Goosegrass (Eleusine indica)

Gregory K. Breeden, Extension Specialist
James T. Brosnan, Associate Professor, Turfgrass Weed Science Department of Plant Sciences

Introduction

Goosegrass (*Eleusine indica*), also referred to as "silver crabgrass" or "wiregrass," is a problematic annual grassy weed found in many turfgrass areas throughout Tennessee. Goosegrass thrives in compacted, poorly drained soils; consequently, it is commonly found in the high-traffic areas of sports fields, golf courses, and residential and commercial lawns. Goosegrass is not often found in healthy, growing turf. Controlling traffic or improving turfgrass vigor can reduce goosegrass populations, but herbicide applications will usually be required for complete control.

Goosegrass Identification

Goosegrass grows in clumps from a central tap root that has a fibrous root system. Leaves are a distinct white or silver color at the base, (Figure 1) folded or flattened in shape, and smooth to the touch; very few hairs are present on the foliage (Figure 2). Goose-grass also has a membranous ligule with jagged edges. The prostrate growing nature of goosegrass gives it the ability to tolerate mowing heights as low as 0.125 inch. Seed-heads emerge from a common point (Figure 3) in late summer. Each seed-head contains 3-7 spikes (racemes) at the tip of the stem. Seeds are arranged in a distinctive herringbone pattern along each spike (Figure 4). A single plant can produce up to 50,000 seeds. As a result, failure to control goose-grass can increase the quantity of goosegrass seed in the soil seedbank.



Figure 1. Mature goosegrass (Eleusine indica) plant

Goosegrass Life Cycle

Goosegrass is a summer annual grassy weed that germinates in late spring and grows throughout the summer. Although its life cycle is similar to that of crabgrass, goosegrass seed germination usually occurs four to six weeks later than crabgrass and is more difficult to tame. Germination of goosegrass seed will generally start sometime in late April in Tennessee and will continue throughout the summer.



Figure 2. Goosegrass (Eleusine indica) seedling



Figure 3. Goosegrass (Eleusine indica) closed seed head

Goosegrass Control Options

Cultural Control: Goosegrass thrives in compacted, poorly drained soils and is consequently found in the high-traffic areas of sports fields, golf courses, and residential and commercial lawns. Implementing cultural practices to maximize turfgrass quality (proper mowing, fertility and pest management, etc.) will help prevent goosegrass infestation. Improving soil conditions in these high-traffic areas will also help make the turf more competitive against goosegrass. Core aeration and altering traffic patterns can relieve compaction, improving both soil aeration and drainage.

Mechanical Control: Goosegrass has a centralized root system that makes mechanical removal easier than for many other weeds. Small plants can be removed by hand, but once the plants grow to 2-3 inches in diameter, a knife or gardening tool (Figure 5) is useful. Tools like the Weed Hound work well to remove plants with a central taproot like goosegrass. If one has the time and there are a limited number of weeds in a given area, hand or mechanical removal can be effective. However, mechanical removal is a very labor-intensive process.

Herbicidal Control: Preemergence herbicides provide effective goosegrass control. Several herbicide options for preemergence goosegrass control are listed in Table 1. Many of the materials applied for preemergence crabgrass (*Digitaria spp.*) control will also control goosegrass. Data from the University of Tennessee have shown that sequential applications of preemergence herbicides will provide an increased level of goosegrass control, as well as extend the length of crabgrass control provided by these materials. The fact that goosegrass germinates later in the season than crabgrass makes a sequential application strategy essential. Target the initial application for February to early March in West Tennessee or mid-March to early April in East Tennessee (note that these are the recommended timings for crabgrass control) (Figure 6), and the sequential application six



Figure 4. Goosegrass (Eleusine indica) opened seed head



Figure 5. Useful tools for mechanical removal

to eight weeks later. It is important to remember that preemergence herbicides evaluated at the University of Tennessee all provided similar goosegrass control when used according to label recommendations.

Numerous postemergence herbicides are also available for goosegrass control (Table 1). Caution should be exercised when applying these materials, as they can potentially injure turf if applied imprecisely. When choosing a postemergence herbicide for goosegrass control, make sure it is labeled for the turf and use area where it is to be applied. Unlike the preemergence options for goosegrass control, many of the postemergence options may only be labeled on one or two turf species. Postemergence herbicides for goosegrass control should be applied after goosegrass seed has germinated; any time from late May through

Table 1. Preemergence and postemergence herbicides for goosegrass control

Trade Name (Active Ingredient)	Formulations	Rate (/A)	Select Tolerant Turfgrasses
Preemergence Herbicides			
Dimension (dithiopyr)	2EW, others	1 to 2 pt	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipedegrass Zoysiagrass
Freehand (dimethenamid-P + pendimethalin)	1.75G	100 to 200 lb	Bermudagrass
SureGuard (flumioxazin)	4SC	8 to 12 fl oz	DORMANT bermudagrass
Specticle Flo (indaziflam)	0.622SC	3 to 10 fl oz	Bermudagrass, Centipedegrass, Zoysiagrass
Ronstar (oxadiazon)	2G, (50WSP Dormant Turf Only)	100 to 200 lb	Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Bermudagrass, Zoysiagrass
Pendulum Aquacap (pendimethalin)	3.8L, others	3.1 to 6.3 pt	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipedegrass Zoysiagrass
Barricade (prodiamine)	65WG, 4FL, others	0.5 to 2.3 lb	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipedegrass Zoysiagrass
Echelon (prodiamine + sulfentrazone)	4SC	8 to 36 fl oz	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipedegrass, Zoysiagrass
Numerous combination products (not listed) combining multiple active ingredients can also provide good to excellent preemergence control of goosegrass.			
Postemergence Herbicides			
Speedzone (carfentrazone + 2,4-D + MCPP + dicamba)	2.2 EC	4 to 5 pt	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Zoysiagrass
Acclaim Extra (fenoxaprop)	0.57EC	3.5 to 39 fl oz	Bentgrass, Kentucky Bluegrass, Fine Fescue, Tall Fescue, Zoysiagrass
Fusilade II (fluazifop)	2L	3 to 16 fl oz	Tall Fescue, Zoysiagrass, Fine Fescue
Revolver (foramsulfuron)	0.19SC	26.2 fl oz	Bermudagrass, Zoysiagrass
Tenacity (mesotrione)	4FL	5 to 8 fl oz	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Centipedegrass
Sencor (metribuzin)	75DF	0.33 to 0.66 lb	Bermudagrass*
MSMA	Product Dependent	2.7 to 5.4 pt	Kentucky Bluegrass*, Fine Fescue*, Tall Fescue*, Bermudagrass, Zoysiagrass
Pylex (topramezone)	2.8SC	1 to 1.5 fl oz	Kentucky Bluegrass, Centipedegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass**
Tribute Total (thiencarbazone + foramsulfuron + halosulfuron)	60.5WDG	3.2 oz	Bermudagrass, Zoysiagrass
** Reduced rates are recommended in situations where temporary turfgrass injury is not acceptable.* *** This herbicide has supplemental labeling for controlling goosegrass in bermudagrass when applied as a spot treatment.*			

early August is appropriate in Tennessee. Sequential applications of these herbicides are usually required to provide complete control. **Additionally, adequate soil moisture at the time of application is required to achieve optimal results with many herbicides used to control goosegrass postemergence.**

Many turfgrass managers have relied on monosodium methanearsonate (MSMA) for postemergence control of goosegrass for years. Unfortunately, use of this herbicide for lawn care and athletic field turf expired in 2013. It can be used on golf courses and sod farms under modified use directions. Please see UT Extension publication W 243 for more information.

Regardless of product selected, turf managers should rotate among the pre- and postemergence herbicides listed in Table 1 to prevent the onset of goosegrass populations evolving resistance to different herbicide chemistries. Goosegrass resistance to many of the herbicides listed in Table 1 has been confirmed at locations where a single herbicide was applied over multiple years without rotation or implementation of any other weed management measure.

The University of Tennessee Weed Diagnostics Center can aid turfgrass managers and producers in combating goosegrass resistance to herbicides. This center provides several diagnostic types to determine if goosegrass is resistant to either pre or postemergence herbicides. Results of these diagnostic tests are essential in making evidence-based management decisions in the field. Tests also offer the potential to confirm that goosegrass will be susceptible to a given herbicide before resources are allocated to purchase and apply the product. For more information on resistance testing, please visit weeddiagnostics.org.

Final Thoughts

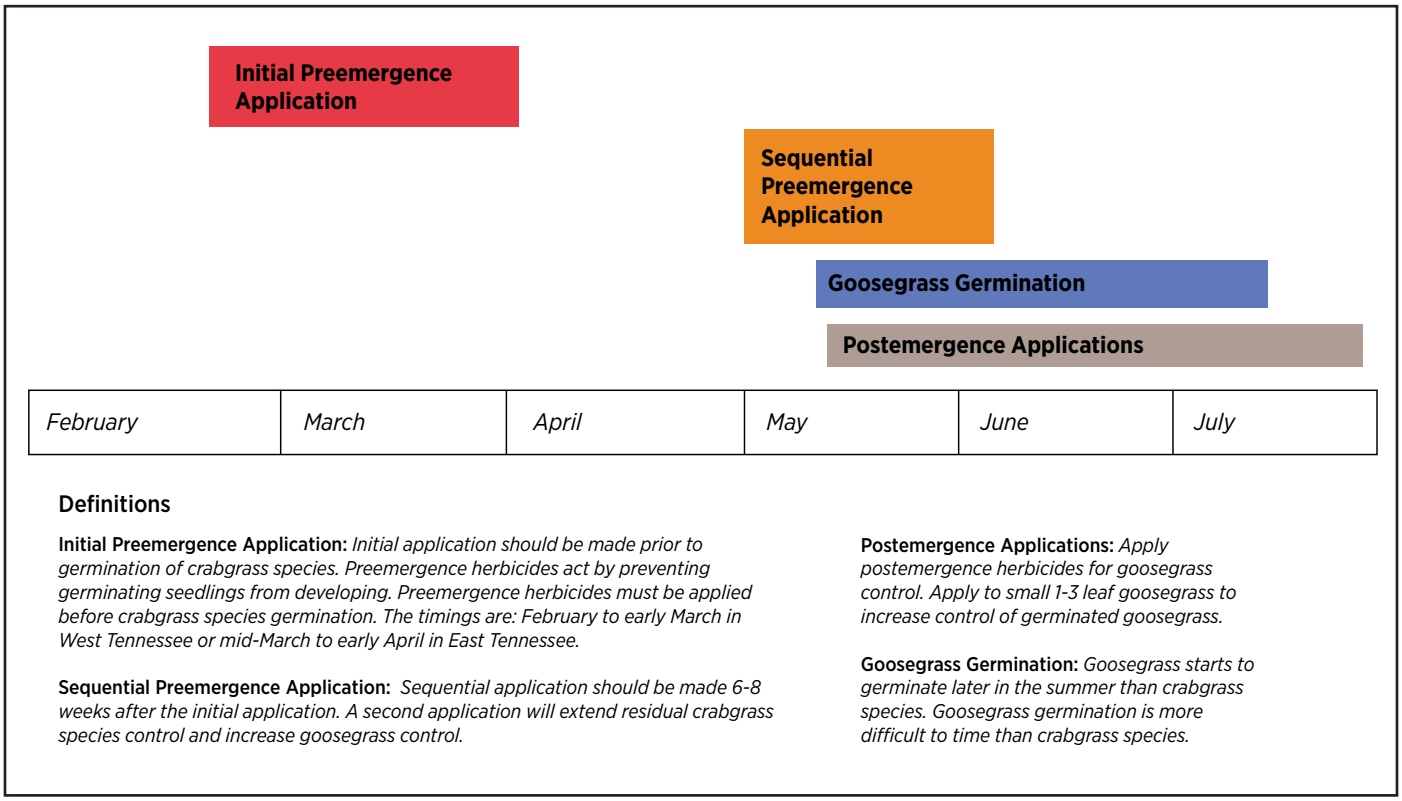
There are numerous options that can be used to control goosegrass in turf. Implementing cultural practices to maximize turfgrass quality (proper mowing, fertility and pest management, etc.) will help prevent goosegrass infestation, as will improving the soil conditions in high-traffic areas. Although mechanical control is an option, multiple pre- and postemergence herbicides provide effective control of goosegrass in established turf. In fact, many preemergence herbicides can be used to control both goosegrass and crabgrass. Sequential applications of preemergence herbicides will provide effective goosegrass control and increase the longevity of crabgrass control throughout the summer.

Always refer to the product label for specific information on proper product use, tank-mix compatibility and turfgrass tolerance.

Herbicides listed in this publication have provided good to excellent control in research trials conducted at the University of Tennessee; however, other herbicides may also have activity on these weeds. For more information on herbicide selection, please visit University of Tennessee Mobile Weed Manual (MWM) at mobileweedmanual.com. MWM was developed by UT Extension professionals to assist green industry professionals in selecting herbicides for use in turf and ornamentals. MWM is a web-based platform optimized for use on mobile devices such as smartphones and tablets, but it will function on desktop and laptop computers as well. The site provides users with weed control efficacy information for 90 different herbicides, tolerance information for over 2,300 turf and ornamental species, as well as direct links to label and material safety data sheet information on herbicides used for turf and ornamental weed management.

For more information on turfgrass weed control, visit the UT Institute of Agriculture's turfgrass weed science website, tennesseeturfgrassweeds.org.

Figure 6. Timeline for goosegrass species control





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