fescue, Annual Bluegrass, Creeping Bentgrass
Sodium salt of asulam	Asulox	5 pints	N/A	1	acre	Control	1 app / season	Warm season: St. Augustinegrass, Tifway 419 Bermudagrass Cool season: N/A
Thiencarbazone-methyl/ iodosulfuron/ dicamba	Celsius WG	0.085 oz. / 2.4 grams	0.17 oz. / 4.82 grams (7.4 oz.)	Not listed	1,000 sq. ft. (acre)	Control	2–4 weeks	Warm season: St. Augustinegrass, Bermudagrass, Centipedegrass, Zoysiagrass, Buffalograss Cool season: N/A
Prodiamine + imazaquin + simazine	Coastal	48–64 oz.	113 fl. oz.	3	acre	Suppression	6–10 weeks apart	Warm season: St. Augustinegrass, Bermudagrass, Zoysiagrass, Centipedegrass Cool season: N/A
Glufosinate-ammonium	Finale XL T&O, others	3.2 oz./ gallon ^C	246 oz.	Not listed	acre	Control	Not listed	Warm season: Non-selective ^D Cool Season: Non-selective ^D
Fluazifop-P-butyl	Fusilade II	3–4 fl. oz.	Not listed	Not listed	acre	Control	28 days	Warm season: Zoysiagrass Cool season: Tall Fescue, Fine Fescue
Fluazifop-P-butyl	Oranamec	6–9 fl. oz.	27 fl. oz.	Not listed	1,000 sq. ft.	Control	Not listed	Warm season: Zoysiagrass Cool season: Tall Fescue
Imazaquin	Image 70 DG	0.2–0.26 oz. (8.6–11.4 oz.)	8.6–11.4 oz.	Not listed	1,000 sq. ft. (acre)	Control	Not listed	Warm season: Bermudagrass, Centipedegrass, St. Augustinegrass, Seashore Paspalum, Zoysiagrass Cool season: N/A
Flazasulfuron	Katana	0.045–0.068 oz. (2–3 oz.)	0.2 oz. (9 oz.)	3	1,000 sq. ft. (acre)	Control	28 days	Warm season: Bermudagrass, Buffalograss, Zoysiagrass, Centipedegrass, Seashore Paspalum Cool season: N/A
Monosodium acid methanearsonate ^A	MSMA 6 Plus	1–2 fl. oz.	4 lbs. a.i. ^B	2	1,000 sq. ft.	Control	1–3 weeks	Warm season: Bermudagrass, Zoysiagrass Cool season: Bluegrass

Table 2. Post-emergent herbicides

Post-emergent Herbicide	Commercial Name Example	Vol./ Application	Max Vol./Year	Max Applications/ Year	Area	Control or Suppression	Application Timing: 2nd Application Interval	Tolerant Turf Species
Glyphosate	Roundup ProMax, others	1.28 oz./ gallon ^C	11 fl. oz.	Not listed	1,000 sq. ft.	Control	Not listed	Warm season: Non-selective ^D Cool Season: Non-selective ^D
Sethoxydim	Segment II	0.6–0.9 fl. oz. (1.5–2.5 pts.)	0.9 fl. oz. (3.0 pts.)	Not listed	1,000 sq. ft. (acre)	Control	Not listed	Warm season: Centipedegrass Cool season: Fine Fescue

^AFor use on golf courses and sod farms only
^BAbbreviation: active ingredient
^CSpot spray application
^DDetrimental to desired turf