

## Crabgrass Species Control in Turfgrass

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### Introduction

Crabgrass species (*Digitaria* spp.) are common annual grassy weeds that can be problematic on athletic fields, golf courses, residential and commercial lawns, and sod farms throughout Tennessee. Uncontrolled crabgrass will decrease the playability, usability and overall aesthetic quality of any turfgrass stand.

### Crabgrass Characteristics

There are two primary crabgrass species in Tennessee – large crabgrass (*Digitaria sanguinalis*) (Figure 1) and smooth crabgrass (*Digitaria ischaemum*) (Figure 2). Large and smooth crabgrass can be

differentiated by examining the leaves and stems of each species. Large crabgrass has pubescence (hairs) on its leaves and stems, while the leaves and stems of smooth crabgrass have very little pubescence except on the collar region (the intersection of the leaf and stem of the plant). Smooth crabgrass is the most prevalent crabgrass species infesting turf in Tennessee. Both large and smooth crabgrass are summer annuals that germinate primarily in the spring, grow through the summer, produce seeds in the fall and die following the first killing frost.



Figure 1. Large crabgrass (*Digitaria sanguinalis*)



Figure 2. Smooth crabgrass (*Digitaria ischaemum*)

## Crabgrass Germination and Preemergence Herbicides

Correct application timing is an integral part of controlling crabgrass with preemergence herbicides. A common misconception is that preemergence herbicides act by preventing weed seeds from germinating. These herbicides actually prevent germinating seedlings from developing into mature plants. For preemergence herbicides to work properly, they must be applied before seed germination and need approximately 0.5 inch of rainfall or overhead irrigation within 24 to 48 hours after application to be activated.

Large and smooth crabgrass seed germinates in the spring when soil temperatures exceed 55 F for four consecutive days and nights. The blooming of the forsythia plant, also known as golden bells, (Figure 3) is a visual indicator that soil temperatures are increasing. Preemergence herbicides for crabgrass control should be applied before crabgrass seed begins to germinate; target applications for late February or early March in West Tennessee and mid-March to early April in East Tennessee. The first preemergence application of the season should be made before the last forsythia bloom falls from the tree.

## Preemergence Crabgrass Control Options

The primary preemergence herbicides for crabgrass control are listed in Table 1. Research conducted at the University of Tennessee Institute of Agriculture has shown that many of these materials perform similarly when applied correctly under the same environmental conditions.

Generally, these herbicides will provide crabgrass control for 12-16 weeks after application depending on application rate and environmental conditions. However, the level of control provided will dissipate over time. Using a split application strategy where each herbicide is applied twice at a lower rate can extend the length of residual control provided by a preemergence herbicide.

It is critical that preemergence herbicides are applied prior to the germination of crabgrass seed. If for some reason an herbicide cannot be applied prior to germination, certain products combining both pre- and postemergence materials can be used to provide crabgrass control. Research at the University of Tennessee Institute of Agriculture has found that Echelon (sulfentrazone + proflamizone) and Dimension (dithiopyr) can provide postemergence control of newly emerged crabgrass seedlings, as well as preemergence control of those that have not yet germinated. Applications of a postemergence product like Tenacity (mesotrione), plus a preemergence product, like Barricade (proflamizone), can also provide a similar response.

## Postemergence Crabgrass Control Options

Numerous postemergence herbicides are also available for crabgrass control (Table 1). When choosing a postemergence herbicide, make sure it is labeled for the turf and use area where it is to be applied. Unlike the preemergence options for crabgrass control, many of the postemergence options may only be labeled on one or two turf species. Postemergence herbicides can be applied anytime after crabgrass has germinated. Consider that these herbicides often provide better control when applied to small (less than two tillers), actively growing crabgrass plants. When applied to larger plants (three or more tillers) repeat applications will likely be necessary for complete control. In most cases, addition of a spray adjuvant with postemergence herbicides is recommended for optimal crabgrass control. Be sure to consult individual product labels for specific use directions.

## Final Thoughts

Establishment of grassy weeds, like crabgrass, can often be prevented with a timely preemergence herbicide application in the spring. Most preemergence herbicides



photo courtesy of tenn.bio.utk.edu/index.html

Figure 3. Forsythia in bloom

Table 1. Preemergence and postemergence herbicide options for selective control of crabgrass (*Digitaria spp.*)

Trade Name (active ingredient)	Formulations	Rate (A)	Select Tolerant Turfgrass
<b>Preemergence Herbicides</b>			
Bensumec (bensulide)	4LF	15 to 25 pt	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Bermudagrass, Centipedegrass, Zoysiagrass
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, Centipedegrass, Zoysiagrass
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, 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 crabgrass.			
<b>Postemergence Herbicides</b>			
Acclaim Extra (fenoxaprop)	0.57EC	3.5 to 39 fl oz	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Zoysiagrass
Fusilade II (fluazifop)	2L	3 to 16 fl oz	Tall Fescue, Fine Fescue, Zoysiagrass
Tenacity (mesotrione)	4FL	5 to 8 fl oz	Kentucky Bluegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass, Centipedegrass
MSMA	Product Dependent	2.7 to 5.4 pt	Kentucky Bluegrass*, Fine Fescue*, Tall Fescue*, Bermudagrass, Zoysiagrass
Manuscript (pinoxaden)	0.42SC	9.6 to 19.2 fl oz	Bermudagrass, Zoysiagrass
Drive XLR8 (quinclorac)	1.5L	64 fl oz	Kentucky Bluegrass, Tall Fescue, Perennial Ryegrass, Bermudagrass, Zoysiagrass
Solitare (quinclorac + sulfentrazone)	75WG	16 to 32 oz	Bermudagrass, Centipedegrass, Kentucky Bluegrass, Perennial Ryegrass, Tall Fescue, Zoysiagrass
Q4-Plus (quinclorac + sulfentrazone + 2,4-D + dicamba)	1.79 L	5 to 8 pt	Bermudagrass, Fine Fescue, Kentucky Bluegrass, Perennial Ryegrass, Tall Fescue
Pylex (topramezone)	2.8SC	1 to 1.5 fl oz	Kentucky Bluegrass, Centipedegrass, Fine Fescue, Tall Fescue, Perennial Ryegrass

\* Lower rates are recommended for use on cool-season turfgrass.

**Initial Preemergence Application**

**Crabgrass Germination**

**Sequential Preemergence Application**

**Postemergence or Preemergence + Postemergence Tank Mixes**

<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>
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**Definitions**

**Initial Preemergence Application:** Initial application should be made prior to germination of crabgrass species. Preemergence herbicides act by preventing germinating seedlings from developing. Preemergence herbicides must be applied before crabgrass species germination.

**Sequential Preemergence Application:** Sequential application should be made 6-8 weeks after the initial application. A second application will extend residual crabgrass species control and increase goosegrass control.

**Postemergence or Preemergence + Postemergence Tank Mixes:** Apply postemergence herbicides or a standard preemergence crabgrass herbicide tank mixed with postemergence herbicides can be applied to control germinated crabgrass species. Apply to small 1-3 leaf crabgrass to increase control of germinated crabgrass species.

**Crabgrass Germination:** Crabgrass species germinate in the spring when soil temperatures reach 55 F or an air temperature of 65 F for four or more days. Once the soil temperature reaches 55 F crabgrass species can germinate over the next 2-3 months.

Figure 4. Timeline for crabgrass species control

perform similarly when applied correctly under the same environmental conditions. Crabgrass plants escaping preemergence herbicide applications will need to be controlled with a postemergence herbicide. Sequential applications of these herbicides can often provide improved control.

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 The University of Tennessee Mobile Weed Manual

(MWM) at [mobileweedmanual.com](http://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](http://tennesseeturfgrassweeds.org).



Disclaimer

This publication contains herbicide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the herbicide applicator's responsibility, by law, to read and follow all current label directions for the specific herbicide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

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W 146 01/19(Rev.) 19-0128