

**POSTEMERGENCE HERBICIDES  
FOR THE CONTROL OF SEDGES  
IN ST. AUGUSTINEGRASS TURF**

*2021 Study report*

# Postemergence herbicides for the control of sedges in St. Augustinegrass turf

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**The Bottom Line:** Thirteen treatments containing commercialized herbicide products were tested alone or in combination against a nontreated control for postemergence control of mixed globe sedge (*Cyperus croceus*) and yellow nutsedge (*Cyperus esculentus*) populations in 'Provista' St. Augustinegrass (*Stenotaphrum secundatum*) maintained as home lawn. The study was conducted at the University of Florida Main Campus Grounds in Gainesville, FL. Herbicides were applied twice (6-wks time intervals) starting July 2021. Sulfentrazone-containing treatments (Dismiss at 6.0 oz/A, Dismiss NXT at 7.63 oz/A, and Blindside at 5.0 oz/A) provided the most rapid control, but it never exceeded 70% and unacceptable level injury to turf was observed for 2 weeks after initial application (WAIT). Best performing treatments in this study were Certainty at 1.25 oz/A, SedgeHammer+ at 21.78 oz/A, Recognition at 1.95 oz/A and Recognition at 1.95 oz/A + Turflon Ester Ultra at 16.0 oz/A. Each of these treatments provided >90% control starting from 4, 8, 6, and 4 WAIT, respectively without inflicting injury that exceeded acceptable thresholds. Remaining ALS-inhibitor based treatments employed in this study achieved satisfactory control (>80%) by 10 WAIT.

## Acknowledgments

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## Introduction

Globe sedge (*Cyperus croceus* Vahl.) and yellow nutsedge (*Cyperus esculentus* L.) are both grass-like, troublesome, difficult-to-control weeds which remain a problem in Florida turfgrasses. They differ in some characteristics, including appearance, e.g., yellow nutsedge forms golden seedheads, while globe sedge are globular, and light green. Nutsedge can create underground tubers which allow plants to survive and spread vegetatively under suboptimal conditions. These plants thrive in areas which remain wet for extended periods. Selective control of these sedges is even more challenging in St. Augustinegrass (*Stenotaphrum secundatum* [Walt.] Kuntze) lawns due to its high injury susceptibility from many of the currently available turfgrass herbicides. Although there are cultivars of St. Augustinegrass which may be less susceptible to non-selective glyphosate applications, such as 'Provista', relying solely on one active ingredient may lead to resistant populations. Identification of efficacious, yet safe control measures is of a high importance.

## Objectives

This study was conducted to evaluate the impact of various herbicides rates and formulations on their ability to control the mixed globe sedge and yellow nutsedge populations in 'Provista' St. Augustinegrass maintained as a home lawn.

## Materials and Methods

The study was conducted in 2021 from July until September at the University of Florida Main Campus Grounds in Gainesville, FL. The turf was 'Provista' St. Augustinegrass established in the spring of 2021 and maintained as a home lawn. Turf was mowed biweekly at 3 inches and received no fertilizer either prior or during the study. No preemergence herbicides were applied to the study area in 2021 either during the study, nor prior to its initiation. Target weeds were a mixture of globe sedge and yellow nutsedge populations. Total of 14 herbicide treatments (including nontreated control) were applied as described in Table 1 on July 1 and August 12. All herbicide treatments were applied using a CO<sub>2</sub>-powered backpack sprayer (R&D Sprayers, Bellspray, Inc.) equipped with four TeeJet<sup>®</sup> 8002VS VisiFlo<sup>®</sup> flat-fan spray tips (TeeJet Technologies, Spraying Systems Co.) calibrated to deliver 2 gallons/1000 ft<sup>2</sup> of spray solution. No irrigation was applied and/or no precipitation (rain) occurred for at least 6 hours following the application.

Evaluation was carried out on a weekly and/or biweekly schedule, starting on July 1 and ending on September 24, 2021. Over the trial duration, plots were visually evaluated for: turfgrass visual quality (1-9 scale, 6 = minimum acceptable quality, 9 = best possible quality), overall target weeds cover (0-100%) which was used to express control – percentage of ratio between initial cover and cover at the time of evaluation (0-100%), and for turfgrass injury (i.e., phytotoxicity; 0-10, 0 = no damage, 3 = maximum acceptable injury level, 10 = dead turfgrass).

Study design was a complete randomized block (CRB) with 4 replications. Individual plot size was 4×4 ft with no alleys due to the localized target weed distribution. By convention, control ratings of 80% or greater was considered satisfactory control (acceptability threshold) and injury ratings of 3 or lower was considered acceptable (acceptability threshold). Data collected throughout the study was analyzed using analysis of variance in Statistica 10 (StatSoft, Inc.) and means compared using Fischer's protected least significant difference test at  $P < 0.05$ .

## Results

The most rapid target weed removal, with the effects noticeable already at 5 days after initial treatment (DAIT) was provided with all sulfentrazone-based applications, i.e., Dismiss at 6.0 oz/A, Dismiss NXT

at 7.63 oz/A, and Blindside at 5.0 oz/A. Unfortunately, the level of control achieved with those treatments never exceeded 70%, thus remained below the acceptable threshold until the termination of the study (Figure 1, Table 2). Furthermore, following the initial application, all these herbicides resulted in an immediate and unacceptable injury to the desired turfgrass stand (>5 at 5 DAIT), persisting until 4 weeks after initial treatment (WAIT) (Figure 4, Table 3). The labels of these products however warn about the possibility of such occurrences when applied to St. Augustinegrass, thus some degree of injury was expected. The damage was manifested as severe bronzing, in some cases followed by loss of turf (Figure 5). However, the injury resulting from the second application of these treatments was less pronounced and remained within the acceptable range (Figure 4, Table 3). This suggests the original damage may have been amplified by additional factors, one of which may include the premature application to an underdeveloped root system after sodding.

In general, among currently available options, Certainty at 1.25 oz/A and SedgeHammer+ at 21.78 oz/A performed the best with regard to target weed removal, achieving almost complete (>90%) and persistent eradication starting from 4 WAIT and 8 WAIT, respectively (Figures 2 and 3, Table 2). Also, both formulations of Celsius (original WG, and new one – XTRA – in which dicamba was replaced with halosulfuron) resulted in satisfactory sedge control 10 WAIT (Figure 2, Table 2). Although of the two, only Celsius XTRA is labeled for sedge control. While some growth regulation was noticeable across the study, except for Celsius XTRA at

10.0 oz/A fb. 5.0 oz/A at 2 WAIT, none of the abovementioned treatments resulted in any unacceptable injury to the desired turf (Figure 4, Table 3).

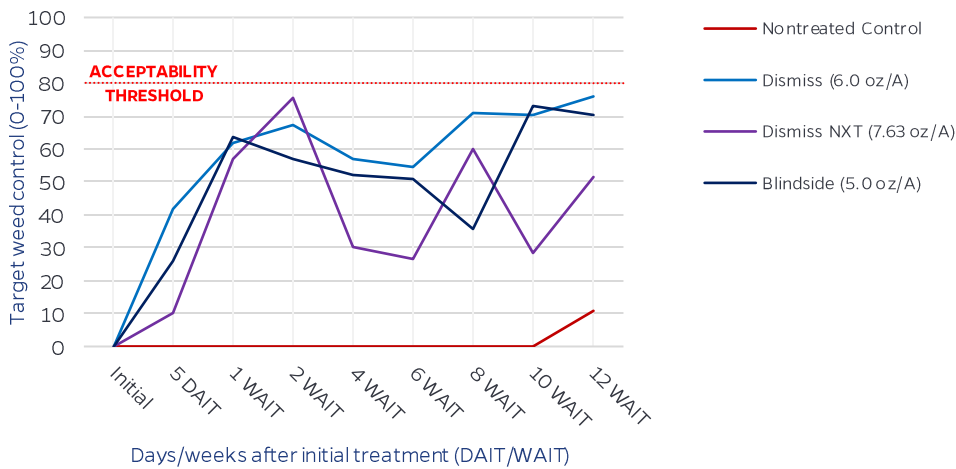
Recognition is a new formulation of trifloxysulfuron-sodium with a planned market release in 2023. Monument 75WG, the original trifloxysulfuron-based formulation is highly injurious to St. Augustinegrass, while Recognition is specifically designed for safe use in St. Augustinegrass turf. Recognition contains a safening compound as an inert component (i.e., not appearing on the label) which also has some capacity to mitigate injury expected with some other chemistries [e.g., triclopyr (Turflon Ester Ultra) employed in this study] when tank-mixed with Recognition. However, the degree of safening, as well as the possibility for safening of the herbicides against some target weeds still requires more in-depth research. The rate of 1.95 oz/A of Recognition used in this study is the equivalent of 0.53 oz/A of Monument 75WG and will be the maximum allowed rate for a single application. Treatments containing Recognition at 3.9 oz/A (and/or Turflon Ester Ultra at 32.0 oz/A) were utilized in this study to demonstrate the effects of possible overlap (2× rate).

When used at the labelled rate of 1.95 oz/A, Recognition, similar to Certainty, required only one application to achieve almost complete target weed removal (>90% at 6 WAIT). The addition of Turflon Ester Ultra at 16.0 oz/A resulted in more rapid eradication of sedges, while a sequential application ensured persistent control in both treatments (Figures 2 and 3, Table 2). Moreover, no unacceptable injury to turf was observed with Recognition-based treatments, except for the overlap (2×) rate of Recognition + Turflon Ester Ultra tank mix (applied at 3.9 oz/A and 32.0 oz/A, respectively). This treatment resulted in injury level equal to the threshold of acceptability at 5 DAIT and 10 WAIT (Figure 4, Table 3). These results indicate that Recognition-based treatments may expand the available options for the control of sedges in St. Augustinegrass turf and can potentially allow for including additional modes of action in future management programs.

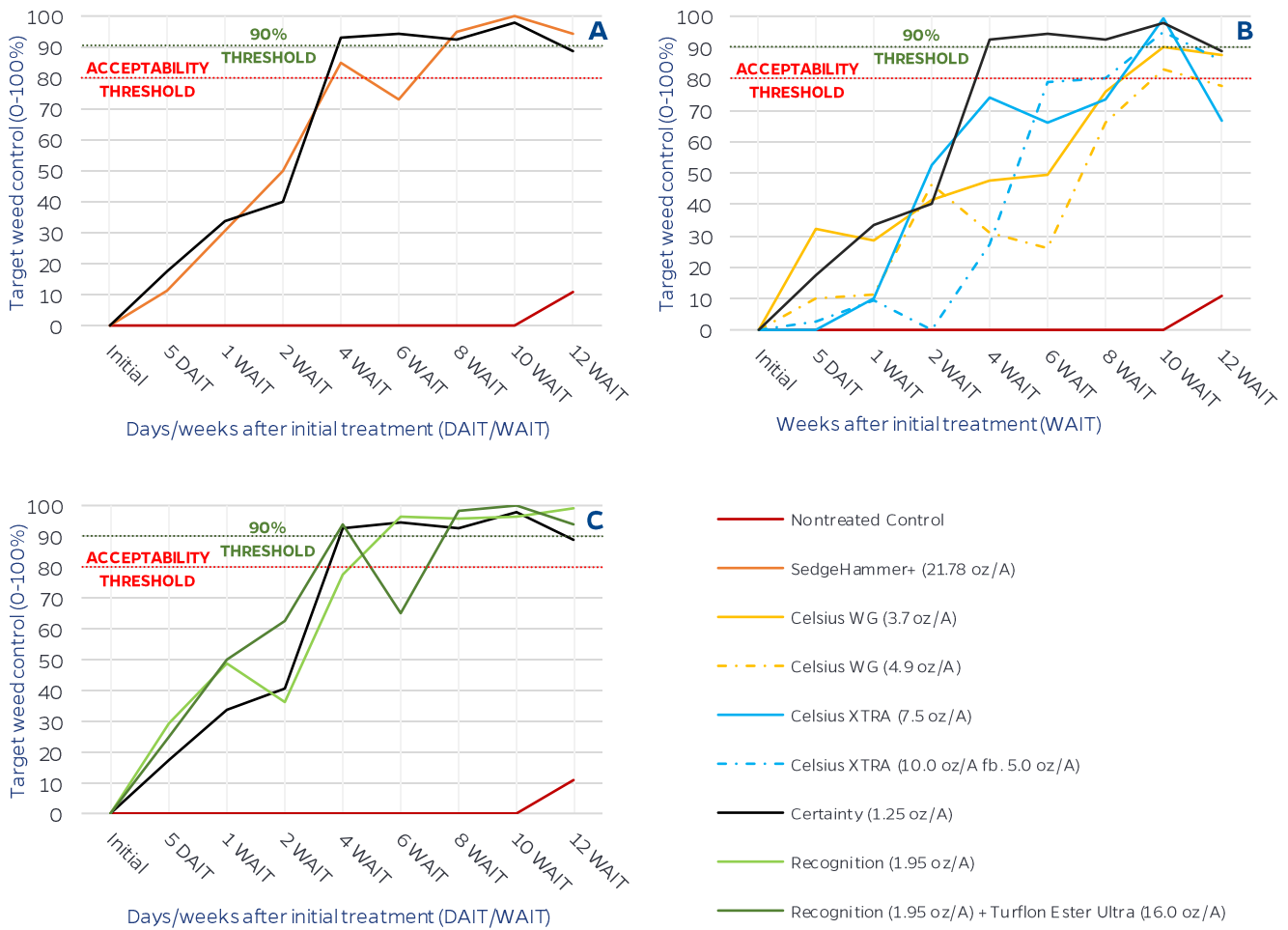
## Tables and Figures

**Table 1.** Herbicide treatments and application timings (A – July 1, B – August 12) used in the study to evaluate control of mixed globe sedge and yellow nutsedge populations in 'Provista' St. Augustinegrass maintained as a home lawn. Non-ionic surfactant (NIS; Induce by Helena) at 0.25% v/v was added to the tank-mix in treatments 3, 4, 5, 6, 7, 11, 12, 13, and 14 as prescribed by the herbicide label. No surfactant was added to treatments 2, 8, 9, and 10 as per herbicide label restrictions. University of Florida Main Campus Grounds, Gainesville, FL. 2021.

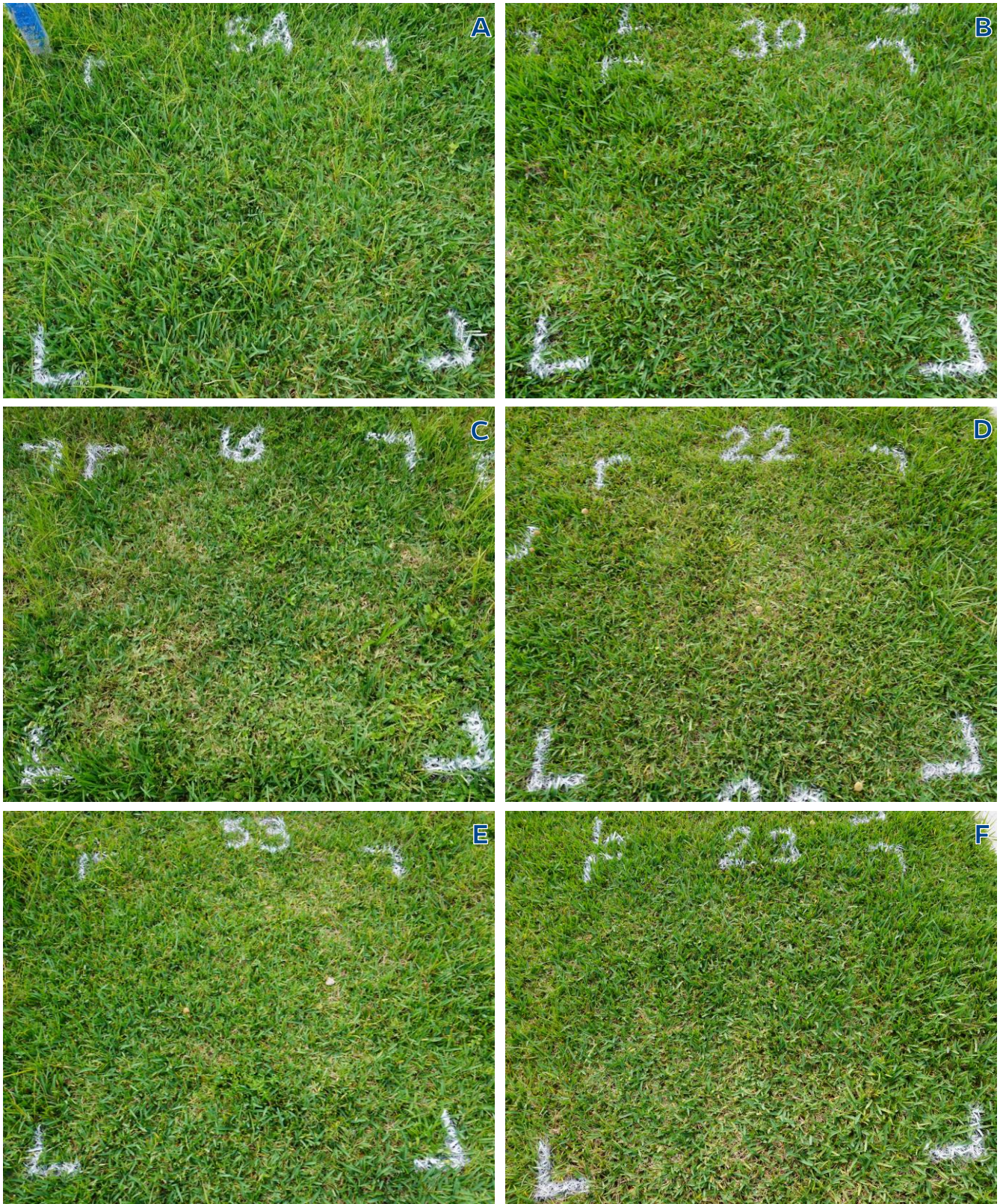
No.	Treatment	Active ingredient	HRAC & WSSA Code	Company	Rate (oz/A)	No. of apps.	Freq. (wks)	Timing
1	Nontreated (NTC)	-						
2	SedgeHammer+	halosulfuron-methyl	2	Gowan	21.78	2	6	AB
3	Celsius WG	thiencarbazone-methyl	2	Envu	3.70	2	6	AB
		iodosulfuron-methyl-sodium	2					
		dicamba	4					
4	Celsius WG	thiencarbazone-methyl	2	Envu	4.90	2	6	AB
		iodosulfuron-methyl-sodium	2					
		dicamba	4					
5	Celsius XTRA	thiencarbazone-methyl	2	Envu	7.50	2	6	AB
		iodosulfuron-methyl-sodium	2					
		halosulfuron-methyl	2					
6	Celsius XTRA	thiencarbazone-methyl	2	Envu	10.00	1	6	A
		iodosulfuron-methyl-sodium	2		5.00			B
		halosulfuron-methyl	2					
7	Certainty	sulfosulfuron	2	Nufarm	1.25	2	6	AB
8	Dismiss	sulfentrazone	14	FMC	6.00	2	6	AB
9	Dismiss NXT	sulfentrazone	14	FMC	7.63	2	6	AB
		carfentrazone-ethyl	14					
10	Blindside	sulfentrazone	14	FMC	5.00	2	6	AB
		metsulfuron-methyl	2					
11	Recognition	trifloxysulfuron-sodium	2	Syngenta	1.95	2	6	AB
12	Recognition	trifloxysulfuron-sodium	2	Syngenta	3.90	2	6	AB
13	Recognition	trifloxysulfuron-sodium	2	Syngenta	1.95	2	6	AB
	Turflon Ester Ultra	triclopyr	4	Corteva	16.00			
14	Recognition	trifloxysulfuron-sodium	2	Syngenta	3.90	2	6	AB
	Turflon Ester Ultra	triclopyr	4	Corteva	32.00			



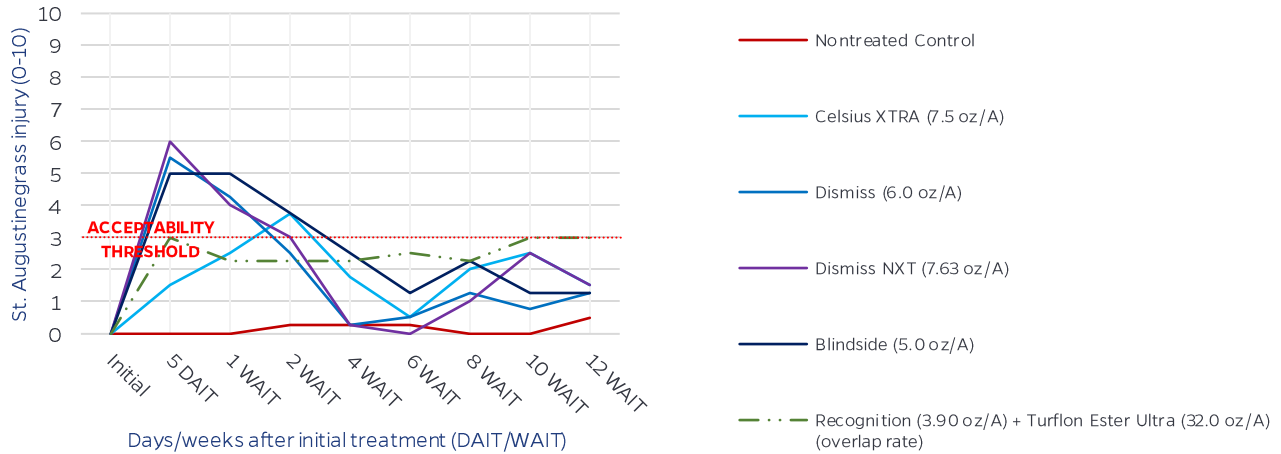
**Figure 1.** Effects of chosen (sulfentrazone-containing) herbicide treatments on the postemergence control (0-100%, y-axis) of mixed globe sedge and yellow nutsedge populations evaluated in 'Provista' St. Augustinegrass maintained as a home lawn. University of Florida Main Campus Grounds, Gainesville, FL. 2021.



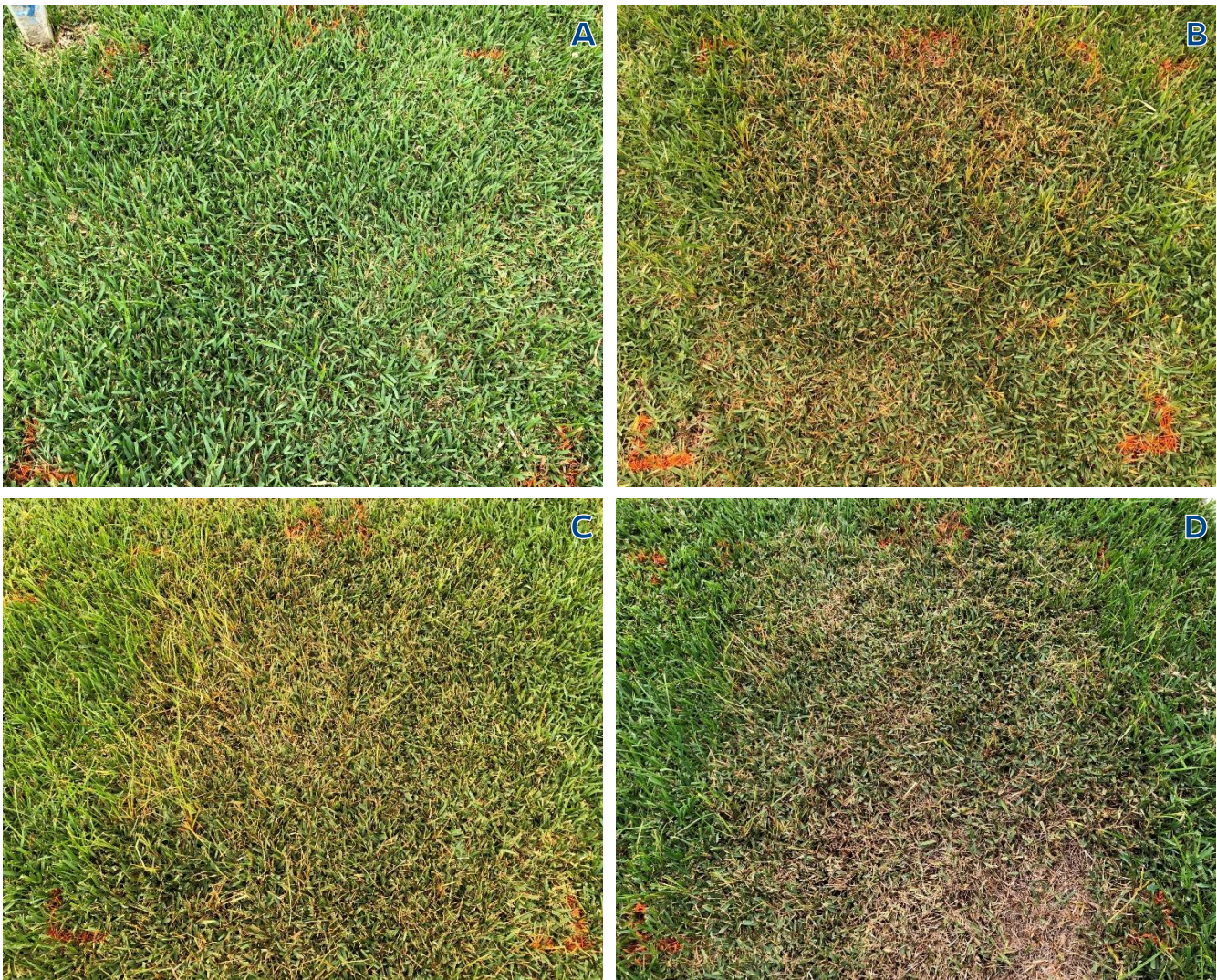
**Figure 2.** Effects of chosen herbicide treatments [SedgeHammer+ (A), Certainty (A, B, C), Celsius WG and Celsius XTRA (B), Recognition and Recognition + Turflon Ester Ultra (C)] on the postemergence control (0-100%, y-axis) of mixed globe sedge and yellow nutsedge populations evaluated in 'Provista' St. Augustinegrass maintained as a home lawn. University of Florida Main Campus Grounds, Gainesville, FL. 2021.



**Figure 3.** Mixed sedge populations cover in nontreated control (A), and plots treated with Certainty at 1.25 oz/A (B), SedgeHammer+ at 21.78 oz/A (C), Celsius XTRA at 7.5 oz/A (D), Recognition at 1.95 oz/A (E), and tank-mix of Recognition at 1.95 oz/A + Turflon Ester Ultra at 16.0 oz/A (F) at 10 weeks after initial application on September 10, 2021. University of Florida Main Campus Grounds, Gainesville, FL. 2021. Photoscredit: Pawel Petelewicz, UF/IFAS Agronomy.



**Figure 4.** Effects of chosen (most damaging) herbicide treatments on 'Provista' St. Augustinegrass injury (0-10 scale, y-axis). University of Florida Main Campus Grounds, Gainesville, FL. 2021.



**Figure 5.** St. Augustinegrass injury in nontreated control (A) and plots treated with Dismiss at 6.00 oz/A (B), Dismiss NXT at 7.63 oz/A (C), and Blindside at 5.0 oz/A (D) at 5 days after initial application on July 6, 2021. University of Florida Main Campus Grounds, Gainesville, FL. 2021. Photos credit: Pawel Petelewicz, UF/IFAS Agronomy.



**Table 2.** Effects of herbicide treatments on the postemergence control (0-100%) of mixed globe sedge and yellow nutsedge population evaluated in 'Provista' St. Augustinegrass maintained as a home lawn. University of Florida Main Campus Grounds, Gainesville, FL. 2021.

No.	Treatment	Target weed control (0-100%)								
		DAIT *	WAIT **							
		5	1	2	4	6	7	8	10	12
1	Nontreated	0.0 e ****	0.0 f	0.0 c	0.0 e	0.0 e	0.0 f	0.0 g	0.0 e	10.8 d
2	SedgeHammer+ ***	11.1 c-e	30.8 b-f	50.2 ab	85.1 ab	73.1 a-c	81.2 a-c	94.9 ab	100.0 a	94.4 ab
3	Celsius WG	32.3 ab	28.4 c-f	41.3 ab	47.9 cd	49.5 cd	52.5 c-e	75.7 b-e	90.2 ab	87.4 ab
4	Celsius WG	10.0 c-e	11.3 ef	46.4 ab	30.8 de	25.8 de	42.8 de	66.1 de	83.1 a-c	77.5 a-c
5	Celsius XTRA	0.0 e	10.0 ef	52.7 ab	74.2 a-c	66.0 a-d	40.0 de	73.8 c-e	99.4 a	66.7 bc
6	Celsius XTRA	2.5 e	9.4 ef	0.0 c	27.5 de	78.8 a-c	73.8 a-d	80.5 a-d	95.0 a	85.5 ab
7	Certainty	17.5 b-e	33.6 a-e	40.3 ab	92.9 a	94.3 ab	95.8 a	92.5 a-c	97.9 a	88.6 ab
8	Dismiss	41.8 a	61.9 ab	67.1 ab	57.3 b-d	54.6 b-d	61.7 b-e	70.9 de	70.3 c	76.0 a-c
9	Dismiss NXT	10.4 c-e	56.7 a-c	75.6 a	30.1 de	26.7 de	30.5 ef	59.9 e	28.5 d	51.7 c
10	Blindside	25.7 a-d	63.9 a	56.8 ab	52.2 b-d	51.0 cd	31.4 ef	36.0 f	73.1 bc	70.4 a-c
11	Recognition	29.6 a-c	48.7 a-d	36.3 bc	77.4 a-c	96.4 a	98.3 a	95.6 ab	96.1 a	99.1 a
12	Recognition	10.3 c-e	22.5 d-f	42.1 ab	79.7 a-c	96.4 a	96.4 a	96.6 a	97.1 a	99.4 a
13	Recognition + Turflon Ester Ultra	24.9 a-d	50.0 a-d	62.5 ab	94.0 a	64.8 a-d	90.4 ab	98.1 a	100.0 a	93.7 ab
14	Recognition + Turflon Ester Ultra	6.3 de	20.2 d-f	38.0 b	83.1 ab	88.5 a-c	93.7 ab	95.1 ab	97.2 a	92.1 ab

\* DAIT - days after initial treatment

\*\* WAIT - weeks after initial treatment

\*\*\* For herbicide rates and application timings refer to Table 1

\*\*\*\* Means followed by the same letter or by no letter in a column are not significantly different (P=0.05).

**Table 3.** Effects of herbicide treatments on desired turfgrass injury (0-10 scale, 0 = no injury, 3 = acceptable threshold, 10 = dead turf) evaluated on 'Provista' St. Augustinegrass maintained as a home lawn. University of Florida Main Campus Grounds, Gainesville, FL. 2021.

No.	Treatment	St. Augustinegrass injury (0-10 scale)								
		DAIT *	WAIT **							
		5	1	2	4	6	7	8	10	12
1	Nontreated	0.0 d ****	0.0 e	0.3 e	0.3 d	0.3	0.0	0.0	0.0 c	0.5
2	SedgeHammer+ ***	0.8 cd	1.3 de	1.0 de	1.0 cd	1.3	1.3	1.0	1.0 bc	1.0
3	Celsius WG	0.8 cd	1.3 de	1.0 de	1.8 a-c	0.8	0.8	1.8	2.5 ab	1.5
4	Celsius WG	1.5 b-d	2.0 d	0.5 de	2.5 a	1.5	1.5	1.8	2.3 ab	2.0
5	Celsius XTRA	1.5 b-d	2.5 b-d	3.8 a	1.8 a-c	0.5	0.8	2.0	2.5 ab	1.5
6	Celsius XTRA	1.3 cd	1.8 de	2.5 bc	2.5 a	1.0	1.0	1.3	2.3 ab	2.0
7	Certainty	0.5 cd	1.3 de	0.8 de	0.5 d	1.0	0.3	1.5	2.5 ab	1.3
8	Dismiss	5.5 a	4.3 ab	2.5 bc	0.3 d	0.5	1.0	1.3	0.8 bc	1.3
9	Dismiss NXT	6.0 a	4.0 a-c	3.0 ab	0.3 d	0.0	0.8	1.0	2.5 ab	1.5
10	Blindside	5.0 a	5.0 a	3.8 a	2.5 a	1.3	1.5	2.3	1.3 a-c	1.3
11	Recognition	1.8 bc	1.3 de	1.5 cd	1.3 b-d	0.8	1.0	0.8	0.8 bc	1.0
12	Recognition	1.0 cd	1.5 de	0.5 de	0.3 d	0.3	0.8	0.3	0.8 bc	1.3
13	Recognition + Turflon Ester Ultra	1.0 cd	0.8 de	0.5 de	0.8 cd	0.5	0.3	0.8	1.3 a-c	1.3
14	Recognition + Turflon Ester Ultra	3.0 b	2.3 cd	2.3 bc	2.3 ab	2.5	2.0	2.3	3.0 a	3.0

\* DAIT - days after initial treatment

\*\* WAIT - weeks after initial treatment

\*\*\* For herbicide rates and application timings refer to Table 1

\*\*\*\* Means followed by the same letter or by no letter in a column are not significantly different (P=0.05).

*Disclaimer:*

Be advised that the results of the presented study **DO NOT** constitute an official UF/IFAS recommendation.

For research purposes, our studies may include experimental compounds and/or commercially available products not labeled for use under researched conditions (e.g., for particular setting, turfgrass species, target weed species, etc.), and/or purposely applied contradictory or not in full accordance with the product's label (e.g., excessive, or insufficient rates, wrong timings, applications in sub-optimal conditions, etc.).

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