

# JOHNSONGRASS CONTROL

## in Pastures, Roadsides, and Noncropland Areas

Patrick McCullough and Donn Shilling



UNIVERSITY OF GEORGIA  
EXTENSION

Johnsongrass (*Sorghum halepense*) is a warm-season perennial weed in pastures and roadsides throughout central and northern Georgia. It germinates from seed in spring after overwintering in the soil, but it primarily emerges from dormant rhizomes in areas with a long-term history of infestations. Rhizomes are belowground stems that produce daughter plants and storage reserves for new growth in spring. The persistence of Johnsongrass is primarily associated with extensive rhizome growth that enables populations to spread laterally and dominate areas by preventing desirable species from flourishing. Johnsongrass may reach heights of 8 to 10 feet, which helps limit the growth of lower growing grasses in mixed stands (Figure 1). It also produces several allelopathic compounds that can be released from the roots and foliage and are toxic to other plants.

Several characteristics of Johnsongrass can help with species identification. Johnsongrass has erect stems and long leaves with a white midvein and thick midrib (Figure 2). The ligule (outgrowth where leaf and leafstalk meet) of Johnsongrass is a prominent membrane with a fringe of hair (trichomes, Figure 3). The inflorescence (the whole flowering head, including stems, stalks, and flowers) is an open panicle, with numerous whorled branches 6 to 20 inches in length. Johnsongrass has fibrous roots and forms from thick rhizomes (Figure 4). The foliage of Johnsongrass can produce cyanogenic compounds (like cyanide and prussic acid) when plants are stressed from cold and drought.



Figure 1. Johnsongrass growth in a Bermudagrass-planted roadside.



Figure 2. Johnsongrass leaf.



Figure 3. Johnsongrass ligule.



Figure 4. Johnsongrass rhizome.

# Johnsongrass control

Regular mowing of Johnsongrass may deplete carbohydrate reserves in rhizomes over time and help limit the spread of infestations, and infrequent mowing can help Johnsongrass spread. It often has rapid regrowth during summer months that may warrant monthly mowing to control shoot development. Preemergence herbicides used for grassy weed control, such as the dinitroanilines, may control Johnsongrass establishment from seed but do not control Johnsongrass emergence from rhizomes. Unfortunately, controlling annual grassy weeds with preemergence herbicides may release Johnsongrass, as competition from other species has been reduced by these applications.

Selective herbicides for control in pastures and hayfields. Outrider (sulfosulfuron) is an acetolactate synthase (ALS)-inhibiting herbicide that may be applied from 0.75 to 2 ounces/acre in bermudagrass and bahiagrass for Johnsongrass control (Table 1). Pastora (nicosulfuron + metsulfuron) at 1.25 ounces/acre and Impose (imazapic) at 4 ounces/acre may also control Johnsongrass in bermudagrass pastures but are more injurious to bermudagrass than Outrider. These herbicides should be applied with a nonionic surfactant at 0.25% volume/volume. Applications three weeks after a mowing or prior to plants reaching the seedhead stage can be critical to optimize efficacy for control. There are no grazing restrictions for Pastora or Outrider. Growers should delay harvesting hay for two to three weeks after treatments to provide these herbicides sufficient time for movement in the Johnsongrass, thus maximizing control.

WSSA Group <sup>a</sup>	Herbicide	Efficacy <sup>b</sup>	Labeled Species	Grazing Restriction (days after treatment)	Harvest Restriction (days after treatment)	Labeled Rate (product/acre)
1	clethodim (Select Max, others)	E	alfalfa, perennial peanut	15 days	15 days	see label
	sethoxydim (Poast, others)	E	alfalfa	7 days	14 days	see label
2	imazamox (Raptor 1L)	F	alfalfa	20 days	20 days	4 to 6 fl oz
	imazapic (Impose 2AS)	F-G	bermudagrass, perennial peanut	See label	7 days	4 to 8 oz
	imazethapyr (Pursuit 70DG, 2EC)	G	alfalfa	30 days	30 days	1.1 to 2.2 oz 3 to 6 fl oz
	nicosulfuron + metsulfuron (Pastora 71.2DF)	G	bermudagrass	0 days	0 days	1 to 1.5 oz
	sulfosulfuron (Outrider 75DF)	E	bahiagrass, bermudagrass	0 days	14 days	0.75 to 2 oz
9	glyphosate (Roundup, Accord, others)	E	bermudagrass	see label	see label	see label

<sup>a</sup>WSSA group numbers: 1 = acetyl-CoA carboxylase (ACCase) inhibitor, 2 = acetolactate synthase (ALS) inhibitor, 9 = EPSP synthase inhibitor.

<sup>b</sup>Excellent (E) = 90 to 100% control, Good (G) = 80 to 89% control, Fair (F) = 70 to 79% control.

The ACCase-inhibitors (Group 1 herbicides), clethodim (Select, others) and sethoxydim (Poast, others), may be used to control Johnsongrass in legumes. These herbicides are sold under several trade names and formulations. Check the labels to determine if an adjuvant is required for the specific product formulation. Do not make broadcast applications of these herbicides in fields with desirable grasses mixed with legumes or severe stand loss could occur. Raptor (imazamox) and Pursuit (imazethapyr) are labeled for alfalfa with fair activity for controlling Johnsongrass early after emergence. Impose (imazapic) at 4 ounces/acre may also be used in perennial peanut hayfields for controlling seedling plants or for temporary suppression of mature Johnsongrass. There are no selective herbicides for Johnsongrass control in tall fescue. For control in tall fescue, spot-treat glyphosate in a 5% solution or apply using a wick-bar for control, using at least a 41% glyphosate concentrate to make these treatment solutions.

## Selective herbicides for control in roadsides and noncrop areas

Monosodium methyl arsonate (MSMA) is an organic arsenic-based herbicide that may be used to control or suppress Johnsongrass in bermudagrass and tall fescue roadsides (Table 2). However, current buffer restrictions in proximity to water bodies and limitations on the number of treatments permitted in a year can restrict the potential use of MSMA in many areas. Sulfonylurea herbicides, such as Outrider (sulfosulfuron) and Derigo (thiencarbazone + foramsulfuron + iodosulfuron), control Johnsongrass in bermudagrass and bahiagrass roadsides, but cannot be applied to tall fescue. Pastora (nicosulfuron + metsulfuron) and Impose (imazapic) are ALS-inhibiting herbicides that may only be used in bermudagrass due to injury potential to bahiagrass and tall fescue.

WSSA Group <sup>a</sup>	Herbicide	Efficacy <sup>b</sup>	Labeled Species	Labeled Rate (product/acre)
1	clethodim (Envoy Plus)	E		9 to 24 fl oz
	sethoxydim (Poast, others)	E		see label
2	imazapic (Impose 2AS)	F-G	bermudagrass	4 to 8 oz
	imazapyr (Arsenal, others)	F-G	bermudagrass	see label
	nicosulfuron + metsulfuron (Pastora 71.2DF)	G	bermudagrass	1 to 1.5 oz
	sulfosulfuron (Outrider 75DF)	E	bahiagrass, bermudagrass	0.75 to 2 oz
	thiencarbazone + foramsulfuron + iodosulfuron (Derigo 36WDG)	G	bahiagrass, bermudagrass	1.5 to 2.5 oz
9	glyphosate (Roundup, Accord, others)	E	bermudagrass	see label
17	MSMA 6L (various)	G-E	bermudagrass, tall fescue	42 oz

<sup>a</sup>WSSA group numbers: 1 = acetyl-CoA carboxylase (ACCase) inhibitor, 2 = acetolactate synthase (ALS) inhibitor, 9 = EPSP synthase inhibitor.

<sup>b</sup>Excellent (E) = 90 to 100% control, Good (G) = 80 to 89% control, Fair (F) = 70 to 79% control.

Arsenal (imazapyr) is a Group 2 herbicide that can be selectively applied to bermudagrass at 8 ounces/acre alone or with low rates of glyphosate for Johnsongrass control. High rates of Arsenal have limited selectivity and may be used for weed control along fence lines or other areas for total vegetation control. Group 2 herbicides are systematically translocated throughout the Johnsongrass plant, unlike MSMA, which is immobile. The mobility of these herbicides to belowground rhizomes enhances the long-term control of perennial populations compared to contact herbicides like MSMA.

The acetyl-CoA carboxylase (ACCase) inhibitors clethodim and sethoxydim have limited use in grassy roadsides. However, these chemistries may control Johnsongrass in areas where injury to roadside grasses is tolerable, such as fence lines, industrial areas, or in certain roadside ornamental plantings. See the labels for specific instructions on adjuvant recommendations and other uses in noncrop areas.

## Timing herbicide applications

Fall applications of herbicides are generally more effective than spring treatments for long-term Johnsongrass control. Johnsongrass begins allocating carbohydrates from leaves to rhizomes in fall, which enhances the movement of herbicides in this source-to-sink pattern. Conversely, spring treatments of postemergence herbicides can provide temporary control of Johnsongrass leaves, but rapid regrowth from rhizomes often occurs. While spring treatments can help release desirable species from competition, restricted herbicide translocation to rhizomes may result in erratic control as Johnsongrass allocates energy to shoot growth. For long-term Johnsongrass control, glyphosate (Roundup, others) is another systemic herbicide that works more effectively when applied in the fall compared to spring treatments. Glyphosate is nonselective and should be limited to spot treatments at rates required to control Johnsongrass.

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