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UNIVERSITY OF WISCONSIN-MADISON

Extension
UNIVERSITY OF WISCONSIN-MADISON

ID #19-12

UW – Madison Weed Science Renz Lab

Can Fluazifop-P-butyl (A12460A) Effectively Control Glyceria (*Glyceria maxima*)?

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Objective:

Determine the efficacy of Fluazifop-P-butyl (fluazifop) applications to glyceria as compared to glyphosate.

Summary:

At 53 days after summer application (A-timing), glyphosate resulted in more injury to glyceria (76% injury) compared to fluazifop treatments (15-20% injury).

In the year following application (326 days after the summer application; A-timing), fluazifop at the high rate resulted in comparable control (81%) to summer applications of glyphosate (88% control). All other rates of Fluazifop resulted in unacceptable control (9-29%).

In the year following application (353 days after the fall application; B-timing), fluazifop provided unacceptable control of glyceria (8-32%) at all rates compared to glyphosate (88% control).

Results suggest that Fluazifop at 3% v/v may provide control of glyceria comparable to glyphosate when applied in the summer, but not when applied in the fall. Data also suggests that control may not remain similar to glyphosate past one year after treatment and subsequent applications may be needed.

Research Plot Information:

Plot Dimensions: 5 feet by 10 feet

Design: Randomized Complete Block, 4 blocks

Soil Type: 100% Wacousta silty clay loam, 0 - 2 percent slopes

Notes:

- An additional late-season application was planned two weeks after C-timing application for treatment 9 but was not applied as not enough time remained in growing season prior to phragmites senescence
- Treatments 2 and 8 were applied at ½ the volume (25 gallons per acre) of all other treatments

Herbicide Treatments:

Treatment Number	Treatment	Application Timing	Spray Volume	Rate
1	Untreated Control (UTC)	-	-	-
2	A12460A COC	A A	25 gallons per acre (GPA)	2 % volume/volume (v/v) 1% v/v
3	A12460A COC A12460A COC	A A B B	50 GPA	2% v/v 1% v/v 2% v/v 1% v/v
4	A12460A COC	A A	50 GPA	1% v/v 1% v/v
5	A12460A COC	A A	50 GPA	2% v/v 1% v/v
6	A12460A COC	A A	50 GPA	3% v/v 1% v/v
7	Glyphosate Non-ionic Surfactant (NIS) Ammonium Sulfate (AMS)	A A A	50 GPA	2% v/v 0.25% v/v 8.5 pounds/100 gallons (lb/100 gal)
8	A12460A COC	C C	25 GPA	2% v/v 1% v/v
9	A12460A COC	C C	50 GPA	2% v/v 1% v/v
10	A12460A COC	C C	50 GPA	1% v/v 1% v/v
11	A12460A COC	C C	50 GPA	2% v/v 1% v/v
12	A12460A COC	C C	50 GPA	3% v/v 1% v/v
13	Glyphosate NIS AMS	C C C	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal

Herbicide Application:

Application Timing	A-Timing	B-Timing	C-Timing
Date	August 2nd, 2019	September 24th, 2019	September 24th, 2019
Time	11:40am – 12:00pm	1:00pm – 1:30pm	1:00pm – 1:30pm

Equipment: Single-nozzle boom

Nozzles: One (1) Flat Tip XR Teejet XR8005

Boom PSI: 40 PSI

Plants Present/Stage of Development:

- **A-timing application**
  - Glyceria vegetative, 3 feet tall

- **B-timing application**
  - Glyceria vegetative, 3 feet tall

Glyceria at B-timing application

Weather Data:

Weather Station	KWIIXONI5	
Application Timing	**A – Timing**	**B & C – Timing**
Temperature	80°F	78°F
Wind Speed and Direction	1.9mph W	1.1mph SW
Relative Humidity	50%	58%
Cloud Cover	0%	0%
Previous Rain Event Within 48 Hours	-	September 22nd, 2019 – 1.19 inches
When ≥ 0.25 inches of precipitation occurred after treatment	August 5th, 2019 - 0.98 inches	September 27th, 2019 – 0.43 inches

Index of Ratings and Results

Results:

0 Days After A – Application (pre A – application data); August 2nd, 2019

Trt no.	Treatment	Application Timing	Spray Volume	Rate	Glyceria Cover (%)	Reed Canary grass Cover (%)	Broadleaf Weed Cover (%)	Grasses Cover (%)	Bareground / Litter Cover (%)
1	UTC	-	-	-	77.3 -	17.5 -	1.0 -	0.0 -	4.3 -
2	A12460A COC	A A	25 GPA	2 % v/v 1% v/v	80.8 -	15.0 -	0.5 -	0.0 -	3.8 -
3	A12460A COC A12460A COC	A A B B	50 GPA	2% v/v 1% v/v 2% v/v 1% v/v	88.3 -	7.5 -	3.0 -	0.0 -	1.3 -
4	A12460A COC	A A	50 GPA	1% v/v 1% v/v	68.3 -	17.5 -	2.5 -	6.3 -	5.5 -
5	A12460A COC	A A	50 GPA	2% v/v 1% v/v	74.0 -	21.3 -	0.5 -	0.0 -	4.3 -
6	A12460A COC	A A	50 GPA	3% v/v 1% v/v	78.8 -	10.0 -	3.8 -	0.0 -	7.5 -
7	Glyphosate NIS AMS	A A A	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	75.8 -	11.3 -	3.8 -	7.5 -	1.8 -
8	A12460A COC	C C	25 GPA	2% v/v 1% v/v	85.8 -	7.5 -	3.8 -	0.0 -	3.0 -
9	A12460A COC	C C	50 GPA	2% v/v 1% v/v	85.0 -	10.0 -	0.0 -	0.0 -	5.0 -
10	A12460A COC	C C	50 GPA	1% v/v 1% v/v	86.3 -	6.3 -	0.0 -	0.0 -	7.5 -
11	A12460A COC	C C	50 GPA	2% v/v 1% v/v	67.3 -	16.8 -	8.0 -	0.0 -	8.0 -
12	A12460A COC	C C	50 GPA	3% v/v 1% v/v	85.8 -	9.3 -	0.0 -	0.0 -	5.0 -
13	Glyphosate NIS AMS	C C C	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	72.5-	7.5 -	11.3 -	5.0 -	3.8 -
Statistics[1]									
Least Significant Difference (LSD) P=.05					19.54	19.12	7.4	8.00	7.37
Standard Deviation					13.62	13.33	5.16	5.58	5.14
Coefficient of Variation (CV)					17.27	110.2	176.61	386.59	110.4
Treatment Prob(F)					0.4028	0.8742	0.1006	0.4685	0.7677

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

[1] All statistical analyses were conducted in ARM software and assumptions of ANOVA were not evaluated.

53 After A – Application, 0 Days After B & C – Application (pre B & C – application data); September 24th, 2019

Trt no.	Treatment	Application Timing	Spray Volume	Rate	Glyceria Cover (%)	Glyceria Injury (%)	Cattail Cover (%)	Reed Canarygrass Cover (%)	Broadleaf Weeds Cover (%)	Bareground / Litter Cover (%)
1	UTC	-	-	-	97 -	8 b	0 -	0 -	2 -	0 -
2	A12460A COC	A A	25 GPA	2 % v/v 1% v/v	91 -	18 b	0 -	5 -	4 -	0 -
3	A12460A COC A12460A COC	A A B B	50 GPA	2% v/v 1% v/v 2% v/v 1% v/v	97 -	16 b	0 -	1 -	2 -	0 -
4	A12460A COC	A A	50 GPA	1% v/v 1% v/v	88 -	20 b	4 -	0 -	8 -	0 -
5	A12460A COC	A A	50 GPA	2% v/v 1% v/v	78 -	15 b	0 -	18 -	0 -	0 -
6	A12460A COC	A A	50 GPA	3% v/v 1% v/v	95 -	20 b	0 -	2 -	2 -	0 -
7	Glyphosate NIS AMS	A A A	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	98 -	76 a	1 -	0 -	0 -	0 -
8	A12460A COC	C C	25 GPA	2% v/v 1% v/v	96 -	N/A	0 -	1 -	2 -	0 -
9	A12460A COC	C C	50 GPA	2% v/v 1% v/v	94 -	N/A	0 -	4 -	1 -	0 -
10	A12460A COC	C C	50 GPA	1% v/v 1% v/v	98 -	N/A	0 -	2 -	0 -	0 -
11	A12460A COC	C C	50 GPA	2% v/v 1% v/v	91 -	N/A	0 -	6 -	2 -	0 -
12	A12460A COC	C C	50 GPA	3% v/v 1% v/v	98 -	N/A	0 -	2 -	0 -	0 -
13	Glyphosate NIS AMS	C C C	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	90 -	N/A	2 -	1 -	6 -	0 -
Statistics										
LSD P=.05					16.98	32.62	3.47	14.38	7.7	-
Standard Deviation					11.84	21.28	2.42	10.02	5.37	0.00
CV					12.69	86.24	419.21	288.01	219.75	0.00
Treatment Prob(F)					0.5793	0.0055	0.4685	0.5136	0.6641	1.000

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

326 After A – Application, 273 Days After B & C – Application; June 23rd, 2020

Trt no.	Treatment	Application Timing	Spray Volume	Rate	Glyceria Cover (%)	Glyceria Control (%)	Cattail Cover (%)	Reed Canarygrass Cover (%)	Broadleaf Weeds Cover (%)	Bareground / Litter Cover (%)
1	UTC	-	-	-	76 a	0 g	1 -	6 -	0 -	16 f
2	A12460A COC	A A	25 GPA	2 % v/v 1% v/v	61 abc	27 ef	0 -	13 -	3 -	22 ef
3	A12460A COC A12460A COC	A A B B	50 GPA	2% v/v 1% v/v 2% v/v 1% v/v	64 abc	29 def	0 -	2 -	5 -	30 def
4	A12460A COC	A A	50 GPA	1% v/v 1% v/v	63 abc	9 fg	5 -	3 -	2 -	36 c-f
5	A12460A COC	A A	50 GPA	2% v/v 1% v/v	61 abc	26 efg	0 -	21 -	2 -	16 f
6	A12460A COC	A A	50 GPA	3% v/v 1% v/v	15 ef	81 ab	0 -	8 -	15 -	61 bc
7	Glyphosate NIS AMS	A A A	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	28 def	88 ab	2 -	0 -	2 -	66 b
8	A12460A COC	C C	25 GPA	2% v/v 1% v/v	65 ab	32 def	0 -	1 -	1 -	32 def
9	A12460A COC	C C	50 GPA	2% v/v 1% v/v	42 b-e	56 bcd	0 -	10 -	1 -	46 b-e
10	A12460A COC	C C	50 GPA	1% v/v 1% v/v	64 abc	34 def	0 -	2 -	2 -	32 def
11	A12460A COC	C C	50 GPA	2% v/v 1% v/v	34 cde	64 bc	0 -	10 -	2 -	48 bcd
12	A12460A COC	C C	50 GPA	3% v/v 1% v/v	50 a-d	50 cde	0 -	14 -	0 -	36 c-f
13	Glyphosate NIS AMS	C C C	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	2 f	98 a	0 -	0 -	0 -	98 a
Statistics										
LSD P=.05					28.44	24.32	21.54	3.38	8.14	26.03
Standard Deviation					19.79	16.91	14.99	2.35	5.66	18.12
CV					47.49	37.57	211.14	345.56	209.78	43.93
Treatment Prob(F)					0.0001	0.0001	0.7228	0.2717	0.1594	0.0001

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

406 After A – Application, 353 Days After B & C – Application; September 11th, 2020

Trt no.	Treatment	Application Timing	Spray Volume	Rate	Glyceria Cover (%)	Glyceria Control (%)	Cattail Cover (%)	Reed Canarygrass Cover (%)	Broadleaf Weeds Cover (%)	Bareground / Litter Cover (%)
1	UTC	-	-	-	88 a	0 c	1 -	2 -	4 -	2 -
2	A12460A COC	A A	25 GPA	2 % v/v 1% v/v	80 a	10 bc	0 -	0 -	12 -	4 -
3	A12460A COC A12460A COC	A A B B	50 GPA	2% v/v 1% v/v 2% v/v 1% v/v	80 a	10 bc	0 -	6 -	3 -	26 -
4	A12460A COC	A A	50 GPA	1% v/v 1% v/v	56 a	30 bc	3 -	0	6 -	33 -
5	A12460A COC	A A	50 GPA	2% v/v 1% v/v	82 a	0 c	0 -	12 -	1 -	4 -
6	A12460A COC	A A	50 GPA	3% v/v 1% v/v	50 a	42 b	0 -	8 -	13 -	3 -
7	Glyphosate NIS AMS	A A A	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	10 b	86 a	2 -	0 -	8 -	46 -
8	A12460A COC	C C	25 GPA	2% v/v 1% v/v	85 a	12 bc	0 -	0 -	2 -	12 -
9	A12460A COC	C C	50 GPA	2% v/v 1% v/v	81 a	14 bc	0 -	1 -	3 -	14 -
10	A12460A COC	C C	50 GPA	1% v/v 1% v/v	71 a	26 bc	0 -	0 -	3 -	26 -
11	A12460A COC	C C	50 GPA	2% v/v 1% v/v	84 a	8 bc	0 -	2 -	4 -	10 -
12	A12460A COC	C C	50 GPA	3% v/v 1% v/v	67 a	32 bc	0 -	2 -	0 -	28 -
13	Glyphosate NIS AMS	C C C	50 GPA	2% v/v 0.25% v/v 8.5 lb/100 gal	10 b	88 a	1 -	0 -	9 -	53 -
Statistics										
LSD P=.05					37.07	35.96	2.78	9.95	11.75	41.54
Standard Deviation					25.7	24.94	1.93	6.93	8.18	28.91
CV					37.98	99.41	312.08	247.37	159.73	141.28
Treatment Prob(F)					0.0024	0.0004	0.3526	0.4025	0.4997	0.2576

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).