



2025 Wisconsin Weed Science Research Report

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Cropping Systems Weed Science
UNIVERSITY OF WISCONSIN-MADISON



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A3646, Pest Management in Wisconsin Field Crops
Available at cropsandsoils.extension.wisc.edu

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We sincerely thank the following companies and organizations who have generously supported our research program in 2026 through financial and/or material donations (listed in alphabetical order):

Albaugh
BASF
Bayer CropScience
Belchim USA
Brandt
CHS Agronomy
Corteva Agriscience
Ecorobotix
Exacto
FMC
Helm
North Central IR-4
Rosen's
Stepan
Syngenta
The DeLong Company, Inc.
United Soybean Board
UPL
Valent
Winfield United
Wisconsin Corn Growers Association
Wisconsin Soybean Marketing Board

We would also like to give a special thanks to all the organizations and individuals who provided valuable technical assistance with many aspects of the research projects presented herein.

Michael Bertram – Arlington Ag Research Station Superintendent
Douglas Wiedenbeck – Lancaster Ag Research Station Superintendent
Arlington and Lancaster Ag Research Station personnel
University of Wisconsin-Madison faculty and staff
Dan and Mark O'Brien – O'Brien Hybrids
Josh Kamps – UW Extension Crops and Soils Outreach Specialist
Ashley Roscoe and Andrew Baker for their support at the Rock County Farm

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Project Goal: Evaluate multiple one- and two-pass corn herbicide programs without atrazine for weed control and crop safety.

Site Description:

Location: Arlington, WI	Crop: Corn
Field #: 453	Hybrid: G97B68-DV-EZ1
Soil type: Plano silt loam	Planting Date: 5/5
% OM: 3.8	Emergence Date: 5/15
pH: 6.5	Population: 34,000 seeds/acre
Fertilization: 161 lbs N/acre	Depth: 2 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 25 ft
Weed species: common ragweed (AMBEL), common lambsquarters (CHEAL), giant foxtail (SETFA), woolly cupgrass (ERBVI)	

Herbicide Application Information:

Date:	5/5	6/2	6/17
Treatment:	PRE (A)	EPOST (B)	POST (C)
Air Temp (°F):	67	71	75
2" Soil Temp (°F):	48	65	70
Soil moisture [surface]:	moist	dry	wet
RH %:	62	58	79
Cloud cover %	50	100	10
Wind speed (mph)/direction	7-11/SE	5-7/SW	4-7/W
Rainfall (in) 1 wk after APP:	0.00"	1.22"	2.20"
Rainfall (in) 2 wks after APP:	0.41"	2.17"	3.02"
GPA:	15	15	15
PSI:	43	43	40
Nozzle:	TTI 110015	TTI 110015	AIXR10015
Nozzle spacing (in):	20	20	20
Boom Height (in):	20	22	25

Crop and weed information at application:

	Date:	5/5	6/2	6/17
Corn	Height:	-	2-4"	6-8"
	Stage:	-	V2	V5
common ragweed	Height:	-	1-4" Avg=2"	-
	Density:	-	0-9/ft ²	sparse*
lambsquarters	Height:	-	0.5-1"	-
	Density:	-	0-2/ft ²	sparse*
annual grasses	Height:	-	1-4" Avg=1.5"	1-5" Avg=2"
	Density:	-	0-6/ft ²	1-2/ft ²

*PRE herbicides used in this trial effectively controlled most common ragweed and common lambsquarters.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	TriVolt SC	3.65 lb/gal	2, 15, 27	20 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
3	Harness MAX	3.85 lb/gal	15, 27	55 fl oz/a	EPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	B
	NIS			0.25% v/v	EPOST	B
	AMSOL			2.5% v/v	EPOST	B
4	Resicore REV	3.26 lb/gal	4, 15, 27	2.25 qt/a	EPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	B
	NIS			0.25% v/v	EPOST	B
	AMSOL			2.5% v/v	EPOST	B
5	Priority S Meso	3.59 lb/gal	15, 27	2 qt/a	PRE	A
	GlyStar 5 Extra	4 lbae/gal	9	36 fl oz/a	POST	C
	NIS			0.25% v/v	POST	C
	AMSOL			2.5% v/v	POST	C
6	Priority Meso	3.59 lb/gal	15, 27	2 qt/a	PRE	A
	GlyStar 5 Extra	4 lbae/gal	9	36 fl oz/a	POST	C
	NIS			0.25% v/v	POST	C
	AMSOL			2.5% v/v	POST	C
7	Acuron Flexi	3.26 lb/gal	15, 27	2 qt/a	PRE	A
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	AMSOL			2.5% v/v	POST	C
8	TriVolt SC	3.65 lb/gal	2, 15, 27	12 fl oz/a	PRE	A
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	Warrant	3 lb/gal	15	3 pt/a	POST	C
	COC			1% v/v	POST	C
	Class Act Ridion			1% v/v	POST	C
9	Harness	7 lb/gal	15	2 pt/a	PRE	A
	Laudis	3.5 lb/gal	27	3 fl oz/a	POST	C
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	MSO			1% v/v	POST	C
	Class Act Ridion			1% v/v	POST	C
10	Surtain	1.63 lb/gal	14, 15	14 fl oz/a	PRE	A
	Status	56% w/w	2, 4	5 oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMSOL			2.5% v/v	POST	C

Adjuvants: AMSOL = AMS (liquid), Class Act Ridion = non-AMS water conditioner + NIS, COC = CropOil, MSO = Upland MSO, NIS = Prefer 90

Trial Summary:

The trial was established at the Arlington Ag Research Station near Arlington, WI to evaluate multiple one- and two-pass corn herbicide programs from several chemical manufacturer portfolios for weed control and crop safety. Atrazine was not included in any treatment since this trial was conducted in an atrazine prohibition area at the Arlington Ag Research Station. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged. The trial was located in a field with a heavy population density of common ragweed and annual grasses (giant foxtail, woolly cupgrass) and a moderate population density common lambsquarters.

None of the PRE herbicide programs we evaluated caused visible corn injury symptoms 25 days after application (data not shown). Minor (<5%) leaf necrosis was observed 15 days after the EPOST application of Harness MAX (trt 3) (data not shown). None of the POST herbicide programs caused visible corn injury symptoms 13 days after application (data not shown).

All of the herbicide programs provided excellent end-of-season control of common ragweed and annual grasses; however, early season residual control did differ amongst the PRE herbicides we evaluated (Table 1). There were slightly more annual grass escapes at the end of the season in the 1-pass herbicide programs although average control was still $\geq 95\%$.

Corn grain yield did not differ amongst treatments (Table 1). Averaged across all treatments, yield of the 2-pass PRE *fb* POST programs = 210 bu acre⁻¹, 1-pass EPOST = 217 bu acre⁻¹, and 1-pass PRE only = 218 bu acre⁻¹. The untreated check yield = 108 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 1. Weed control ratings and corn yield for trial #25-ARL-CN01 at Arlington, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Common Ragweed (%)				Annual Grasses (%)				Yield ^b bu acre ⁻¹
		5/30	6/17	6/30	10/9	5/30	6/17	6/30	10/9	
1	Untreated Check	0	0	0	0	0	0	0	0	108 b
One-Pass – PRE (5/5)										
2	TriVolt (20 oz) + Princep 4L (1 qt)	99	98	98	98	99	99	98	95	218 a
One-Pass – EPOST (6/2)										
EPOST										
3	Harness MAX (55 oz) + Roundup PM3 (30 oz) + NIS (0.25%) + AMSOL (2.5%)	0	99	99	99	0	100	99	96	219 a
4	Resicore REV (2.25 qt) + Roundup PM3 (30 oz) + NIS (0.25%) + AMSOL (2.5%)	0	99	99	99	0	100	99	97	214 a
Two-Pass – PRE (5/5) fb POST (6/17)										
POST										
5	Priority S Meso (2 qt) fb GlyStar 5 Extra (36 oz) + NIS (0.25%) + AMSOL (2.5%)	93	84	98	99	93	90	100	99	214 a
6	Priority Meso (2 qt) fb GlyStar 5 Extra (36 oz) + NIS (0.25%) + AMSOL (2.5%)	95	86	97	100	89	85	99	99	214 a
7	Acuron Flexi (2 qt) fb Roundup PM3 (30 oz) + AMSOL (2.5%)	98	98	99	100	95	95	100	100	204 a
8	TriVolt (12 oz) fb DiFlexx (8 oz) + Roundup PM3 (30 oz) + Warrant (3 pt) + COC (1%) + Class Act Ridion (1%)	94	88	99	99	96	94	100	100	217 a
9	Harness (2 pt) fb Laudis (3 oz) + DiFlexx (8 oz) + Roundup PM3 (30 oz) + MSO (1%) + Class Act Ridion (1%)	93	71	100	100	98	98	100	99	206 a
10	Surtain (14 fl oz) fb Roundup PM3 (30 fl oz) + Status (5 oz) + Zidua SC (2.5 fl oz) + COC (1%) + AMSOL (2.5%)	88	71	100	100	91	88	100	100	203 a
LSD (α=0.10)		6	10	1	ns	5	6	ns	1	23
p value		0.055	<.001	0.016	0.765	<.001	<.001	0.106	<.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

Project Goal: Evaluate multiple one- and two-pass corn herbicide programs for giant ragweed control and crop safety.

Site Description:

Location: Janesville, WI	Crop: Corn
Field #: 4	Hybrid: DKC104-14 RIB
Soil type: Plano silt loam	Planting Date: 5/7
% OM: 3.8	Emergence Date: 5/15
pH: 6.4	Population: 34,000 seeds/acre
Fertilization: 180 lbs N/acre	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: giant ragweed (AMBTR)	

Herbicide Application Information:

Date:	5/7	5/23	5/29	6/5
Treatment:	PRE (A)	VEPOST (B)	EPOST (C)	POST (D)
Air Temp (°F):	68	51	59	75
2" Soil Temp (°F):	59	54	60	63
Soil moisture [surface]:	moist	wet	moist	wet
RH %:	52	49	93	62
Cloud cover %	70	0	0	0
Wind speed (mph)/direction	4-12/N	3-8/NNE	3-7/WNW	4-6/E
Rainfall (in) 1 wk after APP:	0.04"	0.15"	2.43"	0.07"
Rainfall (in) 2 wks after APP:	1.23"	2.57"	2.50"	0.32"
GPA:	15	15	15	15
PSI:	43	38	38	38
Nozzle:	TTI 110015	AIXR110015	AIXR110015	AIXR110015
Nozzle spacing (in):	20	20	20	20
Boom Height (in):	20	21	22	24

Crop and weed information at application:

	Date:	5/7	5/23	5/29	6/5
corn	Height:	-	1.5-2"	2-3"	6"
	Stage:	-	V1	V2	V3/V4
giant ragweed	Height:	-	0.5-1"	0.5-2"	0.5-5"
	Density:	-	25-84/m ²	12-72/m ²	31-158/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	TriVolt SC	3.65 lb/gal	2, 15, 27	20 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
3	Resicore REV	3.25 lb/gal	4, 15, 27	2.25 qt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
4	Harness MAX	3.85 lb/gal	15, 27	64 fl oz/a	EPOST	C
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	C
	NIS			0.25% v/v	EPOST	C
	AMSOL			2.5% v/v	EPOST	C
5	Priority S MA	3.6 lb/gal	5, 15, 27	3 qt/a	EPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	C
	NIS			0.25% v/v	EPOST	C
	AMSOL			2.5% v/v	EPOST	C
6	Priority MA	3.6 lb/gal	5, 15, 27	3 qt/a	EPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	C
	NIS			0.25% v/v	EPOST	C
	AMSOL			2.5% v/v	EPOST	C
7	Lexar EZ	3.7 lb/gal	5, 15, 27	3 qt/a	EPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	C
	NIS			0.25% v/v	EPOST	C
	AMSOL			2.5% v/v	EPOST	C
8	Storen	3.25 lb/gal	15, 27	1.75 qt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	PRE	A
	Halex GT	4.39 lb/gal	9, 15, 27	3.6 pt/a	POST	D
	AAtrex 4L	4 lb/gal	5	1 pt/a	POST	D
	Clarity	4 lbae/gal	4	4 fl oz/a	POST	D
	NIS			0.25% v/v	POST	D
	AMS (dry)			2 lb/a	POST	D
9	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	PRE	A
	Acuron GT	4.3 lb/gal	9, 15, 27	3.75 pt/a	POST	D
	AAtrex 4L	4 lb/gal	5	1 pt/a	POST	D
	NIS			0.25% v/v	POST	D
	AMS (dry)			2 lb/a	POST	D
10	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	PRE	A
	Acuron GT	4.3 lb/gal	9, 15, 27	3.75 pt/a	POST	D
	Moxy 2E	2 lbae/gal	5	1 pt/a	POST	D
	NIS			0.25% v/v	POST	D
	AMS (dry)			2 lb/a	POST	D

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
11	Acuron	3.44 lb/gal	5, 15, 27	1.5 qt/a	PRE	A
	Acuron	3.44 lb/gal	5, 15, 27	1.5 qt/a	POST	D
	Clarity	4 lbae/gal	4	4 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	POST	D
	AMS (dry)			2 lb/a	POST	D
12	Harness	7 lb/gal	15	2 pt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
	Laudis	3.5 lb/gal	27	3 fl oz/a	POST	D
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	MSO			1% v/v	POST	D
	Class Act Ridion			1% v/v	POST	D
13	TripleFlex II	4.25 lb/gal	2, 4, 15	1.5 pt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	COC			1% v/v	POST	D
	Class Act Ridion			1% v/v	POST	D
14	Harness MAX	3.85 lb/gal	15, 27	55 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
	Laudis	3.5 lb/gal	27	3 fl oz/a	POST	D
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	MSO			1% v/v	POST	D
	Class Act Ridion			1% v/v	POST	D
15	TriVolt SC	3.65 lb/gal	2, 15, 27	12 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	Warrant	3 lb/gal	15	3 pt/a	POST	D
	MSO			1% v/v	POST	D
	Class Act Ridion			1% v/v	POST	D
16	Resicore REV	3.26 lb/gal	4, 15, 27	2.25 qt/a	PRE	A
	AAtrex	4 lb/gal	5	2 pt/a	PRE	A
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D
17	Resicore REV	3.26 lb/gal	4, 15, 27	1.4 qt/a	PRE	A
	Kyro	3.07 lb/ga	4, 15, 27	45 fl oz/a	POST	D
	AAtrex	4 lb/gal	5	1 pt/a	POST	D
	Roundup PowerMAX3	4.8 lbae/fal	9	30 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
18	Surestart II	4.25 lb/gal	2, 4, 15	2 pt/a	PRE	A
	Kyro	3.07 lb/ga	4, 15, 27	45 fl oz/a	POST	D
	AAtrex	4 lb/gal	5	1 pt/a	POST	D
	Roundup PowerMAX3	4.8 lbae/fal	9	30 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D
19	Resicore REV	3.26 lb/gal	4, 15, 27	1.4 qt/a	PRE	A
	Resicore REV	3.26 lb/gal	4, 15, 27	1.4 qt/a	POST	D
	AAtrex	4 lb/gal	5	1 pt/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D
20	Verdict	5.57 lb/gal	14, 15	12 fl oz/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A
	AAtrex	4 lb/gal	5	1 pt/a	PRE	A
	Armezon PRO	5.35 lb/gal	15, 27	16 fl oz/a	POST	D
	AAtrex	4 lb/gal	5	1 pt/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	15 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D
21	Surtain	1.63 lb/gal	14, 15	14 fl oz/a	VEPOST	B
	Callisto	4 lb/gal	27	3 fl oz/a	VEPOST	B
	AAtrex	4 lb/gal	5	1 pt/a	VEPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	VEPOST	B
	Armezon PRO	5.35 lb/gal	15, 27	16 fl oz/a	POST	D
	AAtrex	4 lb/gal	5	1 pt/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	15 fl oz/a	POST	D
	COC			1% v/v	POST	D
	AMSOL			2.5% v/v	POST	D
22	Untreated Check					

Adjuvants: AMSOL = AMS (liquid), AMS (dry) = spray grade ammonium sulfate, Class Act Ridion = non-AMS water conditioner + NIS; COC = CropOil; MSO = Upland MSO, NIS = Prefer 90

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate the weed control and crop safety of various corn herbicide programs containing atrazine. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged. Giant ragweed was the predominant species in the trial area. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid- to late-April and continues well into June.

None of the PRE herbicides caused visible corn injury symptoms 20 days after application (data not shown). The very early POST application of Surtain (trt 21) caused minor leaf spotting (3-5%) 4 days after application (data not shown). Minor (<5%) leaf necrosis was observed 6 days after the EPOST applications and 14 days after the POST applications (data not shown).

The average control of giant ragweed was impacted by herbicide program at all rating timings (Table 2). Several of the PRE herbicides evaluated provided acceptable residual control up to 28 days after application. The first significant rainfall event did not occur until 5/20; 0.92 in, 13 days after the PRE application. Several giant ragweed seedlings had emerged prior to an activating rainfall; however, most herbicides had some level of “reach back” and suppressed or eliminated seedlings that had already emerged. All of the 1-pass (EPOST) and 2-pass (PRE followed by POST) programs provided good (>90%) giant ragweed control at corn harvest. Giant ragweed control was poor for all the 1-pass (PRE) programs at corn harvest. Averaged across all treatments, giant ragweed control at corn harvest of the 2-pass PRE *fb* POST programs = 92%, 1-pass EPOST = 95%, and 1-pass PRE only = 53%.

Corn yield was significantly impacted by herbicide program (Table 2). Averaged across all treatments, yield of the 2-pass PRE *fb* POST programs = 241 bu/acre, 1-pass EPOST = 242 bu/acre, and 1-pass PRE only = 139 bu/acre. The untreated check yield = 19 bu/acre.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 2. Giant ragweed control ratings and corn grain yield for trial #25-ROK-CN02 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Giant Ragweed (%)				Yield ^b bu acre ⁻¹
		5/27	6/4	6/19	10/16	
1, 22	Untreated Check	0	0	0	0	20 d
One-Pass – PRE (5/7)						
2	TriVolt (20 oz) + AAtrex (2 pt)	55	81	75	49	119 c
3	Resicore REV (2.25 qt) + AAtrex (2 pt)	78	88	81	56	160 b
One-Pass – EPOST (5/29)		EPOST				
4	Harness MAX (64 fl oz) + AAtrex (2 pt) + Roundup PM3 (30 oz) + NIS (0.25%) + AMS ^c	0	97	98	93	249 a
5	Priority S MA (3 qt) + Roundup PM3 (30 oz) + NIS (0.25% v/v) + AMS ^c	0	97	98	94	231 a
6	Priority MA (3 qt) + Roundup PM3 (30 oz) + NIS (0.25% v/v) + AMS ^c	0	96	97	94	245 a
7	Lexar EZ (3 qt) + Roundup PM3 (30 oz) + NIS (0.25% v/v) + AMS ^c	0	97	99	98	245 a
Two-Pass – PRE (5/7) fb POST (6/5)		POST				
8	Storen (1.75 qt) + AAtrex (1 pt) fb Halex GT (3.6 pt) + AAtrex (1 pt) + Clarity (4 oz) + NIS (0.25% v/v) + AMS (2 lb)	63	82	99	99	247 a
9	Callisto (3 oz) + AAtrex (1 pt) fb Acuron GT (3.75 pt) + AAtrex (1 pt) + NIS (0.25% v/v) + AMS (2 lb)	55	58	97	98	240 a
10	Callisto (3 oz) + AAtrex (1 pt) fb Acuron GT (3.75 pt) + Moxy 2E (1 pt) + NIS (0.25% v/v) + AMS (2 lb)	46	35	96	94	244 a
11	Acuron (1.5 qt) fb Acuron (1.5 qt) + Clarity (4 oz) + Roundup PM3 (28 oz) + AMS (2 lb)	60	73	98	99	250 a
12	Harness (2 pt) + AAtrex (2 pt) fb Laudis (3 oz) + DiFlexx (8 oz) + RU PM3 (30 oz) + MSO (1%) + Class Act Ridion (1%)	81	74	95	87	231 a
13	TripleFlex II (1.5 pt) + AAtrex (2 pt) fb DiFlexx (8 oz) + Roundup PM3 (30 oz) + COC (1% v/v) + Class Act Ridion (1% v/v)	64	79	95	83	231 a
14	Harness MAX (55 oz) + AAtrex (2 pt) fb Laudis (3 oz) + DiFlexx (8 oz) + RU PM3 (30 oz) + MSO (1%) + Class Act Ridion (1%)	69	88	94	89	236 a
15	TriVolt (12 oz) + AAtrex (2 pt) fb DiFlexx (8 oz) + RU PM3 (30 oz) + Warrant (3 pt) + COC (1%) + Class Act Ridion (1%)	46	64	97	94	239 a
16	Resicore REV (2.25 qt) + AAtrex (2 pt) fb Roundup PowerMAX3 (30 oz) + COC (1% v/v) + AMS ^c	83	90	96	88	244 a
17	Resicore REV (1.4 qt) fb Kyro (45 oz) + AAtrex (1 pt) + Roundup PM3 (30 oz) + COC (1% v/v) + AMS ^c	56	70	94	90	243 a
18	Surestart II (2 pt) fb Kyro (45 oz) + AAtrex (1 pt) + Roundup PM3 (30 oz) + COC (1% v/v) + AMS ^c	66	82	95	90	243 a
19	Resicore REV (1.4 qt) fb Resicore REV (1.4 qt) + AAtrex (1 pt) + Roundup PM3 (30 oz) + COC (1% v/v) + AMS ^c	65	78	96	94	240 a
20	Verdict (12 oz) + Callisto (3 oz) + AAtrex (1 pt) fb Armezon PRO (16 oz) + AAtrex (1 pt) + Roundup PM3 (15 oz) + COC (1% v/v) + AMS ^c	74	76	98	94	241 a
Two-Pass – VEPOST (5/23) fb POST (6/5)		POST				
21	Surtain (14 oz) + Callisto (3 oz) + AAtrex (1 pt) + Roundup PM3 (30 oz) fb Armezon PRO (16 oz) + AAtrex (1 pt) + Roundup PM3 (15 oz) + COC (1% v/v) + AMS ^c	97	93	94	83	235 a
		LSD ($\alpha=0.10$)				27
		p value				<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cLiquid AMS (AMSOL) applied at 2.5% v/v

Project Goal: Evaluate weed control and crop safety of PRE applications of *Surtain.

*Surtain is a new corn herbicide pre-mix, developed by BASF, containing encapsulated saflufenacil (Sharpen) and pyroxasulfone (Zidua).

Site Description:

Location:	Janesville, WI	Crop:	Corn
Field #:	4	Hybrid:	DKC104-14 RIB
Soil type:	Plano silt loam	Planting Date:	5/7
% OM:	3.8	Emergence Date:	5/15
pH:	6.4	Population:	34,000 seeds/acre
Fertilization:	180 lbs N/acre	Depth:	2.25 in
Previous crop:	Soybean	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 30 ft
Weed species:	giant ragweed (AMBTR)		

Herbicide Application Information:

Date:	5/7
Treatment:	PRE (A)
Air Temp (°F):	68
2" Soil Temp (°F):	59
Soil moisture [surface]:	moist
RH %:	52
Cloud cover %	70
Wind speed (mph)/direction	4-12/N
Rainfall (in) 1 wk after APP:	0.04"*
Rainfall (in) 2 wks after APP:	1.23"
GPA:	15
PSI:	43
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

*Trial was "reset" on 5/19 with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings that had emerged prior to an activating rainfall. The first significant rainfall event did not occur until 5/20; 0.92 in.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Acuron	3.44 lb/gal	5, 15, 27	1.88 qt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	PRE	A
3	Resicore REV	3.26 lb/gal	4, 15, 27	1.88 qt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
4	Trivolt SC	3.65 lb/gal	2, 15, 27	15 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
5	Storen	3.25 lb/gal	15, 27	1.25 qt/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
6	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	PRE	A
7	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
8	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A
9	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	PRE	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate weed control and crop safety of PRE applications of **Surtain**. **Surtain** is a new corn herbicide pre-mix, developed by BASF, containing encapsulated saflufenacil (Sharpen) and pyroxasulfone (Zidua). The encapsulation of saflufenacil enables the safe application to emerged corn, thus increasing the application flexibility relative to Verdict. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid- to late-April and continues well into June. Due to low rainfall after the PRE herbicide application, the trial was “reset” on 5/19 with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings that had emerged prior to an activating rainfall. The first significant rainfall event did not occur until 5/20; 0.92 in.

There was no visible injury from any of the PRE herbicide programs evaluated (data not shown).

Surtain applied alone provided some suppression of giant ragweed up to 34 days (Table 3). Tank mixing Surtain with atrazine and mesotrione (Callisto) improved and lengthened the residual control of giant ragweed. It is not recommended to apply Surtain alone, particularly if targeting residual control of giant ragweed.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 3. Giant ragweed control ratings for trial #25-ROK-CN04 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Giant Ragweed (%)				
		5/27	6/4	6/10	6/19	7/2
1	Untreated Check	0	0	0	0	0
One-Pass – PRE (5/7); Trial Reset* – 5/19						
2	Acuron (1.88 qt) + AAtrex (1 pt)	95	93	94	91	85
3	Resicore (1.88 qt) + AAtrex (2 pt)	98	94	93	85	75
4	Trivolt SC (15 fl oz) + AAtrex (2 pt)	98	91	89	84	76
5	Storen (1.25 qt) + AAtrex (2 pt)	97	91	93	89	82
6	Surtain (14 fl oz)	98	86	81	59	45
7	Surtain (14 fl oz) + AAtrex (2 pt)	98	70	61	46	33
8	Surtain (14 fl oz) + Callisto (3 fl oz)	95	78	80	63	48
9	Surtain (14 fl oz) + AAtrex (2 pt) + Callisto (3 fl oz)	97	88	87	83	68
LSD ($\alpha=0.10$)		1	9	12	11	12
p value		<.001	0.002	0.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

*Trial reset with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings that had emerged prior to an activating rainfall. The first significant rainfall event did not occur until 5/20; 0.92 in.

Project Goal: Evaluate weed control and crop safety of EPOST applications of *Surtain.

*Surtain is a new corn herbicide pre-mix, developed by BASF, containing encapsulated saflufenacil (Sharpen) and pyroxasulfone (Zidua).

Site Description:

Location: Janesville, WI	Crop: Corn
Field #: 4	Hybrid: DKC104-14 RIB
Soil type: Plano silt loam	Planting Date: 5/7
% OM: 3.8	Emergence Date: 5/15
pH: 6.4	Population: 34,000 seeds/acre
Fertilization: 180 lbs N/acre	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: giant ragweed (AMBTR)	

Herbicide Application Information:

Date:	5/23
Treatment:	EPOST (A)
Air Temp (°F):	51
2" Soil Temp (°F):	54
Soil moisture [surface]:	wet
RH %:	49
Cloud cover %	0
Wind speed (mph)/direction	3-8/NNE
Rainfall (in) 1 wk after APP:	0.15"
Rainfall (in) 2 wks after APP:	2.57"
GPA:	15
PSI:	38
Nozzle:	AIXR110015
Nozzle spacing (in):	20
Boom Height (in):	20

Crop and weed information at application:

	Date:	5/23
Corn	Height:	2"
	Stage:	V1
giant ragweed	Height:	1"
	Density:	83-152/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	EPOST	A
	Clarity	4 lbae/gal	4	8 fl oz/a	EPOST	A
	Roundup PowerMAX 3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	NIS			0.25% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
3	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Clarity	4 lbae/gal	4	8 fl oz/a	EPOST	A
	Roundup PowerMAX 3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	NIS			0.25% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
4	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Callisto	4 lb/gal	27	3 fl oz/a	EPOST	A
	Roundup PowerMAX 3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	NIS			0.25% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
5	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Armezon	2.8 lb/gal	27	0.75 fl oz/a	EPOST	A
	Roundup PowerMAX 3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	COC			1% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
6	Surtain	1.62 lb/gal	14, 15	14 fl oz/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Laudis	3.5 lb/gal	27	3 fl oz/a	EPOST	A
	Roundup PowerMAX 3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	COC			1% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
7	Armezon PRO	5.35 lb/gal	15, 27	20 fl oz/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	COC			1% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
8	Acuron GT	4.3 lb/gal	9, 15, 27	3.75 pt/a	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	NIS			0.25% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A
9	Resicore REV	3.26 lb/gal	4, 15, 27	1.88 qt	EPOST	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	EPOST	A
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	A
	COC			1% v/v	EPOST	A
	AMS			8.5 lb/100 gal	EPOST	A

Adjuncts: AMS = Dry spray grade ammonium sulfate, COC = CropOil, NIS = Induce

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate weed control and crop safety of EPOST applications of **Surtain**. **Surtain** is a new corn herbicide pre-mix, developed by BASF, containing encapsulated saflufenacil (Sharpen) and pyroxasulfone (Zidua). The encapsulation of saflufenacil enables the safe application to emerged corn, thus increasing the application flexibility relative to Verdict. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged. Giant ragweed was the predominant species in the trial area. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid- to late-April and continues well into June.

All POST herbicide programs containing Surtain caused corn leaf necrosis (burn) and speckling 4 and 13 days after application (Table 4). The addition of topramezone (Armezon PRO, Armezon), tembotrione (Laudis) and atrazine increased the severity of leaf burn; however, injury did not persist as corn continued to grow.

None of the herbicide programs containing Surtain adequately controlled giant ragweed later into the growing season (Table 4). Of note, Surtain does not have any POST or burndown activity. POST applications of Surtain will need to be paired with effective tank-mix partners, like glyphosate, dicamba, atrazine, and/or a group 27 herbicide to control emerged weeds. Resicore REV and Acuron GT tank mixed with atrazine both provided >85% giant ragweed control up to five weeks after application.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 4. Giant ragweed control ratings and corn injury for trial #25-ROK-CN05 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Corn Injury ^b (%)		Giant Ragweed (%)			
		4 DAT	13 DAT	13 DAT	27 DAT	35 DAT	53 DAT
1	Untreated Check	0	0	0	0	0	0
One-Pass – EPOST (5/23)							
2	Surtain (14 fl oz) + Clarity (8 fl oz) + Roundup PM3 (30 fl oz) + NIS (0.25%) + AMS ^c	3.5	2.5	76	61	50	41
3	Surtain (14 fl oz) + AAtrex (2 pt) + Clarity (8 fl oz) + RU PM3 (30 fl oz) + NIS (0.25%) + AMS ^c	6.8	3.8	76	76	74	63
4	Surtain (14 fl oz) + AAtrex (2 pt) + Callisto (3 fl oz) + RU PM3 (30 fl oz) + NIS (0.25%) + AMS ^c	4.3	3.5	73	86	77	70
5	Surtain (14 oz) + AAtrex (2 pt) + Armezon (0.75 oz) + RU PM3 (30 oz) + COC (1%) + AMS ^c	8.5	8.5	73	61	43	30
6	Surtain (14 oz) + AAtrex (2 pt) + Laudis (3 oz) + RU PM3 (30 oz) + COC (1%) + AMS ^c	6.3	5.5	75	75	60	48
7	Armezon PRO (20 fl oz) + AAtrex (2 pt) + Roundup PM3 (30 fl oz) + COC (1%) + AMS ^c	8.3	6.0	73	61	43	26
8	Acuron GT (3.75 pt) + AAtrex (2 pt) + NIS (0.25%) + AMS ^c	4.8	3.8	73	94	90	87
9	Resicore REV (1.88 qt) + AAtrex (2 pt) + Roundup PM3 (30 fl oz) + NIS (0.25%) + AMS ^c	5.8	4.0	76	91	87	83
LSD ($\alpha=0.10$)		0.8	1.7	ns	4	7	4
p value		<.001	<.001	0.143	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bCorn injury = % leaf necrosis (burn)

^cDry AMS applied at 8.5 lb/100 gal

Project Goal: Compare weed control and crop safety of PRE applications of Maverick with and without Princep to industry standards.

Site Description:

Location:	Janesville, WI	Crop:	Corn
Field #:	3	Hybrid:	DKC104-14 RIB
Soil type:	Plano silt loam	Planting Date:	5/7
% OM:	3.7	Emergence Date:	5/15
pH:	6.5	Population:	34,000 seeds/acre
Fertilization:	180 lbs N/acre	Depth:	2.25 in
Previous crop:	Soybean	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 30 ft
Weed species:	giant ragweed (AMBTR)		

Herbicide Application Information:

Date:	5/7
Treatment:	PRE (A)
Air Temp (°F):	68
2" Soil Temp (°F):	59
Soil moisture [surface]:	moist
RH %:	52
Cloud cover %	70
Wind speed (mph)/direction	4-12/N
Rainfall (in) 1 wk after APP:	0.04"*
Rainfall (in) 2 wks after APP:	1.23"
GPA:	15
PSI:	43
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

*Trial was "reset" on 5/19 with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings that had emerged prior to an activating rainfall. The first significant rainfall event did not occur until 5/20; 0.92 in.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Resicore REV	3.26 lb/gal	4, 15, 27	2.75 qt/a	PRE	A
3	Maverick	2.04 lb/gal	4, 15, 27	18 fl oz/a	PRE	A
4	Maverick	2.04 lb/gal	4, 15, 27	18 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1.5 pt/a	PRE	A
5	Maverick	2.04 lb/gal	4, 15, 27	24 fl oz/a	PRE	A
6	Maverick	2.04 lb/gal	4, 15, 27	24 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1.5 pt/a	PRE	A
7	Maverick	2.04 lb/gal	4, 15, 27	32 fl oz/a	PRE	A
8	Maverick	2.04 lb/gal	4, 15, 27	32 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1.5 pt/a	PRE	A
9	TriVolt SC	3.65 lb/gal	2, 15, 27	20 fl oz/a	PRE	A
10	Storen	3.23 lb/gal	15, 27	2.4 qt/a	PRE	A

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to compare weed control and crop safety of PRE applications of Maverick with and without Princep to industry standards. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

There was no significant injury from any of the PRE herbicide programs that we tested.

Giant ragweed was the predominant species in the trial area. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid-to late-April and continues well into June. The first significant rainfall event did not occur until 5/20 (0.92") 13 days after the PRE application. In this time several giant ragweed seedlings had emerged prior to herbicide activation. Due to this, the trial was "reset" on 5/19 with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings.

All PRE herbicides provided good (>80%) residual control of giant ragweed up to 34 days after treatment (DAT) (Table 5). The addition of Princep 4L (simazine) did not significantly improve giant ragweed control at any of the Maverick rates we tested. However, higher rates of Maverick did improve control. At 43 DAT, giant ragweed control at 3 different rates of Maverick: 18 fl oz = 62%, 24 fl oz = 71%, and 32 fl oz = 77%. Maverick at the 32 fl oz rate performed similarly to the industry standards (20 fl oz TriVolt, 2.75 qt Resicore REV, 2.4 qt Storen).

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 5. Giant ragweed control ratings for trial #25-ROK-CN07 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Giant Ragweed (%)			
		5/27	6/4	6/10	6/19
1	Untreated Check	0	0	0	0
One-Pass – PRE (5/7); Trial Reset* – 5/19					
2	Resicore REV (2.75 qt)	96	94	89	74
3	Maverick (18 fl oz)	94	83	80	60
4	Maverick (18 fl oz) + Princep 4L (1.5 pt)	93	85	82	64
5	Maverick (24 fl oz)	94	88	85	70
6	Maverick (24 fl oz) + Princep 4L (1.5 pt)	95	89	85	73
7	Maverick (32 fl oz)	96	92	91	76
8	Maverick (32 fl oz) + Princep 4L (1.5 pt)	95	92	90	78
9	TriVolt SC (20 fl oz)	94	89	84	78
10	Storen (2.4 qt)	94	87	86	81
LSD (α=0.10)		2	3	4	5
p value		0.088	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

*Trial reset with an application of 30 fl oz/a Roundup PowerMAX3 + AMS to eliminate all giant ragweed seedlings that had emerged prior to an activating rainfall. The first significant rainfall event did not occur until 5/20; 0.92 in.

Project Goal: Evaluate burndown and residual control of *Rapidicil plus Valent corn herbicides.

*Rapidicil is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO-inhibitors) site of action. Rapidicil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidicil is still pending EPA registration at the time of publication of this report.

Site Description:

Location: Janesville, WI	Crop: Corn
Field #: 8	Hybrid: P9998Q
Soil type: Plano silt loam	Planting Date: 5/14
% OM: 3.5	Emergence Date: 5/26
pH: 6.3	Population: 34,000 seeds/acre
Fertilization: 180 lbs N/acre	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: giant ragweed (AMBTR), waterhemp (AMATA)	

Herbicide Application Information:

Date:	5/14	6/16
Treatment:	Preplant (A)	POST (B)
Air Temp (°F):	88	86
2" Soil Temp (°F):	78	75
Soil moisture [surface]:	dry	dry
RH %:	52	67
Cloud cover %	25	5
Wind speed (mph)/direction	3-9/E	2-5/E
Rainfall (in) 1 wk after APP:	1.19"	0.55"
Rainfall (in) 2 wks after APP:	1.34"	2.64"
GPA:	15	15
PSI:	40	40
Nozzle:	TT 110015	TTI 110015
Nozzle spacing (in):	20	20
Boom Height (in):	25	30

Crop and weed information at application:

	Date:	5/14	6/16
Corn	Height:	-	-
	Stage:	-	V4/V5
giant ragweed	Height:	1-5"	1-17"
		Avg=3.5"	Avg=4"
	Density:	46-80/m ²	2-20/m ²

*Waterhemp had not yet emerged at the time of the preplant burndown application (5/14)

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2**	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	Preplant	A
	Maverick	2.04 lb/gal	4, 15, 27	18 fl oz/a	Preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A
3**	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	Preplant	A
	Maverick	2.04 lb/gal	4, 15, 27	18 fl oz/a	Preplant	A
	AAtrex 4L	4 lb/gal	5	2 pt/a	Preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A
4**	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	Preplant	A
	Bicep Lite II Magnum	6 lb/gal	5, 15	1.9 qt/a	Preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A
5**	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	Preplant	A
	Perpetuo	2.3 lb/gal	14, 15	8 fl oz/a	Preplant	A
	AAtrex	4 lb/gal	5	2 pt/a	Preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A
6**	Storen	3.23 lb/gal	15, 27	1.8 qt/a	Preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A
7	Treated Check					
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	Preplant	A
	COC			1% v/v	Preplant	A
	AMSOL			3 qt/a	Preplant	A

Adjuvants: AMSOL = AMS (liquid), COC = CropOil

***Rapidicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidicil is still pending EPA registration at the time of publication of this report.

**POST (B) application of 32 fl oz Roundup PowerMAX3 + 5 oz Status + NIS + AMS made on 6/16 to treatments 2, 3, 4, 5, and 6.

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate burndown and residual control of **Rapidil** plus Valent corn herbicides. **Rapidil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidil is still pending EPA registration at the time of publication of this report. The trial area was not tilled prior to planting corn.

There was no significant corn injury from any of the herbicide programs that we tested.

Giant ragweed and waterhemp were the predominant species in the trial area. Waterhemp seedlings had not yet started to emerge at the time of the preplant burndown application.

Rapidil provided fast, effective burndown control of emerged giant ragweed. Control five days after treatment was >95% for all herbicide programs with Rapidil compared to only 28% control from treatments without. (Table 6). Herbicide programs containing mesotrione (Maverick, Storen) provided greater residual weed control of both giant ragweed and waterhemp than those with only atrazine and a group 15 herbicide (Table 6). Since Rapidil has very little soil activity it will be necessary to tank mix with herbicides that provide effective residual control of the target weed species.

Corn grain yield did not differ amongst PRE followed by POST herbicide programs (Table 6). Averaged across all treatments, yield of the 2-pass PRE *fb* POST programs = 213 bu acre⁻¹, treated check=31 bu acre⁻¹ (glyphosate only at planting), and the untreated check = 4 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 6. Weed control ratings and corn yield for trial #25-ROK-CN08 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Giant Ragweed (%)					Waterhemp (%)			Yield ^b bu acre ⁻¹
		5/19	5/27	6/4	6/16	10/17	6/16	6/24	10/17	
1	Untreated Check	0	0	0	0	0	0	0	0	4 c
7	Treated Check Roundup PowerMAX3 (32 oz) + COC (1%) + AMS (3 qt)	28	70	74	0	13	0	0	35	31 b
Two-Pass – Preplant (5/14) fb POST (6/16)		POST					POST			
2	Rapidil (5 oz) + Maverick (18 oz) + Roundup PM3 (32 oz) + COC (1%) + AMS (3 qt) fb Roundup PowerMAX3 (32 oz) + Status (5 oz) + NIS (0.25%) + AMS (3 qt)	95	96	93	86	90	87	92	85	206 a
3	Rapidil (5 oz) + Maverick (18 oz) + AAtrex (2 pt) + RU PM3 (32 oz) + COC (1%) + AMS (3 qt) fb Roundup PowerMAX3 (32 oz) + Status (5 oz) + NIS (0.25%) + AMS (3 qt)	97	96	95	89	91	95	96	79	220 a
4	Rapidil (5 oz) + Bicep Lite II Mag (1.9 qt) + Roundup PM3 (32 oz) + COC (1%) + AMS (3 qt) fb Roundup PowerMAX3 (32 oz) + Status (5 oz) + NIS (0.25%) + AMS (3 qt)	96	94	84	44	79	74	68	63	202 a
5	Rapidil (5 oz) + Perpetuo (8 oz) + AAtrex (2 pt) + RU PM3 (32 oz) + COC (1%) + AMS (3 qt) fb Roundup PowerMAX3 (32 oz) + Status (5 oz) + NIS (0.25%) + AMS (3 qt)	97	95	84	70	84	85	81	71	212 a
6	Storen (1.8 qt) + Roundup PM3 (32 oz) + COC (1%) + AMS (3 qt) fb Roundup PowerMAX3 (32 oz) + Status (5 oz) + NIS (0.25%) + AMS (3 qt)	28	75	90	91	98	86	94	91	227 a
LSD ($\alpha=0.10$)		4	2	5	13	8	10	7	14	18
p value		<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

Rapidil is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidil is still pending EPA registration at the time of publication.

Project Goal: Evaluate cereal rye termination with **Rapidicil** compared to the industry standard recommendations.

***Rapidicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO-inhibitor) site of action. Rapidicil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidicil is still pending EPA registration at the time of publication of this report.

Site Description:

Location: Janesville, WI	Crop: Corn
Field #: 00	Hybrid: DKC104-14 RIB
Soil type: Plano silt loam	Planting Date: 5/7
% OM: 3.7	Emergence Date: 5/16
pH: 6	Population: 34,000 seeds/acre
Fertilization: 50 lb N + 18 lb S – preplant 132 lb N + 17 lb S – side dress	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: n/a	

Herbicide Application Information:

Date:	5/7
Treatment:	At Plant (A)
Air Temp (°F):	72
2" Soil Temp (°F):	60
Soil moisture [surface]:	moist
RH %:	47
Cloud cover %	40
Wind speed (mph)/direction	3-7/N
Rainfall (in) 1 wk after APP:	0.04"
Rainfall (in) 2 wks after APP:	1.23"
GPA:	15
PSI:	43
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	34

Crop and weed information at application:

	Date:	5/7
	Height:	9-17" Avg=14"
cereal rye	Stage:	Zadoks 31
	Dry Biomass:	5,400 lb/a

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Standard					
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A
2	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	at plant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A
3	Rapidicil*	0.46 lb/gal	14	5 fl oz/a	at plant	A
	Roundup PowerMAX	4.8 lbae/gal	9	30 fl oz/a	at plant	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A
4	Gramoxone SL2.0	2 lb/gal	22	3 pt/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A
5	Gramoxone SL2.0	2 lb/gal	22	3 pt/a	at plant	A
	AAtrex 4L	5 lb/gal	5	1 pt/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A
6	Roundup PowerMAX	4.8 lbae/gal	9	30 fl oz/a	at plant	A
	AAtrex 4L	4 lb/gal	5	1 pt/a	at plant	A
	COC			1% v/v	at plant	A
	AMSOL			3 qt/a	at plant	A

Adjuvants: AMSOL = AMS (liquid), COC = Agridex

***Rapidicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidicil is still pending EPA registration at the time of publication of this report.

**POST (B) application of 30 fl oz Roundup PowerMAX3 + 32 fl oz Liberty + 1.5 pt Dual II Magnum + AMS made on 6/10 to entire trial to keep weed free.

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate cereal rye termination with **Rapidilicil** compared to the industry standard recommendations. **Rapidilicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidilicil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidilicil is still pending EPA registration at the time of publication of this report. The trial area was not tilled prior to planting corn.

Rapidilicil tank mixed with glyphosate provided fast, effective burndown control of cereal rye compared to glyphosate or paraquate based programs. Cereal rye control seven days after treatment was $\geq 90\%$ for herbicide programs with Rapidilicil compared to $< 80\%$ control from other industry standard treatments (Table 7). The addition of Rapidilicil also helped overcome the antagonism often observed when tank mixing clay-based herbicides, like atrazine, with glyphosate. At 16 DAT, adding Rapidilicil to a glyphosate + atrazine tank mix improved cereal rye control by 29% (Table 7). All programs with glyphosate did eventually achieve 100% cereal rye control by 28 DAT.

Corn grain yield was not impacted despite the differing levels of cereal rye control earlier in the growing season (Table 7). Although some treatments did not provide 100% control within the first two weeks after planting, cereal rye growth was greatly suppressed or completely stopped.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 7. Cereal rye burndown control ratings and corn yield for trial #25-ROK-CN09 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Cereal Rye ^b (%)			Yield bu acre ⁻¹
		7 DAT	16 DAT	28 DAT	
Two-Pass – At Plant (5/17) fb POST (6/10)^c					
1	Roundup PowerMAX3 (30 oz) + COC (1%) + AMS (3 qt)	66 d	99 a	100 a	238
2	Rapidicil (5 oz) + Roundup PowerMAX3 (30 oz) + COC (1%) + AMS (3 qt)	95 a	100 a	100 a	228
3	Rapidicil (5 oz) + Roundup PM3 (30 oz) + AAtrex (1 pt) + COC (1%) + AMS (3 qt)	90 b	99 a	100 a	235
4	Gramoxone 2.0SL (3 pt) + COC (1%) + AMS (3 qt)	79 c	64 c	80 c	231
5	Gramoxone 2.0SL (3 pt) + AAtrex (1 pt) + COC (1%) + AMS (3 qt)	79 c	65 c	87 b	231
6	Roundup PowerMAX3 (30 oz) + AAtrex (1 pt) + COC (1%) + AMS (3 qt)	30 e	70 c	100 a	242
LSD ($\alpha=0.10$)		2	2	1	ns
p value		<.001	<.001	<.001	0.264

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control values with the same letter are not significantly different.

^cPOST application made to all treatments: Roundup PowerMAX3 (30 oz) + Liberty (32 oz) + Dual II Magnum (1.5 pt) + AMS

Rapidicil is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidicil is still pending EPA registration at the time of publication.

Project Goal: Compare weed control and crop safety of POST applications of **Flexion*** to other dicamba based herbicides.

***Flexion**, a dicamba based herbicide similar to DiFlexx, is not registered for use in field corn at the time of publication of this report.

Site Description:

Location:	Janesville, WI	Crop:	Corn
Field #:	3	Hybrid:	DKC104-14 RIB
Soil type:	Plano silt loam	Planting Date:	5/7
% OM:	3.7	Emergence Date:	5/15
pH:	6.5	Population:	34,000 seeds/acre
Fertilization:	180 lbs N/acre	Depth:	2.25 in
Previous crop:	Soybean	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 30 ft
Weed species:	giant ragweed (AMBTR)		

Herbicide Application Information:

Date:	6/10
Treatment:	POST (A)
Air Temp (°F):	74
2" Soil Temp (°F):	75
Soil moisture [surface]:	dry
RH %:	56
Cloud cover %:	50
Wind speed (mph)/direction:	2-9/E
Rainfall (in) 1 wk after APP:	0.00"
Rainfall (in) 2 wks after APP:	0.75"
GPA:	15
PSI:	40
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	25

Crop and weed information at application:

	Date:	6/10
Corn	Height:	6-8"
	Stage:	V5
giant ragweed	Height:	1-5"
		Avg=3"
	Density:	84-172/m ²

*Applied 30 fl oz/a Roundup PowerMAX3 + AMS on 5/19/25 to eliminate all giant ragweed seedlings that had emerged since planting. This was done to give the corn a chance to grow to a more advanced growth stage prior to the treatment applications without heavy competition from giant ragweed.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Flexion NIS	4 lbae/gal	4	16 fl oz/a 0.25% v/v	POST POST	A A
3	DiFlexx NIS	4 lbae/gal	4	16 fl oz/a 0.25% v/v	POST POST	A A
4	Status NIS	56% w/w	4, 19	5 oz/a 0.25% v/v	POST POST	A A

Adjuvants: NIS = Prefer 90

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to compare weed control and crop safety of POST applications of **Flexion** to other dicamba based herbicides. **Flexion**, a dicamba based herbicide similar to DiFlexx, is not registered for use in field corn at the time of publication of this report. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

There was slight corn leaning observed in all treatments 9 days after the application of dicamba (Table 8). Corn injury was greater in Flexion and DiFlexx treatments than the Status treatment. Corn grew out of any observable injury by 22 DAT.

Giant ragweed was the predominant species in the trial area. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid-to late-April and continues well into June. Flexion and DiFlexx provided similar control of giant ragweed at all ratings (Table 8). Furthermore, both Flexion and DiFlexx had greater control than Status.

Corn grain yield did not differ amongst herbicide programs (Table 8). Averaged across all treatments, yield of the POST herbicide programs = 227 bu acre⁻¹, while the untreated check = 36 bu acre⁻¹.

Table 8. Giant ragweed control ratings and corn yield for trial #25-ROK-CN10 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Corn Injury (%)		Giant Ragweed (%)			Yield ^b bu acre ⁻¹
		9 DAT	22 DAT	14 DAT	22 DAT	10/16	
1	Untreated Check	0	0	0	0	0	36 b
One-Pass – POST (6/10); Trial Reset* – 5/19							
2	Flexion** (16 fl oz) + NIS (0.25% v/v)	5.0	0	95	96	100	231 a
3	DiFlexx (16 fl oz) + NIS (0.25% v/v)	5.0	0	95	97	100	226 a
4	Status (5 oz) + NIS (0.25% v/v)	3.0	0	89	87	96	225 a
LSD ($\alpha=0.10$)		0.1	ns	1	1	3	13
p value		<.001	ns	<.001	<.001	0.07	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

*Applied 30 fl oz/a Roundup PowerMAX3 + AMS on 5/19/25 to eliminate all giant ragweed seedlings that had emerged since planting to give the corn a chance to grow to a more advanced growth stage prior to the treatment applications without heavy competition from giant ragweed.

**Flexion, a dicamba based herbicide similar to DiFlexx, is not registered for use in field corn at the time of publication of this report.

Project Goal: Evaluate weed control and crop safety of PRE applications of **Intrava DX**

***Intrava DX** is a new herbicide pre-mix developed by UPL NA, Inc., consisting of two active ingredients from group 5, amicarbazone and metribuzin.

Site Description:

Location:	Arlington, WI	Crop:	Corn
Field #:	453	Hybrid:	G97B68-DV-EZ1
Soil type:	Plano silt loam	Planting Date:	5/12
% OM:	3.8	Emergence Date:	5/25
pH:	6.5	Population:	34,000 seeds/acre
Fertilization:	161 lbs N/acre	Depth:	2.25 in
Previous crop:	Soybean	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 25 ft
Weed species:	common ragweed (AMBEL), giant foxtail (SETFA), woolly cupgrass (ERBVI)		

Herbicide Application Information:

Date:	5/13
Treatment:	PRE (A)
Air Temp (°F):	67
2" Soil Temp (°F):	64
Soil moisture [surface]:	wet
RH %:	72
Cloud cover %	100
Wind speed (mph)/direction	3-7/SE
Rainfall (in) 1 wk after APP:	1.02"
Rainfall (in) 2 wks after APP:	1.63"
GPA:	15
PSI:	40
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Intrava DX	3.34 lb/gal	5	10 fl oz/a	PRE	A
3	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
4	Intrava DX	3.34 lb/gal	5	10 fl oz/a	PRE	A
	Harness	7 lb/gal	15	2 pt/a	PRE	A
5	Intrava DX	3.34 lb/gal	5	10 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
	Moccasin II Plus	7.65 lb/gal	15	1 pt/a	PRE	A
6	Intrava DX	3.34 lb/gal	5	16 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
	Moccasin II Plus	7.65 lb/gal	15	1 pt/a	PRE	A
7	Intrava DX	3.34 lb/gal	5	20 fl oz/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
	Moccasin II Plus	7.65 lb/gal	15	1 pt/a	PRE	A

Trial Summary:

The trial was established at the Arlington Ag Research Station near Arlington, WI to evaluate weed control and crop safety of PRE applications of **Intrava DX**. **Intrava DX** is a new herbicide pre-mix developed by UPL NA, Inc., consisting of two active ingredients from group 5, amicarbazone and metribuzin. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

There was no significant injury from any of the PRE herbicide programs that we tested.

Common ragweed, giant foxtail and woolly cupgrass were the predominant weed species in the trial. All tank mixes with Intrava DX provided excellent (>90%) residual control of common ragweed and annual grass species up to 43 days after application (Table 9). Intrava DX applied alone did not provide acceptable control of annual grasses. If grass species are of concern, Intrava DX should be tank mixed with a group 15 herbicide. Within the 3-way tank mixes of Intrava DX + simazine + S-metolachlor, Intrava DX rates >10 fl oz acre⁻¹ were not necessary to provide acceptable residual weed control of the weed species in our trial area.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 9. Common ragweed and annual grass visual control ratings for trial #25-ARL-CN11 at Arlington, WI.^{ab}

Trt # Herbicide (rate acre ⁻¹)	Common Ragweed (%)			Annual Grasses ^c (%)		
	17 DAT	27 DAT	43 DAT	17 DAT	27 DAT	43 DAT
1 Untreated Check	0	0	0	0	0	0
One-Pass – PRE (5/13)						
2 Intrava DX (10 fl oz)	95 b	90 b	77 b	88 c	73 c	52 c
3 Princep 4L (1 qt)	96 b	80 c	68 c	97 b	84 b	83 b
4 Intrava DX (10 fl oz) + Harness (2 pt)	99 a	98 a	100 a	99 a	99 a	100 a
5 Intrava DX (10 fl oz) + Princep 4L (1 qt) + Mocassin II Plus (1 pt)	99 a	95 a	93 a	99 a	97 a	96 a
6 Intrava DX (16 fl oz) + Princep 4L (1 qt) + Mocassin II Plus (1 pt)	99 a	99 a	99 a	99 a	99 a	99 a
7 Intrava DX (20 fl oz) + Princep 4L (1 qt) + Mocassin II Plus (1 pt)	99 a	99 a	99 a	99 a	99 a	99 a
LSD ($\alpha=0.10$)	1	5	5	1	3	7
p value	<.001	<.001	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

^cAnnual grass species consisted of giant foxtail and woolly cupgrass.

Project Goal: Evaluate the efficacy of atrazine alternative PSII- and HPPD-inhibitor herbicide tank mixes for control of giant ragweed and waterhemp.

Site Description				
Trial #:	25-BRO-CN12		25-ROK-CN12	
Location:	Brooklyn, WI		Janesville, WI	
Soil Type:	Kegonsa loam		Plano silt loam	
Soil Texture % sand/silt/clay:	44 / 35 / 18		7 / 71 / 22	
% OM:	1.9		3.7	
pH:	7.3		6.5	
Fertilization:	125 lbs N/acre		180 lbs N/acre	
Previous Crop:	soybean		soybean	
Tillage:	conventional		conventional	
Hybrid:	P9998Q		DKC104-14RIB	
Planting Date:	5/26		5/7	
Emergence Date:	6/3		5/15	
Seeding Rate:	34,000 seeds/acre		34,000 seeds/acre	
Depth:	2 in		2.25 in	
Row Spacing:	30 in		30 in	
Plot Size:	10 x 30 ft		10 x 30 ft	
Herbicide Application Information				
Trial #:	25-BRO-CN12		25-ROK-CN12	
Date:	5/27	6/23	5/7	6/10
Treatment:	PRE (A)	POST (B)	PRE (A)	POST (B)
Air Temp (°F):	70	95	68	74
2" Soil Temp (°F):	68	93	59	75
Soil moisture [surface]:	Dry	Dry	Dry	Dry
RH %:	55	60	52	56
Cloud cover %:	85	50	70	50
Wind speed (mph)/direction:	5-10/E	1-9/NW	4-12/N	2-9/E
Rainfall (in) 1 wk after APP:	1.02"	1.11"	0.04"	0.00"
Rainfall (in) 2 wks after APP:	1.21"	1.54"	1.22"	0.74"
GPA:	13.6	15	13.6	15
PSI:	--	40	--	40
Nozzle:	TTI 11002	AIXR110015	TTI 11002	AIXR110015
Crop and Weed Information at POST Application				
	Height	Stage	Height	Stage
Corn	6-10"	V5	4-8in	V5
	Height	Density	Height	Density
waterhemp	1.5-7" Avg=2.5"	4-128/m ²	-	-
giant ragweed	-	-	2-6" Avg=2"	44-120/m ²

	Trt #	Treatment*	Formulation	SOA Group	Rate	App Timing	App Code
	1	Untreated Check					
	2	Weed Free Check**					
PSII Only	3	Moxy 2E	2 lbae/gal	6	1 pt/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
	4	Basagran 5L	5 lb/gal	6	1.2 pt/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
5	Metricor DF	75% w/w	5	4 oz/a	POST	B	
	COC			1% v/v	POST	B	
	AMSOL			2.5% v/v	POST	B	
HPPD Only	6	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
7	Armezon	2.8 lb/gal	27	0.75 fl oz/a	POST	B	
	COC			1% v/v	POST	B	
	AMSOL			2.5% v/v	POST	B	
PSII + HPPD	8	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
		Moxy 2E	2 lbae/gal	6	1 pt/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
	9	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
		Basagran 5L	5 lb/gal	6	1.2 pt/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
	10	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
		Metricor DF	75% w/w	5	4 oz/a	POST	B
		COC			1% v/v	POST	B
		AMSOL			2.5% v/v	POST	B
11	Armezon	2.8 lb/gal	27	0.75 fl oz/a	POST	B	
	Moxy 2E	2 lbae/gal	6	1 pt/a	POST	B	
	COC			1% v/v	POST	B	
	AMSOL			2.5% v/v	POST	B	
12	Armezon	2.8 lb/gal	27	0.75 fl oz/a	POST	B	
	Basagran 5L	5 lb/gal	6	1.2 pt/a	POST	B	
	COC			1% v/v	POST	B	
	AMSOL			2.5% v/v	POST	B	
13	Armezon	2.8 lb/gal	27	0.75 fl oz/a	POST	B	
	Metricor DF	75% w/w	5	4 oz/a	POST	B	
	COC			1% v/v	POST	B	
	AMSOL			2.5% v/v	POST	B	

Adjuvants: AMSOL = liquid ammonium sulfate; COC = CropOil

*Verdict (10 fl oz) was applied PRE over the entire trial area to suppress weeds but allow enough escapes to evaluate postemergence control.

**Weed free check: POST applications of Roundup PM3 (30 oz) + Liberty (32 oz) + AMS were made followed by hand weeding as necessary.

Trial Summary:

Trials were established in May 2025 at the O'Brien Hybrids farm located north of Brooklyn, WI and at the Rock County Farm in Janesville, WI to evaluate the efficacy of atrazine alternative PSII- and HPPD-inhibitor herbicide tank mixes for control of giant ragweed and waterhemp. All trials were tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Crop Injury

Severe corn leaf necrosis (burn) and corn stunting was observed at both locations but was dependent on the choice of PSII Inhibitors. At both sites regardless of tank mixing HPPD Inhibitors, corn injury at 14 days after application ranged from 9% to 45% for metribuzin, 1% to 34% for bromoxynil, and 1% to 9% for bentazon (Tables 10, 11). POST applications containing metribuzin had the greatest crop injury at both locations. Crop injury levels were greater at the Janesville trial location than Brooklyn, likely due to differences in corn growth stage at the time of application and weather conditions.

Waterhemp

At 28 days after treatment (DAT), mesotrione alone controlled waterhemp by 69% but increased to 93% and 98% when metribuzin and bromoxynil were mixed, respectively (Table 10). Mesotrione + bromoxynil and mesotrione + metribuzin were the best performing tank mixes and provided comparable control to the weed free check near corn harvest.

Giant Ragweed

At 28 DAT, both topramezone and mesotrione alone controlled giant ragweed by 77% and 80%, respectively (Table 11). The addition of bentazon, bromoxynil or metribuzin to each HPPD-inhibitor increased control, ranging from 86% to 95%. Mesotrione + bromoxynil, mesotrione + metribuzin, and topramezone + bromoxynil were the best performing tank mixes near corn harvest.

Corn Yield

Tank mixes were required to achieve the highest levels of corn yield at both locations. At Brooklyn, mesotrione + bromoxynil (214 bu acre⁻¹) had similar yield averages compared to the weed free check (218 bu acre⁻¹). At Janesville, any PSII-Inhibitor + HPPD-Inhibitor treatment protected the most average yield ranging from 236-246 bu acre⁻¹ compared to the weed free check (250 bu acre⁻¹).

Take Home Points:

- POST applications containing metribuzin had the greatest potential for crop injury at both locations.
- Tank mixes of certain PSII- and HPPD-inhibitors enhanced weed control and corn grain yield compared to herbicides applied alone at both sites.
- The mesotrione + bromoxynil tank mix showed the greatest potential for effective control of both giant ragweed and waterhemp without significant corn injury or yield loss.

This trial was also conducted in 2024 and results can be found in the [2024 Research Report](#) and this [article](#) written by graduate research assistant Danny Zhu.

Table 10. Crop injury, waterhemp control ratings, and corn yield for trial #25-BRO-CN12 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Corn Injury ^c (%)			Waterhemp (%)			Yield ^b bu acre ⁻¹	
		7 DAT	14 DAT	28 DAT	14 DAT	28 DAT	EOS ^e		
1	Check (PRE Only)	0	0	0	0	0	0	206	a
2	Weed Free Check Roundup PowerMAX 3 (30 oz) + Liberty (32 oz) + AMS (2.5%) <i>fb</i> hand weeding (as necessary)	0	0	0	100	100	100	218	a
Two-Pass – PRE^d (5/27) <i>fb</i> POST (6/23)									
PSII Only	3 Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	1.5	1	1	43	43	68	210	a
	4 Basagran 5L (1.2 pt) + COC (1%) + AMS (2.5%)	1	1	1	53	41	68	208	a
	5 Metricor DF (4 oz) + COC (1%) + AMS (2.5%)	2.5	6.5	1	56	55	76	208	a
HPPD Only	6 Callisto (3 oz) + COC (1%) + AMS (2.5%)	1.3	1	1	69	69	81	211	a
	7 Armezon (0.75 oz) + COC (1%) + AMS (2.5%)	1.3	1	1	60	62	76	213	a
PSII + HPPD	8 Callisto (3 oz) + Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	1	1	1	91	93	99	214	a
	9 Callisto (3 oz) + Basagran 5L (1.2 pt) + COC (1%) + AMS (2.5%)	1	1	1	66	68	83	216	a
	10 Callisto (3 oz) + Metricor DF (4 oz) + COC (1%) + AMS (2.5%)	4.8	7.5	1	96	98	99	208	a
	11 Armezon (0.75 oz) + Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	1.5	1	1	82	82	93	218	a
	12 Armezon (0.75 oz)+Basagran 5L (1.2 pt) +COC (1%)+AMS (2.5%)	1	1	1	66	70	89	207	a
	13 Armezon (0.75 oz) +Metricor DF (4 oz) +COC (1%) +AMS (2.5%)	10	8.8	1	85	89	95	211	a
LSD ($\alpha=0.05$)		1.9	3.3	ns	21	23	9	ns	
p value		<0.01	<0.01	ns	<0.01	<0.01	<0.01	ns	

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cCorn injury = leaf necrosis (burn) and stunting.

^dVerdict (10 fl oz/a) was applied PRE over the entire trial area including the checks (treatments #1 and #2)

^eEOS = end-of-season weed control rating

Table 11. Crop injury, giant ragweed control ratings, and corn yield for trial #25-ROK-CN12 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Corn Injury ^c (%)			G. Ragweed (%)			Yield ^b bu acre ⁻¹		
		7 DAT	14 DAT	28 DAT	14 DAT	28 DAT	EOS ^e			
1	Check (PRE Only)	0	0	0	0	0	0	97	c	
2	Weed Free Check Roundup PowerMAX 3 (30 oz) + Liberty (32 oz) + AMS (2.5%) <i>fb</i> hand weeding (as necessary)	0	0	0	100	100	100	250	a	
Two-Pass – PRE^d (5/7) <i>fb</i> POST (6/10)										
PSII Only	3	Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	18.8	16.8	2	80	87	87	239	a
	4	Basagran 5L (1.2 pt) + COC (1%) + AMS (2.5%)	1	1.5	1	55	74	73	220	a
	5	Metricor DF (4 oz) + COC (1%) + AMS (2.5%)	40	33.8	3	35	44	43	146	b
HPPD Only	6	Callisto (3 oz) + COC (1%) + AMS (2.5%)	1	1	1	70	77	79	244	a
	7	Armezon (0.75 oz) + COC (1%) + AMS (2.5%)	1	1	1	84	80	92	241	a
PSII + HPPD	8	Callisto (3 oz) + Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	22.5	20	1.5	92	95	99	246	a
	9	Callisto (3 oz) + Basagran 5L (1.2 pt) + COC (1%) + AMS (2.5%)	6.8	8	1.5	84	89	92	246	a
	10	Callisto (3 oz) + Metricor DF (4 oz) + COC (1%) + (2.5%)	45	35	4	80	93	93	236	a
	11	Armezon (0.75 oz) + Moxy 2E (1 pt) + COC (1%) + AMS (2.5%)	20.8	20	2.5	93	93	95	239	a
	12	Armezon (0.75 oz)+Basagran 5L (1.2 pt)+COC (1%) +AMS (2.5%)	3.3	1.8	1	87	87	87	246	a
	13	Armezon (0.75 oz) + Metricor DF (4 oz) +COC (1%) +AMS (2.5%)	42.5	32.5	5	80	86	86	236	a
LSD ($\alpha=0.05$)		4.7	4.9	1.6	13	18	16	13		
p value		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cCorn injury = leaf necrosis (burn)

^dVerdict (10 fl oz/a) was applied PRE over the entire trial area including the checks (treatments #1 and #2)

^eEOS = end-of-season weed control rating

Project Goal: Evaluate burndown weed control of corn herbicide programs with Tough 5EC.

Site Description:

Location: Arlington, WI	Crop: Corn
Field #: 428C	Hybrid: G97B68-DV-EZ1
Soil type: Plano silt loam	Planting Date: 5/12
% OM: 3.8	Emergence Date: 5/25
pH: 6.4	Population: 34,000 seeds/acre
Fertilization: 124 lbs N/acre	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: No-Till	Plot Size: 10 x 25 ft
Weed species: lambsquarters (CHEAL), dandelion (TAROF), marestail (ERICA), purslane speedwell (VERPG)	

Herbicide Application Information:

Date:	5/13
Treatment:	Preplant (A)
Air Temp (°F):	72
2" Soil Temp (°F):	70
Soil moisture [surface]:	wet
RH %:	70
Cloud cover %	50
Wind speed (mph)/direction	1-5/NNE
Rainfall (in) 1 wk after APP:	1.02"
Rainfall (in) 2 wks after APP:	1.63"
GPA:	15
PSI:	41
Nozzle:	TT 110015
Nozzle spacing (in):	20
Boom Height (in):	23

Crop and weed information at application:

	Date:	5/13
lambsquarters	Height:	1-3"
		Avg=2"
	Density:	8-40/m ²
dandelion	Diameter:	4-14"
		Avg=8"
	Density:	<0.5/m ²
marestail	Diameter:	1-3"
		Avg=3"
	Density:	0-4/m ²
purslane speedwell	Height:	1-6"
		Avg=3"
	Density:	0-48/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Tough 5EC	5 lb/gal	6	8 fl oz/a	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
	COC			1% v/v	preplant	A
	AMS			8.5 lb/100 gal	preplant	A
3	Tough 5EC	5 lb/gal	6	8 fl oz/a	preplant	A
	Callisto	4 lb/gal	27	4.5 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
	COC			1% v/v	preplant	A
	AMS			8.5 lb/100 gal	preplant	A
4	Tough 5EC	5 lb/gal	6	8 fl oz/a	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Callisto	4 lb/gal	27	4.5 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
	COC			1% v/v	preplant	A
5	AMS			8.5 lb/100 gal	preplant	A
	Sharpen	2.85 lb/gal	14	1 fl oz/a	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
	MSO			1% v/v	preplant	A
6	AMS			8.5 lb/100 gal	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
7	AMS			8.5 lb/100 gal	preplant	A
	Clarity	4 lbae/gal	4	0.5 pt/a	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
8	AMS			8.5 lb/100 gal	preplant	A
	Clarity	4 lbae/gal	4	0.5 pt/a	preplant	A
	Callisto	4 lb/gal	27	4.5 fl oz/a	preplant	A
	Roundup PowerMAX3	4.8 lbae/gal	9	25 fl oz/a	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
9	AMS			8.5 lb/100 gal	preplant	A
	COC			1% v/v	preplant	A
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	preplant	A
	Callisto	4 lb/gal	27	4.5 fl oz/a	preplant	A

Adjuvants: AMS = Dry spray grade ammonium sulfate, COC = CropOil, MSO = Upland MSO

POST Application: 6/17 - Roundup PM3 (30 fl oz/a) + Liberty (32 fl oz/a) + AMS (2 lb/a) was applied to all treatments except the untreated check (trt 1).

Trial Summary:

The trial was established at the Arlington Ag Research Station near Arlington, WI to evaluate burndown weed control of corn herbicide programs with Tough 5EC. Tough 5EC (pyridate), a group 6 herbicide, can be used as an alternative to atrazine for synergistic weed control with group 27 (HPPD) herbicides like Callisto (mesotrione). However, Tough 5EC does not provide residual weed control. Atrazine was not included for comparison since this trial was conducted in an atrazine prohibition area at the Arlington Ag Research Station. The trial area was not tilled prior to planting corn.

Tanks mixes containing Tough 5EC + Callisto (trts 3, 4) provided synergistic burndown control of both marestalk and dandelion (Table 12). This mixture also provided greater burndown control of dandelion than tank mixes of glyphosate, glyphosate + dicamba, and dicamba + mesotrione. Tough 5EC + Callisto provided equivalent control of both marestalk and dandelion to Sharpen + glyphosate (trt 5). All herbicide programs provided excellent control of lambsquarters 16 days after application (Table 12). Glyphosate was necessary to achieve complete control of purslane speedwell (Table 12).

Corn grain yield did not differ amongst treatments (Table 12). Averaged across all treatments, yield of herbicide treatments = 234 bu acre⁻¹. The untreated check yield = 78 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 12. Burndown weed control ratings and corn yield for trial #25-ARL-CN18 at Arlington, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Marestail (%)			Dandelion (%)			Lambsquarters (%)			P. Speedwell (%)			Yield ^b bu acre ⁻¹
		9 DAT	16 DAT	21 DAT	9 DAT	16 DAT	21 DAT	9 DAT	16 DAT	21 DAT	9 DAT	16 DAT	21 DAT	
1	Untreated Check	0	0	0	0	0	0	0	0	0	0	0	0	78 b
Two-Pass – Preplant (5/13) fb POST (6/17)														
2	Tough (8 oz) + Roundup PM3 (25 oz) + Dual II Magnum (1.5 pt) + COC (1%) + AMS ^c	57	72	67	21	81	88	92	99	96	3	99	100	240 a
3	Tough (8 oz) + Callisto (4.5 oz) + Dual II Magnum (1.5 pt) + COC (1%) + AMS ^c	72	95	99	34	90	96	92	100	100	3	72	91	232 a
4	Tough (8 oz) + Roundup PM3 (25 oz) + Callisto (4.5 oz) + Dual II Magnum (1.5 pt) + COC (1%) + AMS ^c	70	97	99	30	80	97	96	100	100	15	99	100	230 a
5	Sharpen (1 oz) + Roundup PM3 (25 oz) + Dual II Magnum (1.5 pt) + MSO (1%) + AMS ^c	100	100	100	100	100	99	100	100	99	72	100	100	236 a
6	Roundup PM3 (25 oz) + Dual II Magnum (1.5 pt) + AMS ^c	62	71	78	9	84	91	98	100	99	3	100	100	235 a
7	Clarity (0.5 pt) + Roundup PM3 (25 oz) + Dual II Magnum (1.5 pt) + AMS ^c	83	86	92	24	65	73	98	100	100	45	100	100	228 a
8	Clarity (0.5 pt) + Callisto (4.5 oz) + Roundup PM3 (25 oz) + Dual II Magnum (1.5 pt) + AMS ^c	86	87	95	20	75	83	99	100	100	5	99	99	230 a
9	Callisto (4.5 oz) + Dual II Magnum (1.5 pt) + COC (1%) + AMS ^c	62	82	91	26	74	85	39	97	99	10	67	90	239 a
LSD (α=0.10)		24	7	5	12	9	5	7	2	2	27	7	3	29
p value		0.092	<.001	<.001	<.001	<.001	<.001	<.001	0.098	0.011	0.007	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cSpray grade AMS applied at 8.5 lb/100 gal

Project Goal: Evaluate tank mixes of Tough 5EC with atrazine and mesotrione for synergistic POST control of waterhemp in corn.

Site Description:

Location: Janesville, WI	Crop: Corn
Field #: 8	Hybrid: P9998Q
Soil type: Plano silt loam	Planting Date: 5/14
% OM: 3.5	Emergence Date: 5/26
pH: 6.3	Population: 34,000 seeds/acre
Fertilization: 180 lbs N/acre	Depth: 2.25 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: waterhemp (AMATA)	

Herbicide Application Information:

Date:	5/14	6/19
Treatment:	PRE (A)	POST (B)
Air Temp (°F):	88	86
2" Soil Temp (°F):	78	88
Soil moisture [surface]:	dry	moist
RH %:	52	44
Cloud cover %	25	10
Wind speed (mph)/direction	3-9/E	3-7/E
Rainfall (in) 1 wk after APP:	1.19"	0.80"
Rainfall (in) 2 wks after APP:	1.34"	2.39"
GPA:	13.6	15
PSI:	-	40
Nozzle:	TTI 11002	TT 110015
Nozzle spacing (in):	20	20
Boom Height (in):	20	23

Crop and weed information at application:

	Date:	5/14	6/19
Corn	Height:	-	8-11"
	Stage:	-	V5
waterhemp	Height:	-	1-3.5"
			Avg=1.5"
	Density:	-	77-456/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Check					
2	Tough 5EC	5 lb/gal	6	8 fl oz/a	POST	B
	NIS			0.25% v/v	POST	B
	AMS			2.5% v/v	POST	B
3	AAtrex	4 lb/gal	5	1 pt/a	POST	B
	COC			1% v/v	POST	B
	AMS			2.5% v/v	POST	B
4	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
	COC			1% v/v	POST	B
	AMS			2.5% v/v	POST	B
5	Tough 5EC	5 lb/gal	6	8 fl oz/a	POST	B
	AAtrex	4 lb/gal	5	1 pt/a	POST	B
	NIS			0.25% v/v	POST	B
	AMS			2.5% v/v	POST	B
6	Tough 5EC	5 lb/gal	6	8 fl oz/a	POST	B
	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
	NIS			0.25% v/v	POST	B
	AMS			2.5% v/v	POST	B
7	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
	AAtrex	4 lb/gal	5	1 pt/a	POST	B
	COC			1% v/v	POST	B
	AMS			2.5% v/v	POST	B
8	Tough 5EC	5 lb/gal	6	8 fl oz/a	POST	B
	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
	AAtrex	4 lb/gal	5	1 pt/a	POST	B
	NIS			0.25% v/v	POST	B
	AMS			2.5% v/v	POST	B
9	Callisto	4 lb/gal	27	3 fl oz/a	POST	B
	Moxy 2E	2 lbae/gal	6	1 pt/a	POST	B
	COC			1% v/v	POST	B
	AMS			2.5% v/v	POST	B
10	Moxy 2E	2 lbae/gal	6	1 pt/a	POST	B
	COC			1% v/v	POST	B
	AMS			2.5% v/v	POST	B

Adjuvants: AMS (liquid) = AMSOL, COC = CropOil, NIS = Prefer90

PRE Application (A): 5/14 – Hornet (4 oz/a) was applied to all treatments to suppress giant ragweed as the goal of the trial was to evaluate waterhemp control.

Trial Summary:

The trial was established at the Rock County Farm near Janesville, WI to evaluate tank mixes of Tough 5EC with atrazine and mesotrione for synergistic POST control of waterhemp in corn. Tough 5EC (pyridate), a group 6 herbicide, can be used as an alternative to atrazine for synergistic weed control with group 27 (HPPD) herbicides like Callisto (mesotrione). However, Tough 5EC does not provide residual weed control. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

There was no visual crop response from any tank mixture containing Tough 5EC (Table 13). Both tank mixtures containing Moxy 2E (bromoxynil) caused corn leaf necrosis 8 and 13 days after application (Table 13). Injury was greater when Callisto (mesotrione) was added with Moxy 2E.

All treatments with a PSII inhibitor (Tough, Moxy, atrazine) mixed with Callisto provided synergistic burndown control of waterhemp (Table 13). Tough 5EC + Callisto provided similar waterhemp control to tank mixtures of atrazine and Moxy with Callisto. Tough, Moxy, and atrazine applied alone had very poor waterhemp control (Table 13).

Corn grain yield was greater following herbicide applications with multiple active ingredients. (Table 13). Averaged across all treatments with a single active ingredient applied POST corn yield = 194 bu acre⁻¹, while treatments with at least two active ingredients = 219 bu acre⁻¹. The untreated check yield = 166 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 13. Crop injury, waterhemp control, and corn yield for trial #25-ROK-CN19 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Injury ^c (%)		Waterhemp (%)				Yield ^b bu acre ⁻¹
		8 DAT	13 DAT	8 DAT	13 DAT	26 DAT	10/17	
1	Check	0.0	0.0	0	0	0	0	166 -
Two-Pass – PRE* (5/14) fb POST (6/19)								
2	Tough 5EC (8 oz) + NIS (0.25%) + AMS ^d	0.0	0.0	21	20	8	15	193 d
3	AAtrex (1 pt) + COC (1%) + AMS ^d	0.0	0.0	36	34	16	24	199 cd
4	Callisto (3 oz) + COC (1%) + AMS ^d	0.0	0.0	89	84	82	90	222 ab
5	Tough 5EC (8 oz) + AAtrex (1 pt) + NIS (0.25%) + AMS ^d	0.0	0.0	71	65	39	27	218 abc
6	Tough 5EC (8 oz) + Callisto (3 oz) + NIS (0.25%) + AMS ^d	0.0	0.0	97	93	87	95	220 abc
7	Callisto (3 oz) + AAtrex (1 pt) + COC (1%) + AMS ^d	0.0	0.0	98	96	93	97	209 bcd
8	Tough 5EC (8 oz) + Callisto (3 oz) + AAtrex (1 pt) + NIS (0.25%) + AMS ^d	0.0	0.0	99	99	97	99	215 abc
9	Callisto (3 oz) + Moxy 2E (1 pt) + COC (1%) + AMS ^d	11.0	9.5	98	97	96	97	232 a
10	Moxy 2E (1 pt) + COC (1%) + AMS ^d	8.5	7.0	16	14	10	11	191 d
LSD (α=0.10)		0.8	0.8	11	6	8	9	14
p value		<.001	<.001	<.001	<.001	<.001	<.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cCrop injury = leaf necrosis (burn)

^dLiquid AMS (AMSOL) applied at 2.5% v/v.

*Hornet (4 oz/a) was applied PRE to all treatments to suppress giant ragweed as the goal of the trial was to evaluate POST waterhemp control.

Project Goal: Determine the optimum time to terminate cereal rye to maximize corn yield.

Data presented in this report is from two years (2024, 2025).

Site Description:

Location: Arlington, WI	Soil type: Plano silt loam
Field #: 428C	% OM: 3.8
Tillage: No-Till	pH: 6.4
Previous Crop: 2024 – corn silage	Plot Size: 10 x 45 ft
2025 – soybean	

Cereal Rye

Variety: Aroostook	Seeding Rate: 60 lb/acre
Planting Date: 2024 – 9/20	Seeding Method: Drilled
2025 – 9/27	Row Spacing: 7.5 in

Corn

Hybrid: GH97B68	Seeding Rate: 36,000 sds/acre
Planting Date: 2024 – 5/3	Seeding Depth: 2-2.25 in
2025 – 5/9	Row Spacing: 30 in

Fertility

At Planting: 40 lb N/acre - liquid 32% UAN behind closing wheels
Side Dress at 2024 – 138 lb N/acre – 46-0-0 granular urea
V4/V6: 2025 – 150 lb N/acre – 46-0-0 granular urea

Cereal Rye Termination:

Rye Termination Timing	2024	2025
1) 10-14 days preplant	4/24	4/24
2) at corn planting	5/3	5/9
3) at corn germination	5/10	5/13
4) at corn emergence	5/17	5/23
5) V1 corn	5/23	5/29
6) V2 corn	5/31	6/2

Termination Method

Herbicide:	Roundup PowerMAX3 (20 fl oz/a) + Acuron Flexi (2 qt/a) + NIS (0.25% v/v) + AMS (2.5% v/v)
GPA:	15
Nozzles:	TTI110015

POST Herbicide: Trial was kept weed free with a POST herbicide program applied in mid-June.

Trial Summary:

One of the most critical decisions facing corn producers who utilize cereal rye as a cover crop is when to terminate the cereal rye in the spring. To address this question, a two-year study (2023, 2024) at Arlington, WI evaluated six cereal rye termination timings based on corn growth stage: 10-14 days preplant, at plant, at germination, VE, V1, and V2. Corn was planted in early May at 36,000 seeds acre⁻¹. 40 lb acre⁻¹ of nitrogen was applied as 32-0-0 urea ammonium nitrate liquid fertilizer with the planter. The remaining balance of nitrogen based on UW-recommendations for our research site was side dressed as 46-0-0 granular urea around the V4 to V6 corn growth stage. The trial area was kept weed free with a POST herbicide program applied in mid-June.

Delaying cereal rye termination resulted in greater cover crop biomass accumulation. Averaged across years, cereal rye biomass at the pre-plant termination was ~2,000 lb acre⁻¹ and 3,100 lb acre⁻¹ at corn planting (Figure 1). By the time corn began to emerge, average cereal rye biomass was ~5,500 lb acre⁻¹, an increase of 100% from the time of corn planting. It is important to note that cereal rye was drilled in late September, which explains the high biomass accumulation observed at corn planting in this experiment. Corn grain yield began to significantly decline when termination occurred after the VE (spiking) corn growth stage (Figure 2). A yield reduction of 15 and 20 percent was observed when termination was delayed from VE to V1 and V2, respectively. Yield loss is likely due to increased competition with the living cereal rye at the early corn growth stages and potential nitrogen tie up in these high cereal rye biomass treatments. A slight reduction in corn plant population at harvest as cereal rye termination was delayed past corn seed germination was also observed, although the difference was likely not the main cause of the reduced grain yield (data not shown). Our results indicate that cereal rye can be terminated at corn emergence (VE) without a statistically significant corn grain yield loss (Figure 2). However, our general recommendation is that cereal rye should be terminated within one week after corn is planted at the very latest assuming that corn seedling disease and insect pressure from high biomass cover crops are not major issues and soil moisture is adequate. Otherwise, termination prior to or at planting is generally recommended.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

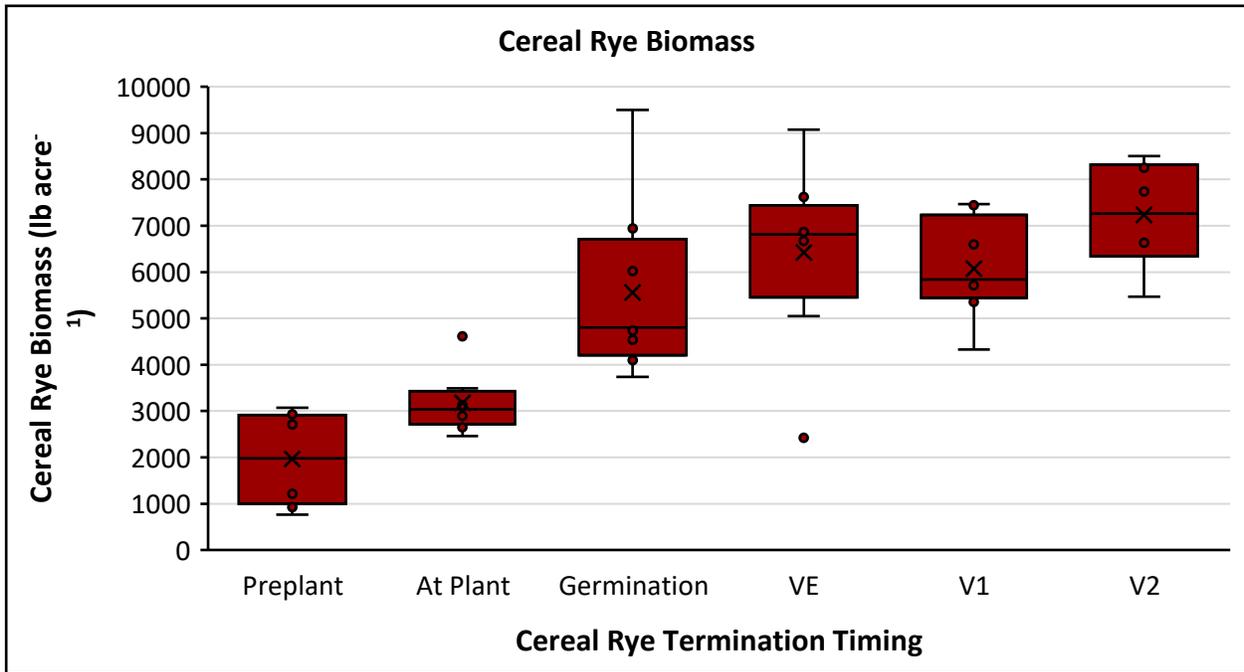


Figure 1. Cereal rye biomass (lb acre⁻¹) at each termination timing averaged across two years (2024, 2025). X's within each box plot indicate the average rye biomass.

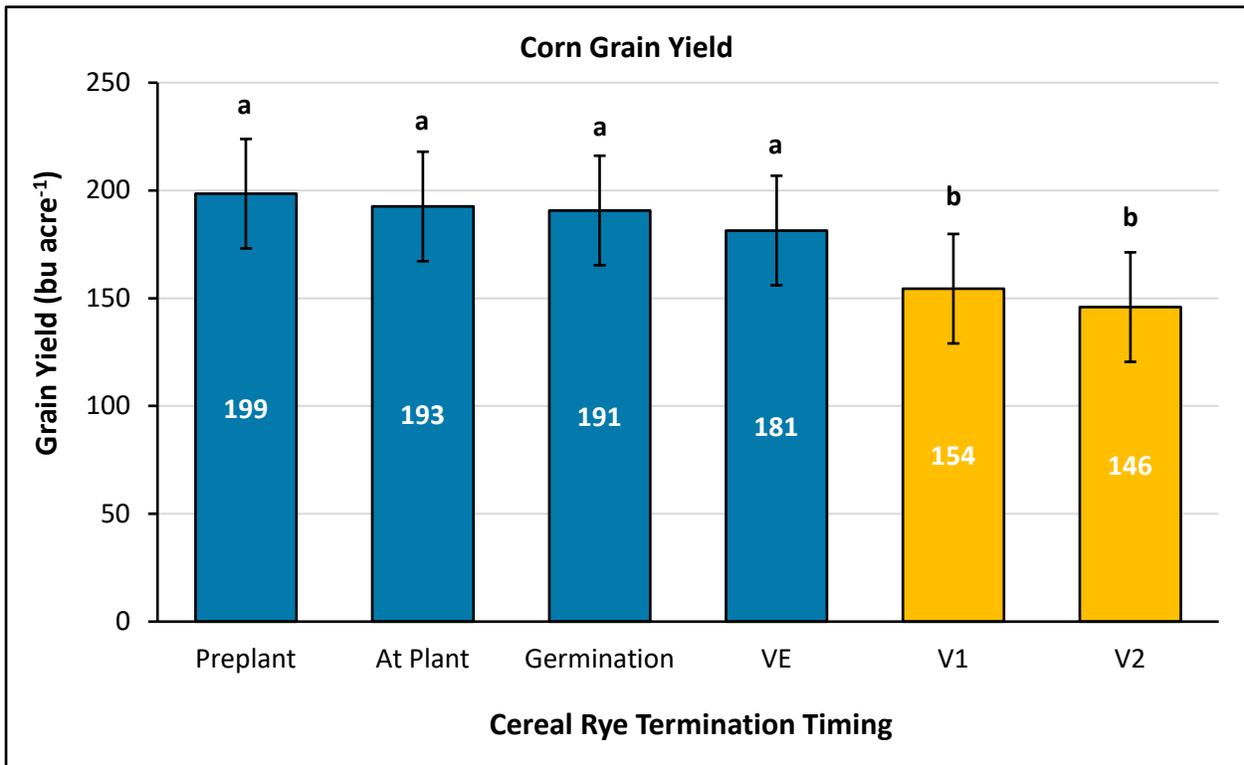


Figure 2. Corn grain yield following six rye termination timings averaged across two years (2024, 2025). Bars indicated the averages ± the standard error. Bars with the same letter are not significantly different at $\alpha = 0.05$

Project Goal: Evaluate various corn herbicide programs without glyphosate and atrazine for season long weed control in conventional corn.

Site Description:

Location: Brooklyn, WI	Crop: Corn
Field #: OB-11	Hybrid: OB 1105
Soil type: Kegonsa loam	Planting Date: 5/26
% OM: 1.9	Emergence Date: 6/3
pH: 7.3	Population: 36,000 seeds/acre
Fertilization: 125 lbs N/acre	Depth: 2 in
Previous crop: Soybean	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: waterhemp (AMATA), velvetleaf (ABUTH), woolly cupgrass (ERBVI), fall panicum (PANDI)	

Herbicide Application Information:

	Date: 5/27	6/10	6/26
Treatment:	PRE (A)	EPOST (B)	POST (C)
Air Temp (°F):	70	73	89
2" Soil Temp (°F):	68	72	93
Soil moisture [surface]:	moist	moist	wet
RH %:	55	53	66
Cloud cover %	85	20	50
Wind speed (mph)/direction	5-10/E	3-13/NW	0-8/S
Rainfall (in) 1 wk after APP:	1.02	0.36	0.11
Rainfall (in) 2 wks after APP:	1.20	1.67	0.83
GPA:	15	15	15
PSI:	40	40	40
Nozzle:	TTI 110015	AIXR110015	AIXR110015
Nozzle spacing (in):	20	20	20
Boom Height (in):	20	23	35

Crop and weed information at application:

	Date: 5/27	6/10	6/26
corn	Height:	-	3-4"
	Stage:	-	V2
waterhemp	Height:	-	**
	Density:	-	**
velvetleaf	Height:	-	**
	Density:	-	**

*Overall annual grass density in the trial area was quite low.

**Missing information.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Storen	3.25 lb/gal	15, 27	2.4 qt/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
3	Harness MAX	3.85 lb/gal	15, 27	64 fl oz/a	EPOST	B
	Status	56% w/w	2, 4	5 oz/a	EPOST	B
	Accent Q	54.5% w/w	2	0.9 oz/a	EPOST	B
	NIS			0.25% v/v	EPOST	B
	AMS			2 lb/a	EPOST	B
4	Resicore REV	3.26 lb/gal	4, 15, 27	2.25 qt/a	EPOST	B
	Status	56% w/w	2, 4	5 oz/a	EPOST	B
	Accent Q	54.5% w/w	2	0.9 oz/a	EPOST	B
	NIS			0.25% v/v	EPOST	B
	AMS			2 lb/a	EPOST	B
5	Harness MAX	3.85 lb/gal	15, 27	2 qt/a	PRE	A
	DiFlexx Duo	2.13 lb/gal	4, 27	28 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C
6	TriVolt SC	3.65 lb/gal	2, 15, 27	20 fl oz/a	PRE	A
	Laudis	3.5 lb/gal	27	3 fl oz/a	POST	C
	DiFlexx	4 lbae/gal	4	8 fl oz/a	POST	C
	Destiny HC			0.5% v/v	POST	C
	AMS			2 lb/a	POST	C
7	Verdict	5.57 lb/gal	14, 15	10 fl oz/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	POST	C
	Armezon	2.8 lb/gal	27	1 fl oz/a	POST	C
	Status	56% w/w	2, 4	5 oz/a	POST	C
	MSO			1% v/v	POST	C
	AMS			2 lb/a	POST	C
8	Surtain	1.63 lb/gal	14, 15	14 fl oz/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	PRE	A
	Armezon PRO	5.35 lb/gal	15, 27	16 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C
9	Surpass NXT	7 lb/gal	15	2 pt/a	PRE	A
	Kyro	3.1 lb/gal	4, 15, 27	45 fl oz/a	POST	C
	Accent Q	54.5% w/w	2	0.9 oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
10	Storen	3.25 lb/gal	15, 27	1.6 qt/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	POST	C
	Accent Q	54.5% w/w	2	0.9 oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C
11	Maverick	2.04 lb/gal	4, 15, 27	24 fl oz/a	PRE	A
	Accent Q	54.5% w/w	2	0.9 oz/a	POST	C
	Status	56% w/w	2, 4	5 oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C
12	Dual II Magnum	7.64 lb/gal	15	1.67 pt/a	PRE	A
	Princep 4L	4 lb/gal	5	1 qt/a	PRE	A
	Callisto	4 lb/gal	27	3 fl oz/a	POST	C
	Moxy 2E	2 lb/gal	5	1 pt/a	POST	C
	COC			1% v/v	POST	C
	AMS			2 lb/a	POST	C

Adjuvants: AMS = dry spray grade ammonium sulfate; COC = CropOil; MSO = Upland MSO; NIS = Prefer 90; Destiny HC = high surfactant methylated oil concentrate (HSMOC)

Trial Summary:

The trial was established in May at the O'Brien Hybrids farm located north of Brooklyn, WI. Multiple two-pass (PRE followed by POST around V5/V6 corn) herbicide programs were developed for control of waterhemp and annual grass weeds. Non-selective herbicides such as glyphosate and glufosinate were not included since treated corn did not have herbicide resistant traits. Furthermore, atrazine was not included in any treatments as the field was located in an atrazine prohibition area. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Only minor corn injury symptoms (<5%) were observed throughout the growing season (data not shown).

Several of the PRE herbicides we evaluated provided good (>80%) control of waterhemp and velvetleaf up to 30 days after application (Table 14). Furthermore, most of the POST herbicide programs also provided excellent waterhemp and velvetleaf control up to 29 days after the POST application (Table 14).

Corn grain yield did not significantly differ amongst herbicide programs (Table 14). Averaged across all treatments, yield = 169 bu acre⁻¹, while the untreated check yield = 147 bu acre⁻¹.

Similar trials were conducted in 2021-2024 and data can be accessed via the following links.

- [2021 Wisconsin Weed Science Research Report](#) – Trial# CN18
- [2022 Wisconsin Weed Science Research Report](#) – Trial# CN12
- [2023 Wisconsin Weed Science Research Report](#) – Trial# CN17
- [2024 Wisconsin Weed Science Research Report](#) – Trial# CN11

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 14. Weed control ratings and corn grain yield for trial #25-BRO-CN22 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Waterhemp %				Velvetleaf %			Yield ^b bu acre ⁻¹
		6/19	6/26	7/7	7/25	6/26	7/7	7/25	
1	Untreated Check	0	0	0	0	0	0	0	147 b
One-Pass – PRE (5/27)									
2	Storen (2.4 qt) + Princep (1 qt)	99	98	100	95	100	100	100	171 a
One-Pass – EPOST (6/10)									
3	Harness MAX (2 qt) + Status (5 oz) + Accent Q (0.9 oz) + NIS (0.25%) + AMS (2 lb)	99	100	100	98	100	100	100	164 a
4	Resicore REV (2.25 qt) +Status (5 oz) +Accent Q (0.9 oz) +NIS (0.25%) +AMS (2 lb)	99	100	100	97	100	100	100	169 a
Two-Pass – PRE (5/27) fb POST (6/26)									
5	Harness Max (2 qt) fb Diflexx Duo (28 oz) + COC (1% v/v) + AMS (2 lb)	99	99	100	99	99	100	100	166 a
6	TriVolt (20 oz) fb Laudis (3 oz) + DiFlexx (8 oz) + Destiny HC (0.5% v/v) + AMS (2 lb)	98	89	98	99	100	99	100	170 a
7	Verdict (10 oz) + Callisto (3 oz) fb Armezon (1 oz) + Status (5 oz) + MSO (1% v/v) + AMS (2 lb)	98	88	98	99	100	100	100	163 a
8	Surtain (14 fl oz) + Callisto (3 oz) fb Armezon PRO (16 oz) + COC (1% v/v) + AMS (2 lb)	97	93	96	90	100	100	100	169 a
9	Surpass NXT (2 pt) fb Kyro (45 oz) + Accent Q (0.9 oz) + COC (1% v/v) + AMS (2 lb)	98	91	98	93	59	98	100	172 a
10	Storen (1.6 qt) + Princep 4L (1 qt) fb Callisto (3 oz) + Accent Q (0.9 oz) + NIS (0.25% v/v) + AMS (2 lb)	97	94	95	95	100	100	100	179 a
11	Maverick (24 oz) fb Accent Q (0.9 oz) + Status (5 oz) + COC (1% v/v) + AMS (2 lb)	98	91	97	99	100	100	100	169 a
12	Dual II Magnum (1.67 pt) + Princep 4L (1 qt) fb Callisto (3 oz) + Moxly 2E (1 pt) + COC (1% v/v) + AMS (2 lb)	97	77	96	98	64	99	100	168 a
LSD (α=0.10)		1	5	3	ns	10	1	ns	10
p value		0.088	<.001	0.081	0.127	<.001	0.001	0.465	0.003

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

Project Goal: Compare residual weed control and crop safety of **Zidua PLUS** to select competitors.

***Zidua PLUS** is a new liquid herbicide premix of pyroxasulfone (Zidua SC) and imazethapyr (Pursuit) from BASF. Zidua PLUS will have the flexibility to be applied from pre-plant to post-emergence in soybean. Zidua PLUS is still pending EPA registration and is not available for sale at the time of publication of this report.

Site Description:

Location: Arlington, WI	Crop: Enlist Soybean
Field #: 362	Variety: Xitavo XO2206E
Soil type: Plano silt loam	Planting Date: 5/15
% OM: 3.3	Emergence Date: 5/28
pH: 6.5	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Corn Silage	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: common ragweed (AMBEL); common lambsquarters (CHEAL); giant foxtail (SETFA)	

Herbicide Application Information:

Date:	5/15
Treatment:	PRE (A)
Air Temp (°F):	67
2" Soil Temp (°F):	62
Soil moisture [surface]:	dry
RH %:	82
Cloud cover %	60
Wind speed (mph)/direction	6-10/SE
Rainfall (in) 1 wk after APP:	1.63"
Rainfall (in) 2 wks after APP:	1.76"
GPA:	15
PSI:	40
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Prefix	5.29 lb/gal	14, 15	2 pt/a	PRE	A
3	Zidua PLUS	3.6 lb/gal	2, 15	6 fl oz/a	PRE	A
4	Anthem Maxx	4.3 lb/gal	14, 15	3.25 fl oz/a	PRE	A
5	Boundary	6.5 lb/gal	5, 15	1.5 pt/a	PRE	A
6	Authority Supreme	4.16 lb/gal	14, 15	6.5 fl oz/a	PRE	A
7	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
8	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A

Trial Summary:

The trial was established at the Arlington Agricultural Research Station located near Arlington, WI to compare the residual weed control and crop safety of **Zidua PLUS** to select competitors. **Zidua PLUS** is a new liquid herbicide premix of pyroxasulfone (Zidua SC) and imazethapyr (Pursuit) from BASF. Zidua PLUS will have the flexibility to be applied from pre-plant to post-emergence in soybean. Zidua PLUS is still pending EPA registration and is not available for sale at the time of publication of this report. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Fierce EZ (trt 8) was the only herbicide that caused visible soybean injury in this trial (data not shown). Injury was minor (<5%) and did not significantly impact soybean growth later in the season. Zidua PLUS (trt 3) provided excellent (>90%) residual control of common ragweed, common lambsquarters, and giant foxtail up to 36 days after application (Table 15).

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 15. Weed control ratings (%) for trial #25-ARL-SB01 at Arlington, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	C. Ragweed		Lambsquarters		Giant Foxtail	
		22 DAT	36 DAT	22 DAT	36 DAT	22 DAT	36 DAT
1	Untreated Check	0	0	0	0	0	0
One-Pass – PRE (5/15)							
2	Prefix (2 pt)	99 a	94 b	100 a	91 b	100 a	95 ab
3	Zidua PLUS* (6 fl oz)	97 ab	93 b	100 a	99 a	100 a	97 a
4	Anthem Maxx (3.25 fl oz)	89 c	71 e	98 b	88 b	92 c	86 c
5	Boundary (1.5 pt)	95 b	82 c	100 a	98 a	99 a	89 bc
6	Authority Supreme (6.5 fl oz)	95 b	77 d	100 a	99 a	100 a	92 abc
7	Sonic (5 oz)	96 ab	99 a	100 a	99 a	97 b	92 abc
8	Fierce EZ (6 fl oz)	96 ab	86 c	100 a	97 a	100 a	93 abc
LSD ($\alpha=0.10$)		2	4	1	4	2	5
p value		<0.001	<0.001	0.035	<0.001	<0.001	0.009

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values. Weed control values with the same letter are not significantly different at $\alpha = 0.10$.

***Zidua PLUS** is a new liquid herbicide premix of pyroxasulfone (Zidua SC) and imazethapyr (Pursuit) from BASF. It is still pending EPA registration and is not available for sale at the time of publication of this report.

Project Goal: Demonstrate the potential of Liberty ULTRA to provide soybean yield protection compared to a generic glufosinate formulation.

Site Description:

Location: Brooklyn, WI	Crop: Enlist Soybean
Field #: OB-10N	Variety: Xitavo XO2075E
Soil type: sandy loam	Planting Date: 5/26
% OM: 1.3	Emergence Date: 6/4
pH: 7	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Seed Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft; 6 replications
Weed species: gly-R waterhemp (AMATA)	

Herbicide Application Information:

	Date: 5/27	6/23	6/26
Treatment:	PRE (A)	EPOST (B)	POST (C)
Air Temp (°F):	70	94	88
2" Soil Temp (°F):	68	99	80
Soil moisture [surface]:	dry	dry	wet
RH %:	55	51	59
Cloud cover %	85	15	60
Wind speed (mph)/direction	5-10/E	8-20/S	3-9/E
Rainfall (in) 1 wk after APP:	1.02"	1.10"	0.11"
Rainfall (in) 2 wks after APP:	1.20"	1.65"	0.83"
GPA:	15	20	20
PSI:	40	40	40
Nozzle:	TTI 1100015	AIXR11002	AIXR11002
Nozzle spacing (in):	20	20	20
Boom Height (in):	20	24	26

Crop and weed information at application:

	Date:	5/27	6/23	6/26
soybean	Height:	-	4"	5"
	Stage:	-	V2	V2/V3
waterhemp	Height:	-	0.5-6"	0.5-6"
			Avg=3"	Avg=4"
	Density:	-	20-172/m ²	11-108/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
3	Zidua PRO	4.09 lb/a	2, 14, 15	6 fl oz/a	PRE	A
4	Surmise 5 AMS	4.6 lb/gal	10	18.4 fl oz/a	EPOST	B
				1.5 lb/a	EPOST	B
5	Liberty ULTRA AMS	1.76 lb/gal	10	24 fl oz/a	EPOST	B
				1.5 lb/a	EPOST	B
6	Surmise 5 Dual II Magnum AMS	4.6 lb/gal 7.64 lb/gal	10 15	18.4 fl oz/a	EPOST	B
				1 pt/a	EPOST	B
				1.5 lb/a	EPOST	B
7	Liberty ULTRA Outlook AMS	1.76 lb/gal 6 lb/gal	10 15	24 fl oz/a	EPOST	B
				12 fl oz/a	EPOST	B
				1.5 lb/a	EPOST	B
8	Sonic Surmise 5 AMS	70% w/w 4.6 lb/gal	2, 14 10	5 oz/a	PRE	A
				18.4 fl oz/a	POST	C
				1.5 lb/a	POST	C
9	Zidua PRO Liberty ULTRA AMS	4.09 lb/gal 1.76 lb/gal	2, 14, 15 10	6 fl oz/a	PRE	A
				24 fl oz/a	POST	C
				1.5 lb/a	POST	C
10	Sonic Surmise 5 Dual II Magnum AMS	70% w/w 4.6 lb/gal 7.64 lb/gal	2, 14 10 15	5 oz/a	PRE	A
				18.4 fl oz/a	POST	C
				1 pt/a	POST	C
				1.5 lb/a	POST	C
11	Zidua PRO Liberty ULTRA Outlook AMS	4.09 lb/gal 1.76 lb/gal 6 lb/gal	2, 14, 15 10 15	6 fl oz/a	PRE	A
				24 fl oz/a	POST	C
				12 fl oz/a	POST	C
				1.5 lb/a	POST	C

Adjuvants: AMS = Dry spray grade ammonium sulfate

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to demonstrate the potential of **Liberty ULTRA** to provide soybean yield protection compared to a generic glufosinate formulation. **Liberty ULTRA** is a new formulation of glufosinate (Liberty 280 SL) powered by Glu-L™ Technology offered by BASF. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

The field was infested with a natural population of glyphosate-resistant waterhemp. Zidua PRO at 6 fl oz/a provided greater residual control (78%) than Sonic at 5 oz/a (60%) 30 days after the PRE application (Table 16). None of the one-pass PRE only or POST only herbicide programs (trts 1-7) provided adequate waterhemp control (Table 16). Within the two-pass PRE followed by POST herbicide programs (trts 8-11), mixtures with Liberty ULTRA outperformed the generic glufosinate. Adding Dual II Magnum to Surmise 5 drastically improved waterhemp control. However, this was not due to improve residual control but rather Dual II Magnum was acting as an adjuvant in this tank mixture as it is an oil-based formulation (emulsifiable concentrate). Results of this trial illustrate the importance of glufosinate formulation when applying to difficult to control weeds, like waterhemp. When using generic formulations of glufosinate additional adjuvants may be necessary to achieve satisfactory levels of control. Furthermore, one-pass herbicide programs are not sufficient to control waterhemp in soybean production systems. The use of a strong PRE followed by a POST herbicide program will deliver the most consistent and satisfactory results.

Soybean yield differed amongst the herbicide programs we evaluated (Table 16). Yield was greatest in the three PRE followed by POST herbicide programs that provide greater than 70% waterhemp control at harvest (trts 9-11). Averaged across all treatments, yield of the 2-pass PRE *fb* POST programs = 65 bu/acre, 1-pass EPOST = 57 bu/acre, and 1-pass PRE only = 51 bu/acre. The untreated check yield = 41 bu/acre.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 16. Waterhemp control ratings and soybean yield for trial #25-BRO-SB05 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Waterhemp (%)					Yield ^b bu acre ⁻¹
		6/26 ^c	7/8	7/18	7/29	9/30	
1	Treated Check	0	0	0	0	0	41 e
One-Pass – PRE (5/27)							
2	Sonic (5 oz)	60	37	21	12	5	50 d
3	Zidua PRO (6 fl oz)	78	48	31	23	3	51 d
One-Pass – EPOST (6/23)							
4	Surmise 5 (18.4 fl oz) + AMS (1.5 lb)	-	54	25	19	28	51 d
5	Liberty ULTRA (24 fl oz) + AMS (1.5 lb)	-	70	47	48	36	61 b
6	Surmise 5 (18.4 fl oz) + Dual II Magnum (1 pt) + AMS (1.5 lb)	-	72	52	43	34	57 bc
7	Liberty ULTRA (24 fl oz) + Outlook (12 fl oz) + AMS (1.5 lb)	-	68	38	40	28	59 bc
Two-Pass – PRE (5/27) fb POST (6/26)							
8	Sonic (5 oz) <i>fb</i> Surmise 5 (18.4 fl oz) + AMS (1.5 lb)	-	56	31	25	23	54 cd
9	Zidua PRO (6 fl oz) <i>fb</i> Liberty ULTRA (24 fl oz) + AMS (1.5 lb)	-	95	90	94	90	67 a
10	Sonic (5 oz) <i>fb</i> Surmise 5 (18.4 fl oz) + Dual II Magnum (1 pt) + AMS (1.5 lb)	-	83	78	78	72	68 a
11	Zidua PRO (6 fl oz) <i>fb</i> Liberty ULTRA (24 fl oz) + Outlook (12 fl oz) + AMS (1.5 lb)	-	90	88	89	86	70 a
LSD ($\alpha=0.10$)		-	10	12	13	14	4
p value		-	<.001	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cAverage waterhemp control of Sonic (trts 2, 8, 10) and Zidua PRO (trts 3, 9, 11)

Project Goal: Demonstrate the importance of AMS when applying Liberty ULTRA.

Site Description:

Location: Arlington, WI	Crop: Enlist Soybean
Field #: 362	Hybrid: Xitavo XO2206E
Soil type: Plano silt loam	Planting Date: 5/15
% OM: 3.3	Emergence Date: 5/28
pH: 6.5	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Corn Silage	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 25 ft
Weed species: common lambsquarters (CHEAL); common ragweed (AMBEL)	

Herbicide Application Information:

Date:	6/26
Treatment:	EPOST (A)
Air Temp (°F):	76
2" Soil Temp (°F):	80
Soil moisture [surface]:	wet
RH %:	88
Cloud cover %	80
Wind speed (mph)/direction	0-4/E
Rainfall (in) 1 wk after APP:	0.30"
Rainfall (in) 2 wks after APP:	0.53"
GPA:	20
PSI:	40
Nozzle:	AIXR11002
Nozzle spacing (in):	20
Boom Height (in):	28

Crop and weed information at application:

	Date:	6/26
Soybean	Height:	6"
	Stage:	V4
lambsquarters	Height:	1-6" Avg=3.5"
	Density:	11-38/ft ²
common ragweed	Height:	3-10" Avg=8"
	Density:	2-9/ft ²

Trt #	Treatment	Formulation	SOA Group	Rate*	App Timing	App Code
1	Untreated Check					
2	Liberty ULTRA	1.76 lb/gal	10	19 fl oz/a	POST	A
3	Liberty ULTRA AMS	1.76 lb/gal	10	19 fl oz/a 0.75 lb/a	POST POST	A A
4	Liberty ULTRA AMS	1.76 lb/gal	10	19 fl oz/a 1.5 lb/a	POST POST	A A
5	Liberty ULTRA AMS	1.76 lb/gal	10	19 fl oz/a 3 lb/a	POST POST	A A
6	Liberty ULTRA Request	1.76 lb/gal	10	19 fl oz/a 0.5% v/v	POST POST	A A
7	Liberty ULTRA Verimax AMS	1.76 lb/gal	10	19 fl oz/a 0.5% v/v	POST POST	A A

Adjuvants: AMS = Dry spray grade ammonium sulfate; Request = water conditioner; Verimax AMS = water conditioner + deposition agent

*A slightly reduced rate of Liberty ULTRA was used in order to achieve better treatment separation.

Trial Summary:

The trial was established at the Arlington Agricultural Research Station to demonstrate the importance of AMS when applying Liberty ULTRA. **Liberty ULTRA** is a new formulation of glufosinate (Liberty 280 SL) powered by Glu-L™ Technology offered by BASF. A slightly reduced rate of Liberty ULTRA was applied to larger weeds (>6 inches) in order to achieve better treatment separation.

All AMS use rates and formulations provided near complete control of common ragweed (data not shown). However, AMS use rate and type drastically impacted common lambsquarters control (Table 17). Common lambsquarters is an excellent bioindicator species for detecting differences in visual control when evaluating glufosinate formulations or glufosinate and adjuvant tank mixes. An increase from 0.75 lb/a to 3 lb/a of dry AMS improved control by 12% 15 days after application. The liquid AMS replacements used in this trial performed very poorly and control was similar to that of the no AMS control (trt 2). Precaution needs to be taken when using AMS replacements applied with glufosinate as use rates of actual AMS in such products, when present, is often too low to work effectively.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 17. Lambsquarters control ratings for trial #25-ARL-SB06 at Arlington, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Lambsquarters (%)		
		6 DAT	15 DAT	28 DAT
1	Untreated Check	0	0	0
One-Pass – POST (6/26)				
2	Liberty ULTRA (19 fl oz) ^b	78 d	66 c	59 c
3	Liberty ULTRA (19 fl oz) + AMS (0.75 lb)	88 c	79 b	70 b
4	Liberty ULTRA (19 fl oz) + AMS (1.5 lb)	92 b	87 a	76 ab
5	Liberty ULTRA (19 fl oz) + AMS (3 lb)	95 a	91 a	81 a
6	Liberty ULTRA (19 fl oz) + Request (0.5% v/v)	80 d	72 bc	60 c
7	Liberty ULTRA (19 fl oz) + Verimax AMS (0.5% v/v)	80 d	74 b	63 c
LSD ($\alpha=0.10$)		4	6	7
p value		<0.001	<0.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values. Weed control values with the same letter are not significantly different at $\alpha = 0.10$.

^bA slightly reduced rate of Liberty ULTRA was used in order to achieve better treatment separation.

Project Goal: Evaluate the efficacy of applying Liberty ULTRA alone and tank mixed with Enlist One in an Enlist soybean system.

Site Description:

Location: Brooklyn, WI	Crop: Enlist Soybean
Field #: OB-10N	Variety: Xitavo XO2075E
Soil type: sandy loam	Planting Date: 5/26
% OM: 1.3	Emergence Date: 6/4
pH: 7	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Seed Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: gly-R waterhemp (AMATA)	

Herbicide Application Information:

	Date: 5/27	6/26	7/2
Treatment:	PRE (A)	POST (B)	LPOST (C)
Air Temp (°F):	70	90	89
2" Soil Temp (°F):	68	95	-
Soil moisture [surface]:	moist	wet	dry
RH %:	55	67	43
Cloud cover %	85	30	45
Wind speed (mph)/direction	5-10/E	3-11/S	2-5/W
Rainfall (in) 1 wk after APP:	1.02	0.11	0.55
Rainfall (in) 2 wks after APP:	1.20	0.83	2.55
GPA:	13.6	20*/15*	20*/15*
PSI:	-	42	42
Nozzle:	TTI 11002	AIXR*	AIXR*
Nozzle spacing (in):	20	20	20
Boom Height (in):	20	24	24

*Used AIXR 110015 nozzle tips and 15 GPA for trts 4, 5, 9, and 10 (Enlist)

*Used AIXR11002 nozzle tips and 20 GPA for trts 2, 3, 6, 7, and 10 (glufosinate)

Crop and weed information at application:

	Date: 5/27	6/26	7/2
soybean	Height:	-	5"
	Stage:	-	V2/V3
waterhemp	Height:	-	1-5"
			Avg=3"
	Density:	-	54-172/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Check*					
2	Interline	2.34 lb/gal	10	36 fl oz/a	POST	B
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	POST	B
	AMS			3 lb/a	POST	B
3	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	B
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	POST	B
	AMS			3 lb/a	POST	B
4	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	B
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			3 lb/a	POST	B
5	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	B
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	B
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			3 lb/a	POST	B
6	Interline	2.34 lb/gal	10	43 fl oz/a	LPOST	C
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	LPOST	C
	AMS			3 lb/a	LPOST	C
7	Liberty ULTRA	1.76 lb/gal	10	29 fl oz/a	LPOST	C
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	LPOST	C
	AMS			3 lb/a	LPOST	C
8	Liberty ULTRA	1.76 lb/gal	10	34 fl oz/a**	LPOST	C
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	LPOST	C
	AMS			3 lb/a	LPOST	C
9	Enlist One	3.8 lbae/gal	4	2 pt/a	LPOST	C
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	LPOST	C
	Superb HC			0.5% v/v	LPOST	C
	AMS			3 lb/a	LPOST	C
10	Enlist One	3.8 lbae/gal	4	2 pt/a	LPOST	C
	Liberty ULTRA	1.76 lb/gal	10	34 fl oz/a**	LPOST	C
	Zidua SC	4.17 lb/gal	15	2.5 fl oz/a	LPOST	C
	Superb HC			0.5% v/v	LPOST	C
	AMS			3 lb/a	LPOST	C

Adjuvants: AMS = Dry spray grade ammonium sulfate; Superb HC = high surfactant oil concentrate

*Verdict (5 fl oz/a) was applied PRE (A) over the entire trial area to suppress waterhemp but allow enough escapes to evaluate postemergence control.

**34 fl oz use rate is allowed under the Liberty ULTRA supplemental label.

Trial Summary:

The trial was established at the O’Brien Hybrids farm located north of Brooklyn, WI to evaluate the efficacy of applying Liberty ULTRA alone and tank mixed with Enlist One in an Enlist soybean system. The field was infested with a natural population of glyphosate-resistant waterhemp. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Glufosinate applied alone did not provide adequate waterhemp control following either application timing even at high rates (Table 18). Enlist One applied alone had greater control than glufosinate alone; however, control was still less than 90% throughout the growing season. Tank mixing Liberty ULTRA and Enlist One significantly improved waterhemp control. This is consistent with what we have consistently observed from several trials across the years.

Averaged across both application timings and glufosinate formulation and rates, end-of-season waterhemp control:

- Glufosinate alone = 69%
- Enlist One alone = 86%
- Liberty ULTRA + Enlist One = 94%

Delaying the POST application timing by six days did not significantly impact end-of-season waterhemp control; however, soybean yield did decrease by almost 4 bu acre⁻¹ (Table 18). Averaged across all treatments soybean yield of the early POST application (trts 2-5) = 64 bu acre⁻¹, while the later POST application yield = 60 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Liberty ULTRA is a new formulation of glufosinate (Liberty) powered by Glu-L™ Technology offered by BASF.

Liberty ULTRA Use Rate Equivalency

Liberty ULTRA (fl oz/A)	L-glufosinate ammonium (lb ai/A)	Glufosinate Ammonium Equivalent (lb ai/A)	Liberty 280/Interline Equivalent (fl oz/A)
24	0.33	0.66	36
29	0.40	0.80	44
34	0.47	0.94	51

Table 18. Waterhemp control ratings and soybean yield for trial #25-BRO-SB07 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Waterhemp (%)					Yield ^b bu acre ⁻¹
		7/8	7/18	7/25	7/29	9/30	
1	Treated Check ^c	0	0	0	0	0	47 c
Two-Pass – PRE (5/27) fb POST (6/26)							
2	Interline (36 oz) + Dual II Magnum (1 pt) + AMS (3 lb)	93	82	72	77	68	63 ab
3	Liberty ULTRA (24 oz) + Zidua SC (2.5 oz) + AMS (3 lb)	93	81	74	77	69	63 ab
4	Enlist One (2 pt) + Dual II Magnum (1 pt) + Superb HC (0.5%) + AMS (3 lb)	86	88	82	84	88	64 ab
5	Enlist One (2 pt) + Liberty ULTRA (24 oz) + Zidua SC (2.5 oz) + Superb HC (0.5%) + AMS (3 lb)	97	95	91	93	92	66 a
Two-Pass – PRE (5/27) fb POST (7/2)							
6	Interline (43 oz) + Dual II Magnum (1 pt) + AMS (3 lb)	85	82	74	78	70	59 b
7	Liberty ULTRA (29 oz) + Zidua SC (2.5 oz) + AMS (3 lb)	83	83	74	78	70	60 b
8	Liberty ULTRA (34 oz) + Zidua SC (2.5 oz) + AMS (3 lb)	85	82	72	76	67	60 b
9	Enlist One (2 pt) + Dual II Magnum (1 pt) + Superb HC (0.5%) + AMS (3 lb)	81	87	85	86	85	60 b
10	Enlist One (2 pt) + Liberty ULTRA (34 oz) + Zidua SC (2.5 oz) + Superb HC (0.5%) + AMS (3 lb)	84	96	96	95	96	62 ab
LSD ($\alpha=0.10$)		3	4	4	4	9	3
p value		<.001	<.001	<.001	<.001	<.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cVerdict (5 fl oz/a) was applied over the entire trial area to suppress waterhemp but allow enough escapes to evaluate postemergence control

Project Goal: Demonstrate and evaluate PRE residual waterhemp control of **Convintro** applied alone and in various tank mixtures.

***Convintro** is a Group 12 herbicide from Bayer Crop Science containing the active ingredient diflufenican. Convintro will be labeled preplant and preemergence use in corn and soybeans for residual control of amaranthus species (waterhemp). Convintro is still pending EPA approval at the time of publication of this report.

Site Description:

Location:	Brooklyn, WI	Crop:	XtendFlex Soybean
Field #:	OB-10N	Variety:	AG20XF1
Soil type:	sandy loam	Planting Date:	5/26
% OM:	1.3	Emergence Date:	6/4
pH:	7	Population:	140,000 seeds/acre
Fertilization:	-	Depth:	1.5 in
Previous crop:	Seed Corn	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 30 ft
Weed species:	gly-R waterhemp (AMATA); velvetleaf (ABUTH); woolly cupgrass (ERBVI)		

Herbicide Application Information:

Date:	5/27
Treatment:	PRE (A)
Air Temp (°F):	70
2" Soil Temp (°F):	68
Soil moisture [surface]:	moist
RH %:	55
Cloud cover %	85
Wind speed (mph)/direction	5-10/E
Rainfall (in) 1 wk after APP:	1.02
Rainfall (in) 2 wks after APP:	1.20
GPA:	15
PSI:	40
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
3	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
	Mauler	4 lb/gal	5	8.6 fl oz/a	PRE	A
4	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
	Warrant	3 lb/gal	15	48 fl oz/a	PRE	A
5	Mauler	4 lb/gal	5	8.6 fl oz/a	PRE	A
	Warrant	3 lb/gal	15	48 fl oz/a	PRE	A
6	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
	Mauler	4 lb/gal	5	8.6 fl oz/a	PRE	A
	Warrant	3 lb/gal	15	48 fl oz/a	PRE	A
7	Valor EZ	4 lb/gal	14	2.5 fl oz/a	PRE	A
8	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
	Valor EZ	4 lb/gal	14	2.5 fl oz/a	PRE	A
9	Fierce EZ	3.04 lb/gal	14, 15	6.5 fl oz/a	PRE	A
10	Convintro	4.16 lb/gal	12	4.1 fl oz/a	PRE	A
	Fierce EZ	3.04 lb/gal	14, 15	6.5 fl oz/a	PRE	A
11	Fierce MTZ	2.64 lb/gal	5, 14, 15	1.25 pt/a	PRE	A
12	Authority MTZ	45% w/w	5, 14	16 oz/a	PRE	A
13	Tendovo	4.03 lb/gal	2, 5, 15	2 qt/a	PRE	A
14	Spartan 4F	4 lb/gal	14	8 fl oz/a	PRE	A
	Mauler	4 lb/gal	5	8.6 fl oz/a	PRE	A
	Warrant	3 lb/gal	15	48 fl oz/a	PRE	A

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to demonstrate and evaluate PRE residual waterhemp control of **Convintro** applied alone and in various tank mixtures. **Convintro** is a Group 12 herbicide from Bayer Crop Science containing the active ingredient diflufenican. Convintro will be labeled preplant and preemergence use in corn and soybeans for residual control of amaranthus species (waterhemp). Convintro is still pending EPA approval at the time of publication of this report. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

All tank mixtures with Convintro provided good (>80%) residual control of waterhemp up to 34 days after application (Table 19). Convintro applied alone (trt 2) did not provide satisfactory residual control of velvetleaf or woolly cupgrass. Results of this trial demonstrate that Convintro can provide another herbicide mode of action for residual waterhemp control. However, it is recommended to tank mix with other herbicides to broaden the spectrum of weeds controlled and for herbicide resistance management.

Table 19. Weed ratings and soybean yield for trial #25-BRO-SB08 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Waterhemp			Velvetleaf		ERBVI ^b
		21 DAT	30 DAT	34 DAT	30 DAT	34 DAT	34 DAT
1	Untreated Check	0	0	0	0	0	0
One-Pass – PRE (5/27)							
2	Convintro (4.1 fl oz)	93	88	78	71	70	65
3	Convintro (4.1 fl oz) + Mauler (8.6 fl oz)	96	91	85	97	97	89
4	Convintro (4.1 fl oz) + Warrant (48 fl oz)	96	93	85	75	67	93
5	Mauler (8.6 fl oz) + Warrant (48 fl oz)	97	95	92	94	94	98
6	Convintro (4.1 fl oz) + Mauler (8.6 fl oz) + Warrant (48 fl oz)	97	97	94	98	95	97
7	Valor EZ (2.5 fl oz)	87	84	67	100	100	92
8	Convintro (4.1 fl oz) + Valor EZ (2.5 fl oz)	93	92	85	98	96	86
9	Fierce EZ (6.5 fl oz)	92	89	85	99	99	97
10	Convintro (4.1 fl oz) + Fierce EZ (6.5 fl oz)	95	95	89	99	100	98
11	Fierce MTZ (1.25 pt)	97	94	91	100	100	97
12	Authority MTZ (16 oz)	97	90	83	98	99	93
13	Tendovo (2 qt)	98	96	94	100	100	99
14	Spartan 4F (8 fl oz) + Mauler (8.6 fl oz) + Warrant (48 fl oz)	97	96	94	99	99	99
LSD ($\alpha=0.10$)		4	5	11	11	11	8
p value		0.005	0.003	0.006	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bERBVI = woolly cupgrass

*Convintro is a Group 12 herbicide from Bayer Crop Science containing the active ingredient diflufenican. Convintro is still pending EPA approval at the time of publication of this report.

Project Goal: Evaluate burndown control of ***Rapidicil**.

***Rapidicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO-inhibitor) site of action. Rapidicil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidicil is still pending EPA registration at the time of publication of this report.

Site Description:

Location:	Brooklyn, WI	Crop:	Enlist
Field #:	OB-10N	Variety:	GH2292E3
Soil type:	sandy loam	Planting Date:	4/28
% OM:	1.3	Emergence Date:	5/16
pH:	7	Population:	140,000 seeds/acre
Fertilization:	-	Depth:	1.5 in
Previous crop:	Seed Corn	Row spacing:	30 in
Tillage:	Conventional	Plot Size:	10 x 25 ft
Weed species:	purslane speedwell (VERPG); smallflower buttercup (RANAB); Shepherd's purse (CAPBP)		

Herbicide Application Information:

Date:	4/30
Treatment:	PRE (A)
Air Temp (°F):	64
2" Soil Temp (°F):	52
Soil moisture [surface]:	moist
RH %:	53
Cloud cover %	50
Wind speed (mph)/direction	4-13/NE
Rainfall (in) 1 wk after APP:	1.47"
Rainfall (in) 2 wks after APP:	1.47"
GPA:	15
PSI:	40
Nozzle:	TTI 110015
Nozzle spacing (in):	20
Boom Height (in):	20

Crop and weed information at application:

	Date:	4/30
purslane	Height:	1-4"
speedwell	Density:	22-75/m ²
smallflower	Height:	4-9.5"
buttercup	Density:	0-11/m ²
Shepherd's	Diameter:	5-8"
purse	Density:	0-5/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Rapidicil	0.46 lb/gal	14	5 fl oz/a	PRE	A
	Fierce MTZ	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	PRE	A
	COC			1% v/v	PRE	A
	AMS			3 qt/a	PRE	A
3	Zidua PRO	4.09 lb/gal	2, 14, 15	6 fl oz/a	PRE	A
	Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	PRE	A
	COC			1% v/v	PRE	A
	AMS			3 qt/a	PRE	A
	4	Authority Supreme	4.16 lb/gal	14, 15	8 fl oz/a	PRE
Roundup PowerMAX3		4.8 lbae/gal	9	32 fl oz/a	PRE	A
Enlist One		3.8 lbae/gal	4	2 pt/a	PRE	A
COC				1% v/v	PRE	A
AMS				3 qt/a	PRE	A
5		Roundup PowerMAX3	4.8 lbae/gal	9	32 fl oz/a	PRE
	Enlist One	3.8 lbae/gal	4	2 pt/a	PRE	A
	COC			1% v/v	PRE	A
	AMS			3 qt/a	PRE	A

Adjuvants: AMS (liquid) = AMSOL, COC = CropOil

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to evaluate the burndown control of **Rapidicil** compared to some industry standards. **Rapidicil** is the registered trademark name for the active ingredient epyrifenacil, a new active ingredient in the group 14 (PPO) site of action. Rapidicil is a fast-acting herbicide that can be used for burndown weed control prior to planting corn, soybeans, or wheat. Rapidicil is still pending EPA registration at the time of publication of this report. Soybean was planted no-till 2 days prior to the burndown applications.

The Rapidicil tank mixture provided excellent burndown control of purslane speedwell, smallflower buttercup, and Shepherd's purse 14 days after application (Table 20). Rapidicil also increased the speed of control of smallflower buttercup and Shepherd's purse relative to the other burndown herbicide programs we evaluated. The glyphosate + 2,4-D tank mixture (trt 4) failed to provide >90% control of all weed species in the trial area 14 days after application.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 20. Weed burndown control ratings (%) for trial #25-BRO-SB12 at Brooklyn, WI.^a

Trt # Herbicide (rate acre ⁻¹)	VERPG ^b (%)		RANAB ^b (%)		CAPBP ^b (%)	
	7 DAT	14 DAT	7 DAT	14 DAT	7 DAT	14 DAT
1 Untreated Check	0	0	0	0	0	0
One-Pass – Burndown (4/30)						
2 Rapidicil* (5 fl oz) + Fierce MTZ (1 pt) + RU PM3 (32 oz) + Enlist One (2 pt) + COC (1% v/v) + AMS (3 qt/a)	70 a	99 a	91 a	98 a	83 a	100 a
3 Zidua PRO (6 oz) + Roundup PM3 (32 oz) + Enlist One (2 pt) + MSO (1% v/v) + AMS (3 qt/a)	69 a	97 a	78 b	98 a	70 b	97 ab
4 Authority Supreme (8 oz)+ Roundup PM3 (32 oz) + Enlist One (2 pt) + COC (1% v/v) + AMS (3 qt/a)	70 a	97 b	79 b	98 a	40 c	90 b
5 Roundup PM3 (32 oz) + Enlist One (2 pt) + COC (1% v/v) + AMS (3 qt/a)	60 b	89 b	35 c	84 b	38 c	88 b
LSD (α=0.10)	3	3	7	4	6	8
p value	<0.001	0.002	<0.001	<0.001	<0.001	0.051

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values. Weed control values with the same letter are not significantly different at α = 0.10.

^bVERPG = purslane speedwell; RANAB = smallflower buttercup; CAPBP = Shepherd’s purse.

***Rapidicil** is the registered trademark name for the active ingredient epyrifencil, a new active ingredient in the group 14 (PPO) site of action. Rapidicil is still pending EPA registration at the time of publication.

Project Goal: Evaluate multiple two-pass herbicide programs for season-long glyphosate-resistant waterhemp control in Enlist soybean.

Site Description:

Location: Brooklyn, WI	Crop: Enlist
Field #: OB-10N	Variety: O'SOY 2253EL-3
Soil type: sandy loam	Planting Date: 5/26
% OM: 1.3	Emergence Date: 6/4
pH: 7	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Seed Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: gly-R waterhemp (AMATA); velvetleaf (ABUTH)	

Herbicide Application Information:

	Date:	5/27	6/10	6/30	7/2
Treatment:		PRE (A)	EPOST (B)	POST (C)	LPOST (D)
Air Temp (°F):		70	73	81	89
2" Soil Temp (°F):		68	72	-	-
Soil moisture [surface]:		moist	dry	moist	dry
RH %:		55	53	74	43
Cloud cover %		85	20	30	45
Wind speed (mph)/direction		5-10/E	8-13/NW	4-11/SW	2-5/W
Rainfall (in) 1 wk after APP:		1.02	0.36	0.55	0.55
Rainfall (in) 2 wks after APP:		1.2	1.67	1.63	2.55
GPA:		15	15	15	15
PSI:		40	40	40	40
Nozzle:		TTI 110015	AIXR110015	AIXR110015	AIXR110015
Nozzle spacing (in):		20	20	20	20
Boom Height (in):		20	20	24	24

Crop and weed information at application:

	Date:	5/27	6/10	6/30*	7/2
soybean	Height:	-	1-3'	7"	8"
	Stage:	-	VE/VC	V4	V4
waterhemp	Height:	-	**	1-8" Avg=3.5"	0.25-5" Avg=2"
	Density:	-	**	6-14/m ²	48-140/m ²

*All weed densities and heights were recorded from plots with a PRE herbicide.

Density and height varied depending on the effectiveness of the PRE-emergence herbicide.

**Very few waterhemp had emerged prior to the EPOST application on 6/10.

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Zidua Plus*	3.6 lb/gal	2, 15	6 fl oz/a	EPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	EPOST	B
	COC			1% v/v	EPOST	B
	AMS			8.5 lb/100 gal	EPOST	B
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	LPOST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	LPOST	D
	Outlook	6 lb/gal	15	14 fl oz/a	LPOST	D
	AMS			3 lb/a	LPOST	D
3	Tendovo	4.03 lb/gal	2, 5, 15	1.75 qt/a	PRE	A
	Spartan 4F	4 lb/gal	14	6 fl oz/a	PRE	A
	Flexstar	1.88 lb/gal	14	1 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	29 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	POST	C
	AMS			3 lb/a	POST	C
4	Prefix	5.29 lb/gal	14, 15	2 pt/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	0.9 pt/a	PRE	A
	Pursuit	2 lb/gal	2	3 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	29 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	POST	C
	Dual II Magnum	7.64 lb/gal	15	1.25 pt/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
5	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Perpetuo	2.3 lb/gal	14, 15	6 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			3 lb/a	POST	C
6	Fierce MTZ	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Perpetuo	2.3 lb/gal	14, 15	6 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			3 lb/a	POST	C
7	Fierce XLT	62.4% w/w	2, 14, 15	3.75 oz	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Perpetuo	2.3 lb/gal	14, 15	6 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			3 lb/a	POST	C
8	Authority Supreme	4.16 lb/gal	14, 15	8 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
9	Authority Edge	4.25 lb/gal	14, 15	8 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
10	Kyber PRO	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			3 lb/a	POST	C
11	Kyber PRO	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	Enversa	3 lb/gal	15	48 fl oz/a	POST	C
	COC			1% v/v	POST	C
	AMS			3 lb/a	POST	C
12	Kyber PRO	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
13	Kyber PRO	2.64 lb/gal	5, 14, 15	1 pt/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Enversa	3 lb/gal	15	48 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
14	Sonic Boom**	3.35 lb/gal	5, 14	20 fl oz	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
15	Sonic Boom**	3.35 lb/gal	5, 14	20 fl oz	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Enversa	3 lb/gal	15	48 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C
16	Zidua PRO	4.09 lb/gal	2, 14, 15	6 fl oz	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	20 fl oz/a	POST	C
	Superb HC			0.5% v/v	POST	C
	AMS			3 lb/a	POST	C

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
17	Zidua Plus*	3.6 lb/gal	2, 15	6 fl oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	Outlook	6 lb/gal	15	14 fl oz/a	POST	C
	AMS			3 lb/a	POST	C
18	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	30 fl oz/a	POST	C
	Zidua Plus*	3.6 lb/gal	2, 15	6 fl oz/a	POST	C
	AMS			3 lb/a	POST	C

Adjuvants: AMS = Dry spray grade ammonium sulfate; COC = CropOil; Superb HC = high surfactant oil concentrate.

***Zidua PLUS** is a new liquid herbicide premix of pyroxasulfone (Zidua SC) and imazethapyr (Pursuit) from BASF. Zidua PLUS will have the flexibility to be applied from pre-plant to post-emergence in soybean. Zidua PLUS is still pending EPA registration and is not available for sale at the time of publication of this report.

****Sonic Boom** is a new liquid herbicide premix of sulfentrazone (Spartan) and metribuzin from Corteva and is registered by the EPA and available for sale.

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to evaluate multiple two-pass herbicide programs from several company portfolios for season-long control of glyphosate resistant waterhemp in Enlist soybean. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Minor soybean injury (5%) was observed 23 days after PRE application (data not shown). Soybean leaf necrosis and/or deformed leaves injury symptoms were observed 13 days after the POST application (Table 21). POST applications containing a PPO-inhibitor (Group 14) active ingredient (Flexstar, Perpetuo) caused greater levels of leaf necrosis.

Several of the PRE herbicides we evaluated provided acceptable early-season residual control of waterhemp 34 days after application (Table 21). Furthermore, most of the POST herbicide programs provided excellent (>95%) end-of-season waterhemp control. POST treatments with glufosinate as the only effective active ingredient for control of emerged waterhemp tended to have reduced levels of control, particularly in treatments that had worse PRE residual control at the time of application. Tank mixes of Liberty ULTRA + Enlist One performed very well across all PRE herbicide programs.

Similar trials were conducted in 2021-2024. See trial #24-BRO-SB13 in the 2024 Wisconsin Weed Science Research Report, trial #23-BRO-SB10 in the [2023 Wisconsin Weed Science Research Report](#), trial #22-BRO-SB12 in the [2022 Wisconsin Weed Science Research Report](#), and trial #21-BRO-SB10 in the [2021 Wisconsin Weed Science Research Report](#)

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 21. Crop injury, waterhemp control ratings, and soybean yield for trial #25-BRO-SB13 at Brooklyn, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Injury ^c 7/14	Waterhemp (%)				Yield ^b bu acre ⁻¹
			6/19	6/30	7/14	9/30	
1	Untreated Check	0	0	0	0	0	46 c
Two-Pass – EPOST (6/10) fb LPOST (7/2)			LPOST				
2	Zidua Plus* (6 oz) + Roundup PM3 (30 oz) + COC (1%) + AMS (8.5 lb/100 gal) fb Liberty ULTRA (24 oz) + Roundup PM3 (30 oz) + Outlook (14 oz) + AMS (3 lb)	3.3	99	80	88	86	64 ab
Two-Pass – PRE (5/27) fb POST (6/30)			POST				
3	Tendovo (1.75 qt) + Spartan 4F (6 oz) fb Liberty ULTRA (29 oz) + Flexstar (1 pt) + Roundup PM3 (28 oz) + AMS (3 lb)	14.5	99	85	99	96	63 ab
4	Prefix (2 pt) + Dual II Magnum (0.9 pt) + Pursuit (3 oz) fb Enlist One (2 pt) + Liberty ULTRA (29 oz) + Roundup PM3 (28 oz) + Dual II Magnum (1.25 pt) + Superb HC (0.5%) + AMS (3 lb)	4.8	95	59	97	99	62 ab
5	Fierce EZ (6 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1%) + AMS (3 lb)	8.8	97	83	97	95	62 ab
6	Fierce MTZ (1 pt) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1%) + AMS (3 lb)	9.3	99	85	98	95	61 b
7	Fierce XLT (3.75 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1%) + AMS (3 lb)	8.5	99	87	98	97	62 ab
8	Authority Supreme (8 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS (3 lb)	1.3	96	74	98	99	62 ab
9	Authority Edge (8 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS (3 lb)	1.8	95	64	98	99	64 ab
10	Kyber PRO (1 pt) fb Enlist One (2 pt) + Roundup PM3 (30 oz) + COC (1%) + AMS (3 lb)	1.8	99	86	96	99	66 ab
11	Kyber PRO (1 pt) fb Enlist One (2 pt) + Roundup PM3 (30 oz) + Enversa (3 pt) + COC (1%) + AMS (3 lb)	1.3	99	86	93	98	65 ab
12	Kyber PRO (1 pt) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS (3 lb)	2.0	99	86	99	100	65 ab
13	Kyber PRO (1 pt) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Enversa (3 pt) + Superb HC (0.5%) + AMS (3 lb)	1.8	98	84	100	99	64 ab
14	Sonic Boom** (20 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS (3 lb)	0.0	99	74	97	98	70 a
15	Sonic Boom** (20 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Enversa (3 pt) + Superb HC (0.5%) + AMS (3 lb)	0.3	99	78	99	100	70 a
16	Zidua PRO (6 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + RU PM3 (20 oz) + Superb HC (0.5%) + AMS (3 lb)	1.3	98	73	98	100	67 ab
17	Zidua Plus* (6 oz) fb Liberty ULTRA (24 oz) + Roundup PM3 (30 oz) + Outlook (14 oz) + AMS (3 lb)	0.5	97	73	91	87	65 ab
18	Fierce EZ (6 oz) fb Liberty ULTRA (24 oz) + Roundup PM3 (30 oz) + Zidua Plus* (6 oz) + AMS (3 lb)	5.0	99	84	96	94	64 ab
LSD (α=0.10)		1.3	1	6	2	3	4
p value		<.001	<.001	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cSoybean injury (%) = necrosis (burn) and/or leaf deformation

***Zidua PLUS** is a new liquid herbicide premix of pyoxasulfone (Zidua SC) and imazethapyr (Pursuit) from BASF. It is still pending EPA registration and is not available for sale at the time of publication of this report.

****Sonic Boom** is a new liquid herbicide premix of sulfentrazone (Spartan) and metribuzin from Corteva and is registered by the EPA and available for sale.

Project Goal: Compare several herbicide tank mixes for POST waterhemp control and soybean yield.

Site Description:

Location: Brooklyn, WI	Crop: Enlist
Field #: OB-10N	Variety: O'SOY 2253EL-3
Soil type: sandy loam	Planting Date: 5/26
% OM: 1.3	Emergence Date: 6/4
pH: 7	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Seed Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: gly-R waterhemp (AMATA)	

Herbicide Application Information:

Date:	5/27	7/2
Treatment:	PRE (A)	POST (B)
Air Temp (°F):	70	89
2" Soil Temp (°F):	68	-
Soil moisture [surface]:	moist	dry
RH %:	55	43
Cloud cover %	85	45
Wind speed (mph)/direction	5-10/E	2-5/W
Rainfall (in) 1 wk after APP:	1.02	0.55
Rainfall (in) 2 wks after APP:	1.20	2.55
GPA:	13.6	15
PSI:	-	40
Nozzle:	TTI 11002	AIXR 110015
Nozzle spacing (in):	20	20
Boom Height (in):	20	24

Crop and weed information at application:

	Date:	5/27	7/2
soybean	Height:	-	6"
	Stage:	-	V4
waterhemp	Height:	-	0.5-4"
	Density:	-	60-116/m ²

Trt #	Treatment*	Formulation	SOA Group	Rate	App Timing	App Code
1	Check	70% w/w	2, 14	2.5 oz/a		
2	Handweeded Check					
3	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B
4	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Select MAX	0.97 lb/gal	1	9 fl oz/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B
5	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	B
	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Select MAX	0.97 lb/gal	1	9 fl oz/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B
6	Enlist One	3.8 lbae/gal	4	2 pt/a	POST	B
	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Select MAX	0.97 lb/gal	1	9 fl oz/a	POST	B
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B
7	Flexstar	1.88 lb/gal	14	1 pt/a	POST	B
	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Select MAX	0.97 lb/gal	1	9 fl oz/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B
8	Flexstar	1.88 lb/gal	14	1 pt/a	POST	B
	Liberty ULTRA	1.76 lb/gal	10	25 fl oz/a	POST	B
	Select MAX	0.97 lb/gal	1	9 fl oz/a	POST	B
	Dual II Magnum	7.64 lb/gal	15	1.5 pt/a	POST	B
	Superb HC			0.5% v/v	POST	B
	AMS			2 lb/a	POST	B

Adjuvants: AMS = Dry spray grade ammonium sulfate; Superb HC = high surfactant oil concentrate.

*Tendovo (2.1 qt/acre) was applied PRE (A) over the entire trial area.

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to compare several herbicide tank mixes for POST waterhemp control and soybean yield. The trial area was tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

POST herbicide tank mixes containing Flexstar caused significant soybean injury symptoms (leaf necrosis, stunting, leaf crinkling) (Table 22). Adding Dual II Magnum to the tank also increased soybean injury relative to the same herbicide program without Dual. Soybean recovered by 23 days after the POST application of most herbicide programs; however, injury persisted for both tank mixtures containing Flexstar.

Tank mixing either Enlist One or Flexstar with Liberty ULTRA improved waterhemp control at all rating timings (Table 22). Adding Dual II Magnum to the tank at the POST application did not improve end-of-season waterhemp control.

Soybean yield of the various herbicide programs was very similar and did not statistically differ (Table 22). Furthermore, soybean yield of the handweeded check (PRE only) was the same as all treatments that received a POST herbicide application, indicating that soybean injury earlier in the season did not negatively impact grain yield. Yield across all PRE fb POST herbicide programs = 67 bu acre⁻¹, while the treated check (PRE only) = 60 bu acre⁻¹.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 22. Crop injury, waterhemp control ratings, and soybean yield for trial #25-BRO-SB17 at Brooklyn, WI.^a

Trt # Herbicide (rate acre ⁻¹)	Soybean Injury (%)			Waterhemp (%)				Yield ^b bu acre ⁻¹
	8 DAT	13 DAT	23 DAT	8 DAT	13 DAT	23 DAT	9/30	
1 Treated Check ^c	0	0	0	0	0	0	0	60 b
2 Handweeded Check ^c	0	0	0	100	100	100	96	66 a
Two-Pass – PRE^c (5/27) fb POST (7/2)								
3 Liberty ULTRA (25 oz) ^d	0.5	0.5	0.0	94	88	81	82	66 a
4 Liberty ULTRA (25 oz) + Select Max (9 oz) ^d	0.0	0.0	0.0	94	88	80	81	66 a
5 Enlist One (2 pt) + Liberty ULTRA (25 oz) + Select Max (9 oz) ^d	3.5	0.0	0.0	99	99	94	95	69 a
6 Enlist One (2 pt) + Liberty ULTRA (25 oz) + Select Max (9 oz) + Dual II Magnum (1.5 pt) ^d	11.3	4.0	0.5	99	95	88	90	67 a
7 Flexstar (1 pt) + Liberty ULTRA (25 oz) + Select Max (9 oz) ^d	25.0	9.3	3.3	99	96	88	91	67 a
8 Flexstar (1 pt) + Liberty ULTRA (25 oz) + Select Max (9 oz) + Dual II Magnum (1.5 pt) ^d	30.3	15.0	7.0	99	98	90	89	66 a
LSD (α=0.10)	1.9	1.1	0.8	3	3	5	4	2
p value	<0.001	<0.001	<0.001	0.010	<0.001	0.002	<0.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

^cTendovo (2.1 qt/acre) was applied PRE over the entire trial area.

^dAll POST applications included Superb HC (0.5% v/v) and AMS (2 lb/a)

Project Goal: Investigate the use of group 15 herbicides in two-pass soybean programs for season-long waterhemp control in soybean.

Site Description:

Location: Brooklyn, WI	Crop: Enlist
Field #: OB-10N	Variety: GH2292E3
Soil type: sandy loam	Planting Date: 4/28
% OM: 1.3	Emergence Date: 5/15
pH: 7	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Seed Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: gly-R waterhemp (AMATA)	

Herbicide Application Information:

Date:	4/30	6/19
Treatment:	PRE (A)	POST (B)
Air Temp (°F):	64	83
2" Soil Temp (°F):	52	81
Soil moisture [surface]:	moist	moist
RH %:	53	56
Cloud cover %	50	0
Wind speed (mph)/direction	4-13/NE	3-10/W
Rainfall (in) 1 wk after APP:	1.47"	1.04"
Rainfall (in) 2 wks after APP:	1.47"	1.04"
GPA:	15	15
PSI:	40	40
Nozzle:	TTI 110015	AIXR110015
Nozzle spacing (in):	20	20
Boom Height (in):	20	24

Crop and weed information at application:

	Date:	4/30	6/19
soybean	Height:		8"
	Stage:		V5
waterhemp	Height:		0.5-7"
			Avg=2.5"
	Density:		2-48/m ²
			Avg=12/m ²

Trt #	Treatment*	Formulation	SOA Group	Rate	App Timing	App Code
1	Sonic	70% w/	2, 14	5 oz/a	PRE	A
2	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	2 pt/a	PRE	A
3	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	3.5 fl oz/a	PRE	A
4	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	PRE	A
5	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	1.75 fl oz/a	PRE	A
6	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	2 pt/a	POST	B
7	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	3.5 fl oz/a	POST	B
8	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	POST	B
9	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	1.75 fl oz/a	POST	B
10	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	PRE	A
	Dual II Magnum	7.64 lb/gal	15	1 pt/a	POST	B
11	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	1.75 fl oz/a	PRE	A
	Zidua SC	4.17 lb/gal	15	1.75 fl oz/a	POST	B

*All treatments received a POST application of Enlist One (2 pt) + Liberty ULTRA (24 fl oz) + Roundup PowerMAX3 (20 fl oz) + Superb HC (0.5% v/v) + AMS (2 lb).

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to investigate the use of group 15 herbicides in two-pass soybean programs for season-long waterhemp control in soybean. Our goal is to fine-tune recommendations on application timing and use rate of group 15 herbicides as part of a larger waterhemp management strategy in soybean cropping systems in Wisconsin. Soybean was planted early to get the most potential benefit out of using group 15 herbicides in a POST application. We chose two commonly used group 15 herbicides (Dual II Magnum, S-metolachlor; Zidua SC, pyroxasulfone) and five different use strategies varying the rate and timing each herbicide is sprayed (listed below).

1. Full rate at PRE
2. Half rate at PRE
3. Full rate at POST
4. Half rate at POST
5. Half rate at PRE + half rate at POST

For all PRE applications, the group 15 herbicide was tank mixed with Sonic for additional waterhemp control. All treatments received a POST application of Enlist One (2 pt) + Liberty ULTRA (24 fl oz) + Roundup PowerMAX3 (20 fl oz) + Superb HC (0.5% v/v) + AMS (2 lb). The group 15 herbicides were tank mixed at the POST application when necessary in the respective treatment.

End-of-season waterhemp visual control was >90% for all treatments, including the no group 15 herbicide control (trt 1) (Table 23). The addition of group 15 herbicides with Sonic at the PRE application decreased waterhemp density at the time of the POST application by 42% (full rate) and 20% (half rate) relative to the Sonic only PRE treatments (Table 23). End-of-season waterhemp density was also impacted by group 15 herbicide use strategies. Averaged across both products and use rates, end-of-season waterhemp density decreased by 13%; 3.9 plants m^{-2} (PRE), 67%; 1.5 plants m^{-2} (POST), and 60%; 1.8 plants m^{-2} (PRE + POST) relative to the control (no group 15 herbicide); 4.5 plants m^{-2} . Of note, surviving waterhemp plants at the end of the season were small and almost no plants extended above the soybean canopy.

Soybean yield was similar across all herbicide programs (Table 23).

Take Home Points:

- Using a group 15 herbicide at the PRE application reduced the number of waterhemp plants exposed to a POST herbicide = reduction in selection pressure.
 - Full rate > half rate
- Using a group 15 herbicide at the POST application reduced the number of waterhemp plants that survived to produce seed = reduction in soil seed bank.

Table 23. Waterhemp density, visual control ratings, and soybean yield for trial #25-BRO-SB19 at Brooklyn, WI.

		Trt #	Herbicide (rate acre ⁻¹)	Waterhemp Density (m ²)		Waterhemp Control (%)		Yield bu acre ⁻¹	
				6/19	9/22	7/2	9/22		
Group 15 Herbicide Rate and Timing		Two-Pass – PRE (4/30) fb POST (6/19)							
			1	Sonic (5 oz) <i>fb</i> *	15.6	4.5	-	93	78
		Full Rate PRE	2	Sonic (5 oz) + Dual II Magnum (2 pt) <i>fb</i> *	7.9	3.0	93	95	76
			3	Sonic (5 oz) + Zidua SC (3.5 fl oz) <i>fb</i> *	8.6	6.7	93	95	78
		Half Rate PRE	4	Sonic (5 oz) + Dual II Magnum (1 pt) <i>fb</i> *	12.8	5.5	95	94	76
			5	Sonic (5 oz) + Zidua SC (1.75 fl oz) <i>fb</i> *	13.6	1.0	97	96	79
		Full Rate POST	6	Sonic (5 oz) <i>fb</i> * + Dual II Magnum (2 pt)	13.6	4.5	90	94	79
			7	Sonic (5 oz) <i>fb</i> * + Zidua SC (3.5 fl oz)	14.0	0.0	97	98	75
		Half Rate POST	8	Sonic (5 oz) <i>fb</i> * + Dual II Magnum (1 pt)	14.9	1.0	95	95	78
			9	Sonic (5 oz) <i>fb</i> * + Zidua SC (1.75 fl oz)	12.6	0.5	95	95	76
		½ Rate PRE	10	Sonic (5 oz) + Dual II Magnum (1 pt) <i>fb</i> * + Dual II Magnum (1 pt)	10.3	1.5	96	97	76
½ Rate POST	11	Sonic (5 oz) + Zidua SC (1.75 fl oz) <i>fb</i> * + Zidua SC (1.75 fl oz)	8.8	2.0	98	97	76		
Standard Deviation				4.85	3.06	2.19	2.20	1.99	
CV				40.3	110.4	2.3	2.3	2.6	
p-value				ns	0.043	0.002	0.087	0.093	

*POST Herbicide applied to all treatments: Enlist One (2 pt) + Liberty ULTRA (24 oz) + Roundup PM3 (20 oz) + Superb HC (0.25% v/v) + AMS (2 lb)

Project Goal: Evaluate several 2- and 3-pass herbicide programs for season-long giant ragweed control and soybean yield.

Site Description:

Location: Janesville, WI	Crop: Enlist Soybean
Field #: 7	Variety: B202EE
Soil type: Plano silt loam	Planting Date: 5/14
% OM: 3.4	Emergence Date: 5/27
pH: 6.3	Population: 140,000 seeds/acre
Fertilization: -	Depth: 1.5 in
Previous crop: Corn	Row spacing: 30 in
Tillage: Conventional	Plot Size: 10 x 30 ft
Weed species: giant ragweed (AMBTR); common lambsquarters (CHEAL); giant foxtail (SETFA)	

Herbicide Application Information:

Date:	5/14	6/5	6/16	6/26	7/3
Treatment:	PRE (A)	EPOST (B)	MPOST(C)	POST (D)	LPOST (E)
Air Temp (°F):	88	75	86	89	94
2" Soil Temp (°F):	78	63	75	81	97
Soil moisture [surface]:	dry	wet	dry	wet	dry
RH %:	52	62	67	74	56
Cloud cover %	25	0	5	50	0
Wind speed (mph)/direction	3-9/E	4-6/E	2-5/E	0-4/W	2-4/E
Rainfall (in) 1 wk after APP:	1.19	0.07	0.55	1.70	1.64
Rainfall (in) 2 wks after APP:	1.34	0.32	2.64	3.34	2.65
GPA:	15	15	15	15	15
PSI:	40	38	40	40	40
Nozzle:	TT1110015	AIXR110015	AIXR110015	AIXR110015	AIXR110015
Nozzle spacing (in):	20	20	20	20	20
Boom Height (in):	20	24	24	26	30

Crop and weed information at application:

	Date:	5/14	6/5	6/16	6/26	7/3
soybean	Height:	-	3"	-	8"	10"
	Stage:	-	VC	V1	V4	R1
giant ragweed	Height:	-	1-3"	1-6"	3-8"	1-3"
	Density:	-	Avg=2" 4-24/m ²	Avg=3" 2-16/m ²	Avg=4" 1-8/m ²	Avg=2" 0-4/m ²
giant foxtail	Height:	-	-	-	-	1-6" Avg=4"
	Density:	-	-	-	-	0-32/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	FirstRate	84% w/w	2	0.6 oz/a	EPOST	B
	Dual II Magnum	7.64 lb/gal	15	1.3 pt/a	EPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	20 fl oz/a	EPOST	B
	AMS			8.5 lb/100 gal	EPOST	B
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	POST	D
	AMS			3 lb/a	POST	D
3	Prefix	5.29 lb/gal	14, 15	2.33 pt/a	EPOST	B
	Pursuit	2 lb/gal	2	4 fl oz/a	EPOST	B
	Roundup PowerMAX3	4.8 lbae/gal	9	20 fl oz/a	EPOST	B
	AMS			8.5 lb/100 gal	EPOST	B
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	POST	D
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	POST	D
	AMS			3 lb/a	POST	D
4	Fierce XLT	62.4% w/w	2, 14, 15	3.75 oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Perpetuo	2.3 lb/al	14, 15	6 fl oz/a	MPOST	C
	COC			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
5	Valor XLT	40.3% w/w	2, 14	5 oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Perpetuo	2.3 lb/al	14, 15	6 fl oz/a	MPOST	C
	COC			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
6	Tendovo	4.03 lb/gal	2, 5, 15	2.1 qt/a	PRE	A
	Flexstar	1.88 lb/gal	14	1 pt/a	MPOST	C
	Liberty ULTRA	1.76 lb/gal	10	29 fl oz/a	MPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	MPOST	C
	AMS			3 lb/a	MPOST	C
7	Prefix	5.29 lb/gal	14, 15	2.5 pt/a	PRE	A
	Pursuit	2 lb/gal	2	3 fl oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	MPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	MPOST	C
	Dual II Magnum	7.64 lb/gal	15	1.25 pt/a	MPOST	C
	AMS			3 lb/a	MPOST	C
8	Sonic	70% w/w	2, 14	5 oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	MPOST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Superb HC			0.5% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
9	Authority First	70% w/w	2, 14	6.4 oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Flexstar	1.88 lb/gal	14	1 pt/a	MPOST	C
	COC			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
10	Authority XL	70% w/w	2, 14	6.4 oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Flexstar	1.88 lb/gal	14	1 pt/a	MPOST	C
	COC			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
11	Zidua PRO	4.09 lb/gal	2, 14, 15	6 fl oz/a	PRE	A
	Metricor DF	75% w/w	5	5 oz/a	PRE	A
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	MPOST	C
	Enlist One	3.8 lbae/gal	4	2 pt/a	MPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	20 fl oz/a	MPOST	C
	Superb HC			0.5% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
12	Surveil	48% w/w	2, 14	4.2 oz/a	PRE	A
	Enlist One	3.8 lbae/gal	4	2 pt/a	MPOST	C
	Roundup PowerMAX3	4.8 lbae/gal	9	28 fl oz/a	MPOST	C
	AMS			3 lb/a	MPOST	C
	Liberty ULTRA	1.76 lb/gal	10	24 fl oz/a	LPOST	E
AMS			3 lb/a	LPOST	E	
13	Surveil	48% w/w	2, 14	4.2 oz/a	PRE	A
	Flexstar	1.88 lb/gal	14	1 pt/a	MPOST	C
	Poast	1.5 lb/gal	1	1 pt/a	MPOST	C
	MSO			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
14	Surveil	48% w/w	2, 14	4.2 oz/a	PRE	A
	Flexstar	1.88 lb/gal	14	1 pt/a	MPOST	C
	Basagran 5L	5 lb/gal	6	1.6 pt/a	MPOST	C
	Poast	1.5 lb/gal	1	1 pt/a	MPOST	C
	MSO			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
15	Surveil	48% w/w	2, 14	4.2 oz/a	PRE	A
	Storm	4 lb/gal	6, 14	1.5 pt/a	MPOST	C
	Poast	1.5 lb/gal	1	1 pt/a	MPOST	C
	COC			1% v/v	MPOST	C
	AMS			3 lb/a	MPOST	C
	Basagran 5L	5 lb/gal	6	1.6 pt/a	LPOST	E
	COC			1% v/v	LPOST	E
	AMS			3 lb/a	LPOST	E

Adjuvants: AMS = Dry spray grade ammonium sulfate; COC = CropOil; MSO = Upland MSO; Superb HC = high surfactant oil concentrate.

Trial Summary:

The trial was established at the Rock County Farm in Janesville, WI to evaluate several 2- and 3-pass herbicide programs for season-long giant ragweed management and soybean yield. Giant ragweed at this research location is a biotype with a prolonged emergence pattern as emergence typically starts in mid- to late-April and continues well into June. Due to this, managing giant ragweed with a 2-pass PRE followed by POST herbicide system is challenging and in past years a third cleanup pass was often needed to achieve greater than 90% control at the end of the season. We developed several 2-pass PRE followed by POST herbicide programs and prioritized choosing products that have been shown to provide good giant ragweed control. Chosen rates for PRE herbicides were very aggressive (high end of rate range) to give us the best opportunity to achieve season long control with only two herbicide applications. We also designed a 2-pass very early POST (applied when soybean reached the VC, cotyledon, growth stage) followed by a second POST pass (applied when giant ragweed reached four inches) to evaluate if delaying the initial herbicide application would result in season long giant ragweed control with only two herbicide applications. The trial area was chisel plowed in the fall and tilled in the spring to prepare the seedbed for planting and eliminate any weeds that had already emerged.

Valor XLT and Surveil caused minor soybean injury symptoms (stunting, leaf crinkling) 33 days after application (Table 25). Soybean injury (stunting, leaf necrosis) was also observed 11 following the EPOST applications. Injury was more severe following the application of Prefix + Pursuit + Roundup (trt 3). Leaf necrosis and some stunting occurred following the MPOST applications of treatments containing PPO-inhibitor (Group 14) herbicides, fomesafen, acifluorfen, and flumiclorac. Soybean recovered in most treatments; however, acifluorfen (Storm) injury persisted as seen in the percent canopy closure on 7/15 (Table 25).

Most of the PRE herbicides we evaluated provided acceptable early season residual control of giant ragweed (Table 24). Furthermore, several of the 2-pass PRE followed by POST herbicide programs provide good end-of-season control; however, most treatments had some escapes that produced viable seed. Both two-pass very early POST followed by POST herbicide programs provided near 100% control at soybean harvest.

Soybean yield was statistically similar among all of the different herbicide programs (Table 25).

A similar trial was conducted in 2024. See trial #25-ROK-SB21 in the [2024 Wisconsin Weed Science Research Report](#).

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 24. Giant ragweed and giant foxtail visual control ratings for trial #25-ROK-SB21 at Janesville, WI.^a

Trt #	Herbicide (rate acre ⁻¹)	Giant Ragweed (%)					Giant Foxtail (%)			
		6/4	6/16	7/2	7/15	10/6	6/16	7/2	7/15	10/6
1	Untreated Check	0	0	0	0	0	0	0	0	0
Two-Pass – EPOST (6/5) fb POST (6/26)		EPOST POST					POST			
2	FirstRate (0.6 oz) + Dual II Magnum (1.3 pt) + Roundup PM3 (20 oz) + AMS ^d fb Liberty ULTRA (24 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	0	98	100	100	97	99	100	98	100
3	Prefix (2.33 pt) + Pursuit (4 oz) + Roundup PM3 (20 oz) + AMS ^d fb Liberty ULTRA (24 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	0	98	99	99	96	99	100	100	100
Two-Pass – PRE (5/14) fb MPOST (6/16)		MPOST					MPOST			
4	Fierce XLT (3.75 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1% v/v) + AMS ^c	80	75	93	90	80	91	98	97	94
5	Valor XLT (5 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1% v/v) + AMS ^c	82	74	100	97	95	91	98	97	90
6	Tendovo (2.1 qt) fb Flexstar (1 pt) + Liberty ULTRA (29 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	88	85	97	93	90	93	96	91	87
7	Prefix (2.5 pt) + Pursuit (3 oz) fb Enlist One (2 pt) + Roundup PM3 (28 oz) + Dual II Magnum (1.25 pt) + AMS ^c	95	90	99	98	93	99	98	97	95
8	Sonic (5 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS ^c	89	79	97	94	86	86	93	88	83
9	Authority First (6.4 oz) fb Liberty ULTRA (24 oz) + Flexstar (1 pt) + COC (1% v/v) + AMS ^c	88	79	97	97	91	91	96	97	99
10	Authority XL (6.4 oz) fb Liberty ULTRA (24 oz) + Flexstar (1 pt) + COC (1% v/v) + AMS ^c	82	72	93	88	78	84	94	92	90
11	Zidua PRO (6 oz) + Metricor DF (5 oz) fb Liberty U. (24 oz) + Enlist (2 pt) + Roundup (20 oz) + Superb HC (0.5%) + AMS ^c	66	52	96	90	82	55	95	88	76
13	Surveil (4.2 oz) fb Flexstar (1 pt) + Poast (1 pt) + MSO (1% v/v) + AMS ^c	91	85	100	96	90	91	96	90	90
14	Surveil (4.2 oz) fb Flexstar (1 pt) + Basagran 5L (1.6 pt) + Poast (1 pt) + MSO (1% v/v) + AMS ^c	84	77	96	89	82	91	90	76	70
Three-Pass – PRE (5/14) fb MPOST (6/16) fb LPOST (7/3)		LPOST					LPOST			
12	Surveil (4.2 oz) fb Enlist One (2 pt) + Roundup PM3 (28 oz) + AMS ^c fb Liberty ULTRA (24 oz) + AMS ^c	91	83	97	98	97	90	95	99	96
15	Surveil (4.2 oz) fb Storm (1.5 pt) + Poast (1 pt) + COC (1% v/v) + AMS ^c fb Basagran 5L (1.6 pt) + COC (1% v/v) + AMS ^c	91	79	94	98	99	92	88	100	100
LSD (α=0.10)		7	18	4	7	11	9	4	6	7
p value		<.001	<.001	0.028	0.032	0.019	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^cAMS = ^capplied at 3 lb/a; ^dapplied at 8.5 lb/100 gal.

Highlighted treatments were designed to be used in non-gmo soybean.

Table 25. Crop injury, canopy closure, and soybean yield for trial #25-ROK-SB21 at Janesville, WI.

Trt #	Herbicide (rate acre ⁻¹)	Soybean Injury (%)			Canopy (%)	Yield ^b
		6/16	7/2	7/15	7/15	bu acre ⁻¹
1	Untreated Check	0	0	0	-	0 b
Two-Pass – EPOST (5/15) fb POST (6/25)						
2	FirstRate (0.6 oz) + Dual II Magnum (1.3 pt) + Roundup PM3 (20 oz) + AMS ^d fb Liberty ULTRA (24 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	9.0	3.3	0.0	94 ab	73 a
3	Prefix (2.33 pt) + Pursuit (4 oz) + Roundup PM3 (20 oz) + AMS ^d fb Liberty ULTRA (24 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	14.8	7.3	0.0	93 ab	71 a
Two-Pass – PRE (5/15) fb MPOST (6/11)		MPOST				
4	Fierce XLT (3.75 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1% v/v) + AMS ^c	1.8	5.5	0.0	95 a	70 a
5	Valor XLT (5 oz) fb Liberty ULTRA (24 oz) + Perpetuo (6 oz) + COC (1% v/v) + AMS ^c	4.0	6.5	0.0	93 ab	68 a
6	Tendovo (2.1 qt) fb Flexstar (1 pt) + Liberty ULTRA (29 oz) + Roundup PowerMAX3 (28 oz) + AMS ^c	1.5	8.0	0.0	94 ab	68 a
7	Prefix (2.5 pt) + Pursuit (3 oz) fb Enlist One (2 pt) + Roundup PM3 (28 oz) + Dual II Magnum (1.25 pt) + AMS ^c	1.0	4.3	0.0	96 a	71 a
8	Sonic (5 oz) fb Enlist One (2 pt) + Liberty ULTRA (24 oz) + Superb HC (0.5%) + AMS ^c	0.5	1.8	0.0	97 a	71 a
9	Authority First (6.4 oz) fb Liberty ULTRA (24 oz) + Flexstar (1 pt) + COC (1% v/v) + AMS ^c	0.5	7.3	0.0	97 a	73 a
10	Authority XL (6.4 oz) fb Liberty ULTRA (24 oz) + Flexstar (1 pt) + COC (1% v/v) + AMS ^c	0.3	7.8	0.0	95 a	65 a
11	Zidua PRO (6 oz) + Metricor DF (5 oz) fb Liberty U. (24 oz) + Enlist (2 pt) + Roundup (20 oz) + Superb HC (0.5%) + AMS ^c	1.0	3.8	0.0	95 a	69 a
13	Surveil (4.2 oz) fb Flexstar (1 pt) + Poast (1 pt) + MSO (1% v/v) + AMS ^c	4.0	10.3	0.0	94 ab	66 a
14	Surveil (4.2 oz) fb Flexstar (1 pt) + Basagran 5L (1.6 pt) + Poast (1 pt) + MSO (1% v/v) + AMS ^c	3.0	11.7	0.0	91 b	64 a
Three-Pass – PRE (5/15) fb MPOST (6/11) fb LPOST (7/1)		POST				
12	Surveil (4.2 oz) fb Enlist One (2 pt) + Roundup PM3 (28 oz) + AMS ^c fb Liberty ULTRA (24 oz) + AMS ^c	3.5	1.3	0.0	96 a	70 a
15	Surveil (4.2 oz) fb Storm (1.5 pt) + Poast (1 pt) + COC (1% v/v) + AMS ^c fb Basagran 5L (1.6 pt) + COC (1% v/v) + AMS ^c	2.8	12.5	17.5	81 c	70 a
LSD (α=0.10)		1.6	1.9	1.2	2	6
p value		<.001	<.001	<.001	<.001	<.001

^bCrop canopy closure and yield values with the same letter are not significantly different.

^cAMS = applied at 3 lb/a; ^dapplied at 8.5 lb/100 gal.

Highlighted treatments were designed to be used in non-gmo soybean.

Project Goal: Evaluate different metribuzin rates in comprehensive herbicide programs to maximize PRE waterhemp control and minimize crop injury in early and late planted soybeans

Site Description:

Location: Brooklyn, WI	Crop: Enlist Soybean
Field #: OB-10N	Variety: GH2292E3
Soil type: sandy loam	Planting Date (early): 4/28
% OM: 1.3	Planting Date (late): 5/26
pH: 7.0	Emergence Date (early): 5/15
Fertilization: -	Emergence Date (late): 6/4
Previous crop: Seed Corn	Population: 140,000 seeds/acre
Tillage: Conventional	Depth: 1.5 in
Plot Size: 10 x 30 ft	Row spacing: 30 in
Weed species: gly-R waterhemp (AMATA)	

PRE Herbicide Application Information:

Date:	4/30	5/27
Treatment:	PRE (A)	PRE (B)
Air Temp (°F):	64	70
2" Soil Temp (°F):	52	68
Soil moisture [surface]:	moist	moist
RH %:	53	55
Cloud cover %	50	85
Wind speed (mph)/direction	4-13/NE	3-10/W
Rainfall (in) 1 wk after APP:	1.47	1.02
Rainfall (in) 2 wks after APP:	1.47	1.20
GPA:	15	15
PSI:	40	40
Nozzle:	TTI 110015	TTI 110015
Nozzle spacing (in):	20	20
Boom Height (in):	20	20

Soybean information at POST application:

Date:	6/19	6/26
Treatments Sprayed:	1-7	9-15
soybean Height:	9"	6"
Stage:	V4/V5	V3

*POST applications were made when waterhemp reached an average height of 4 inches.

Planting Date	Trt #	Treatment	Formulation	SOA		App Timing	App Code
				Group	Rate		
Early	1	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
	2	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
		Metricor DF	75% w/w	5	4 oz/a	PRE	A
	3	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
		Metricor DF	75% w/w	5	8 oz/a	PRE	A
	4	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
		Metricor DF	75% w/w	5	12 oz/a	PRE	A
	5	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	A
Metricor DF		75% w/w	5	16 oz/a	PRE	A	
6	Spartan	4 lb/gal	14	10 fl oz/a	PRE	A	
7	Preview 2.1SC	3.35 lb/gal	5, 14	23 fl oz/a	PRE	A	
8	Untreated Check						
Late	9	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	B
	10	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	B
		Metricor DF	75% w/w	5	4 oz/a	PRE	B
	11	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	B
		Metricor DF	75% w/w	5	8 oz/a	PRE	B
	12	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	B
		Metricor DF	75% w/w	5	12 oz/a	PRE	B
	13	Fierce EZ	3.04 lb/gal	14, 15	6 fl oz/a	PRE	B
Metricor DF		75% w/w	5	16 oz/a	PRE	B	
14	Spartan	4 lb/gal	14	10 fl oz/a	PRE	B	
15	Preview 2.1SC	3.35 lb/gal	5, 14	23 fl oz/a	PRE	B	
16	Untreated Check						

*POST application of Liberty (32 oz) + Enlist One (2 pt) + Dual II Magnum (1.5 pt) + AMS (3 lb) was made when average waterhemp height reached 4 inches.

Trial Summary:

This study was part of multi-state effort funded by the United Soybean Board evaluating different metribuzin rates in comprehensive herbicide programs to maximize PRE waterhemp control and minimize crop injury in early and late planted soybeans. The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI in a field with a natural infestation of glyphosate-resistant waterhemp. The entire trial area was tilled immediately prior to the first soybean planting date (4/28). No tillage operation was done prior to the second planting date on 5/26, so Liberty (32 fl oz/a) and AMS (3 lb/a) were added to all PRE herbicide treatments to control any emerged waterhemp in the late planted treatments. POST applications were made when waterhemp reached an average height of 4 inches.

Only minor soybean injury symptoms were observed in most of the herbicide treatments at both planting dates (data not shown) Only Fierce EZ + metribuzin at the highest rate (16 oz) applied following the late planting date (trt 13) had an average crop injury response rating greater than 5% 14 days after soybean emergence (DAE).

Waterhemp density data and visual control ratings were collected from each plot at two intervals: 14 DAE and at the time of POST application (Table 26). In general, the addition of metribuzin at increasing rates to Fierce EZ improved waterhemp visual control and conversely decreased both waterhemp density and biomass at the time of the POST application in both planting timings. Averaged across all herbicide treatments, more waterhemp plants were exposed to the POST herbicide in the early planting date (~34 plants m⁻²) than the later planting date (~11 plants m⁻²). However, waterhemp plants were slightly larger in size at the later planting date as shown by the biomass data.

Soybean yield was similar across PRE herbicide treatments at each respective soybean planting date (Table 26). Averaged across herbicide treatments, the early planted soybean had a 5 bu acre⁻¹ yield advantage relative to the late planted soybean, 74 and 69 bu acre⁻¹, respectively.

A similar trial was conducted in 2024. See trial #24-BRO -USB01 in the [2024 Wisconsin Weed Science Research Report](#).

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 26. Waterhemp visual control and density and soybean yield for trial #25-BRO-USB01 at Brooklyn, WI.

Plant Date	POST App Date	Trt # Herbicide (rate acre ⁻¹)	Control (%)		Density (plants/m ²)		Biomass (g/m ²)	Yield ^b bu acre ⁻¹
			14 DAE	@POST	14 DAE	@POST	@POST	
Early	-	8 Untreated Check	0	0	7.0	73.0	15.0	57 bc
Late	-	16 Untreated Check	0	0	40.0	31.5	21.4	52 c
Two-Pass – PRE fb POST^c								
Early	6/19	1 Fierce EZ (6 fl oz)	99	83	0.0	49.5	6.8	76 a
		2 Fierce EZ (6 fl oz) + Metricor DF (4 oz)	99	91	0.0	29.0	6.3	73 a
		3 Fierce EZ (6 fl oz) + Metricor DF (8 oz)	99	94	0.0	23.5	1.4	75 a
		4 Fierce EZ (6 fl oz) + Metricor DF (12 oz)	99	96	0.0	13.5	1.6	72 a
		5 Fierce EZ (6 fl oz) + Metricor DF (16 oz)	99	98	0.0	29.0	1.0	76 a
		6 Spartan (10 fl oz)	99	76	0.6	58.0	8.8	75 a
		7 Preview 2.1SC (23 fl oz)	99	88	0.0	37.5	4.3	74 a
		Average (trts 1-7)		99	89	0.1	34.3	4.3
Late	6/26	9 Fierce EZ (6 fl oz)	95	93	15.0	12.0	9.6	69 ab
		10 Fierce EZ (6 fl oz) + Metricor DF (4 oz)	97	94	6.0	8.5	6.1	71 a
		11 Fierce EZ (6 fl oz) + Metricor DF (8 oz)	98	95	11.6	7.0	3.4	69 ab
		12 Fierce EZ (6 fl oz) + Metricor DF (12 oz)	98	99	4.6	3.0	3.1	69 ab
		13 Fierce EZ (6 fl oz) + Metricor DF (16 oz)	99	98	4.0	1.5	0.9	68 ab
		14 Spartan (10 fl oz)	88	78	28.6	33.0	22.4	70 a
		15 Preview 2.1SC (23 fl oz)	97	94	6.6	10.5	5.0	69 ab
		Average (trts 9-15)		96	93	10.9	10.8	7.2
LSD (α=0.10)			2	4	13.0	20.2	8.0	8
p value			<.001	<.001	<.001	<.001	<.001	<.001

^aWaterhemp density collected from two 0.25 m² quadrats 14 days after emergence (DAE) of each respective planting date and at the time of the POST herbicide application.

^bYield values with the same letter are not significantly different.

^cPOST application of Liberty (32 oz) + Enlist One (2 pt) + Dual II Magnum (1.5 pt) + AMS (3 lb) was made when average waterhemp height reached 4 inches.

Project Goals: Compare weed control of Albaugh glufosinate formulations to the industry standard.

Site Description:

Location: Arlington, WI	Crop: none
Field #: 362	Variety: -
Soil type: Plano silt loam	Planting Date: -
% OM: 3.3	Emergence Date: -
pH: 6.5	Population: -
Fertilization: -	Depth: -
Previous crop: Silage corn	Row spacing: -
Tillage: conventional	Plot Size: 8 x 25 ft
Weed species: common lambsquarters (CHEAL); common ragweed (AMBEL); giant foxtail (SETFA)	

Herbicide Application Information:

Date:	6/20
Treatment:	POST (A)
Air Temp (°F):	75
2" Soil Temp (°F):	72
Soil moisture [surface]:	wet
RH %:	77
Cloud cover %	30
Wind speed (mph)/direction	6-15/SSW
Rainfall (in) 1 wk after APP:	2.31
GPA:	15
PSI:	40
Nozzle:	AIXR 110015
Nozzle spacing (in):	20
Boom Height (in):	25

Crop and weed information at application:

	Date:	6/20
lambsquarters	Height:	0.5-6" Avg=3"
	Density:	53-79/ft ²
common ragweed	Height:	1-9" Avg=4"
	Density:	6-15/ft ²
giant foxtail	Height:	1-9" Avg=6"
	Density:	4-21/ft ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Liberty AMS	2.34 lb/gal	10	22 fl oz/a 1.5 lb/a	POST POST	A A
2	Liberty AMS	2.34 lb/gal	10	32 fl oz/a 1.5 lb/a	POST POST	A A
3	Liberty AMS	2.34 lb/gal	10	43 fl oz/a 1.5 lb/a	POST POST	A A
4	Surmise 5 AMS	4.6 lb/gal	10	11 fl oz/a 1.5 lb/a	POST POST	A A
5	Surmise 5 AMS	4.6 lb/gal	10	16 fl oz/a 1.5 lb/a	POST POST	A A
6	Surmise 5 AMS	4.6 lb/gal	10	21.5 fl oz/a 1.5 lb/a	POST POST	A A
7	Exp. Glufosinate #1 AMS	-	10	16 fl oz/a 1.5 lb/a	POST POST	A A
8	Exp. Glufosinate #1 AMS	-	10	24 fl oz/a 1.5 lb/a	POST POST	A A
9	Exp. Glufosinate #1 AMS	-	10	29 fl oz/a 1.5 lb/a	POST POST	A A
10	Surmise 5 Exp. Adjuvant #1 AMS	4.6 lb/gal	10	11 fl oz/a 0.25% v/v 1.5 lb/a	POST POST POST	A A A
11	Surmise 5 Exp. Adjuvant #1 AMS	4.6 lb/gal	10	16 fl oz/a 0.25% v/v 1.5 lb/a	POST POST POST	A A A
12	Surmise 5 Exp. Adjuvant #1 AMS	4.6 lb/gal	10	21.5 fl oz/a 0.25% v/v 1.5 lb/a	POST POST POST	A A A
13	Untreated Check					

Adjuvants: AMS = dry spray grade ammonium sulfate

Trial Summary:

The trial was established at the Arlington Ag Research Station to compare weed control of Albaugh glufosinate formulations to the industry standard. The Albaugh experimental glufosinate formulation performed similarly to the industry standard (Liberty) at the mid and high rates for both common lambsquarters and giant foxtail control (Table 27). Surmise 5 did not adequately control either weed species without an additional adjuvant. Surmise 5 at 21.5 fl oz acre⁻¹ + the experimental adjuvant had similar lambsquarters and giant foxtail control as Liberty. Common lambsquarters is an excellent bioindicator species for detecting differences in visual control when evaluating glufosinate formulations or glufosinate and adjuvant tank mixes. When using generic formulations of glufosinate additional adjuvants may be necessary to achieve satisfactory levels of control on weeds less sensitive to glufosinate.

Table 27. Lambsquarters and giant foxtail visual control ratings for trial #25-ARL-BG01 at Arlington, WI.^{ab}

Trt #	Herbicide (rate acre ⁻¹)	Lambsquarters (%)			Giant Foxtail (%)		
		6 DAT	10 DAT	13 DAT	6 DAT	10 DAT	13 DAT
13	Untreated Check	0	0	0	0	0	0
One-Pass – POST (6/20)							
1	Liberty (22 fl oz) + AMS (1.5 lb)	97 bcd	97 a	95 abc	88 d	86 de	85 e
2	Liberty (32 fl oz) + AMS (1.5 lb)	98 abc	98 a	98 ab	91 bc	95 ab	94 ab
3	Liberty (43 fl oz) + AMS (1.5 lb)	99 a	99 a	99 a	93 ab	97 a	97 a
4	Surmise 5 (11 fl oz) + AMS (1.5 lb)	63 g	61 e	54 f	80 f	75 g	73 g
5	Surmise 5 (16 fl oz) + AMS (1.5 lb)	79 f	79 d	70 e	88 d	89 cd	86 de
6	Surmise 5 (21.5 fl oz) + AMS (1.5 lb)	85 e	85 c	80 d	86 de	89 cd	88 cde
10	Surmise 5 (11 fl oz) + Exp. Adjuvant #1 (0.25% v/v) + AMS (1.5 lb)	80 f	80 d	71 e	85 e	83 ef	76 fg
11	Surmise 5 (16 fl oz) + Exp. Adjuvant #1 (0.25% v/v) + AMS (1.5 lb)	96 cd	96 ab	94 bc	90 c	94 ab	92 bc
12	Surmise 5 (21.5 fl oz) + Exp. Adjuvant #1 (0.25% v/v) + AMS (1.5 lb)	97 abc	97 a	95 abc	93 ab	95 ab	95 ab
7	Experimental Glufosinate #1 (16 fl oz) + AMS (1.5 lb)	95 d	93 b	91 c	85 e	81 f	78 f
8	Experimental Glufosinate #1 (24 fl oz) + AMS (1.5 lb)	98 abc	98 a	97 ab	90 c	93 bc	90 bcd
9	Experimental Glufosinate #1 (29 fl oz) + AMS (1.5 lb)	98 ab	99 a	99 a	94 a	96 ab	97 a
LSD (α=0.10)		2	4	4	2	4	5
p value		<.001	<.001	<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

Project Goals: Compare weed control of glyphosate tank mixed with Uptake Plus adjuvant to industry standards.

Site Description:

Location:	Arlington, WI	Crop:	none
Field #:	362	Variety:	-
Soil type:	Plano silt loam	Planting Date:	-
% OM:	3.3	Emergence Date:	-
pH:	6.5	Population:	-
Fertilization:	-	Depth:	-
Previous crop:	Silage corn	Row spacing:	-
Tillage:	conventional	Plot Size:	10 x 25 ft
Weed species:	common lambsquarters (CHEAL); common ragweed (AMBEL)		

Herbicide Application Information:

Date:	7/7
Treatment:	POST (A)
Air Temp (°F):	76
2" Soil Temp (°F):	76
Soil moisture [surface]:	dry
RH %:	66
Cloud cover %	70
Wind speed (mph)/direction	1-2/N
Rainfall (in) 1 wk after APP:	0.62
Rainfall (in) 2 wks after APP:	1.65
GPA:	15
PSI:	39
Nozzle:	AIXR 110015
Nozzle spacing (in):	20
Boom Height (in):	35

Crop and weed information at application:

	Date:	7/7
lambsquarters	Height:	2-16" Avg=8"
	Density:	5-21/ft ²
common ragweed	Height:	6-20" Avg=12"
	Density:	4-8/ft ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Buccaneer Plus	3 lbae/gal	9	16 fl oz/a	POST	A
2	Buccaneer Plus Uptake Plus	3 lbae/gal	9	16 fl oz/a 2.5% v/v	POST POST	A A
3	Buccaneer Plus Brandt Exp. Adjuvant #1 Brandt AMS	3 lbae/gal	9	16 fl oz/a 0.25% v/v 7 lb/100 gal	POST POST POST	A A A
4	Buccaneer Plus Brandt AMS	3 lbae/gal	9	16 fl oz/a 7 lb/100 gal	POST POST	A A
5	Buccaneer Plus Class Act NG	3 lbae/gal	9	16 fl oz/a 2.1% v/v	POST POST	A A

Adjuvants: Brandt AMS = dry spray grade ammonium sulfate; Uptake Plus = AMS water conditioner + NIS + sugar release technology blend; Class Act NG = AMS water conditioner + NIS blend

Buccaneer Plus was applied at a low use rate to large weeds in order to better detect differences between adjuvants treatments.

Trial Summary:

The trial was established at the Arlington Ag Research Station to compare weed control of glyphosate tank mixed with Brandt experimental adjuvants. Buccaneer Plus was applied at a low use rate to large weeds in order to better detect differences across adjuvant treatments. Uptake Plus improved common lambsquarters and common ragweed visual control over Buccaneer alone and Buccaneer + Brandt AMS (Table 28). When tank mixed with glyphosate, Uptake Plus also provided similar control of both weed species to Class Act NG. This trial demonstrates the importance of adjuvants when using generic formulations of glyphosate.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 28. Lambsquarters and common ragweed visual control ratings for trial #25-ARL-BG02 at Arlington, WI.^{ab}

Trt #	Herbicide (rate acre ⁻¹)	Lambsquarters (%)			Common Ragweed (%)		
		10 DAT	15 DAT	21 DAT	10 DAT	15 DAT	21 DAT
One-Pass – POST (7/7)^c							
1	Buccaneer Plus (16 oz)	57 c	43 c	47 c	77 b	76 b	81 c
2	Buccaneer Plus (16 oz) + Uptake Plus (2.5% v/v)	90 a	93 a	92 a	85 a	88 a	92 a
3	Buccaneer Plus (16 oz) + Brandt Exp Adjuvant #1 (0.25% v/v) + Brandt AMS (7 lb/100 gal)	83 a	89 a	87 a	82 a	84 a	86 bc
4	Buccaneer Plus (16 oz) + Brandt AMS (7 lb/100 gal)	68 b	62 b	55 b	80 ab	78 b	83 c
5	Buccaneer Plus (16 oz) + Class Act NG (2.1% v/v)	84 a	87 a	86 a	83 a	89 a	90 ab
LSD ($\alpha=0.10$)		7	10	7	4	6	4
p value		<.001	<.001	<.001	0.016	0.004	0.003

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

^cBuccaneer Plus was applied at a low use rate to large weeds in order to better detect differences between adjuvants treatments.

Project Goals: Compare weed control of glufosinate tank mixed with Uptake Plus adjuvant to industry standards.

Site Description:

Location: Arlington, WI	Crop: none
Field #: 362	Variety: -
Soil type: Plano silt loam	Planting Date: -
% OM: 3.3	Emergence Date: -
pH: 6.5	Population: -
Fertilization: -	Depth: -
Previous crop: Silage corn	Row spacing: -
Tillage: conventional	Plot Size: 8 x 25 ft
Weed species: common lambsquarters (CHEAL); common ragweed (AMBEL); giant foxtail (SETFA)	

Herbicide Application Information:

Date:	6/20
Treatment:	POST (A)
Air Temp (°F):	75
2" Soil Temp (°F):	72
Soil moisture [surface]:	wet
RH %:	77
Cloud cover %	30
Wind speed (mph)/direction	3-11/S
Rainfall (in) 1 wk after APP:	2.31
Rainfall (in) 2 wks after APP:	2.53
GPA:	15
PSI:	40
Nozzle:	TT 110015
Nozzle spacing (in):	20
Boom Height (in):	24

Crop and weed information at application:

	Date:	6/20
lambsquarters	Height:	0.5-7"
	Density:	Avg=3" 46-54/ft ²
common ragweed	Height:	1-10"
	Density:	Avg=4" 2-13/ft ²
giant foxtail	Height:	1-10"
	Density:	Avg=6" 8-40/ft ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Surmise 5	4.6 lb/gal	10	16 fl oz/a	POST	A
2	Surmise 5 Uptake Plus	4.6 lb/gal	10	16 fl oz/a 2.5% v/v	POST POST	A A
3	Surmise 5 Brandt Exp. Adjuvant #1 Brandt AMS	4.6 lb/gal	10	16 fl oz/a 0.25% v/v 7 lb/100 gal	POST POST POST	A A A
4	Surmise 5 Brandt AMS	4.6 lb/gal	10	16 fl oz/a 7 lb/100 gal	POST POST	A A
5	Surmise 5 Class Act NG	4.6 lb/gal	10	16 fl oz/a 2.1% v/v	POST POST	A A

Adjuvants: Brandt AMS = dry spray grade ammonium sulfate; Uptake Plus = AMS water conditioner + NIS + sugar release technology blend; Class Act NG = AMS water conditioner + NIS blend

Trial Summary:

The trial was established at the Arlington Ag Research Station to compare weed control of glufosinate tank mixed with Brandt experimental adjuvants. There was no difference in common ragweed control as all treatments had >95% control (data not shown). All adjuvants improved common lambsquarters control when tank mixed with Surmise 5 when compared to Surmise 5 applied alone (Table 29). Uptake Plus provided the best control and was greater than Class Act NG. Common lambsquarters is an excellent bioindicator species for detecting differences in visual control when evaluating glufosinate formulations or glufosinate and adjuvant tank mixes. Uptake Plus also provided similar control of giant foxtail as Class Act NG 13 days after application (Table 29). This trial demonstrates the importance of choosing the right adjuvants when using generic formulations of glufosinate.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 29. Lambsquarters and giant foxtail visual control ratings for trial #25-ARL-BG03 at Arlington, WI.^{ab}

Trt #	Herbicide (rate acre ⁻¹)	Lambsquarters (%)			G. Foxtail (%)	
		6 DAT	13 DAT	21 DAT	6 DAT	13 DAT
One-Pass – POST (6/20)^c						
1	Surmise 5 (16 oz)	68 e	55 e	34 e	85 b	80 c
2	Surmise 5 (16 oz) + Uptake Plus (2.5% v/v)	95 a	93 a	89 a	87 a	89 a
3	Surmise 5 (16 oz) + Brandt Exp Adjuvant #1 (0.25% v/v) + Brandt AMS (7 lb/100 gal)	88 c	76 c	67 c	87 a	85 b
4	Surmise 5 (16 oz) + Brandt AMS (7 lb/100 gal)	79 d	66 d	52 d	86 ab	84 b
5	Surmise 5 (16 oz) + Class Act NG (2.1% v/v)	91 b	86 b	79 b	87 a	89 a
LSD ($\alpha=0.10$)		3	5	6	1	3
p value		<.001	<.001	<.001	0.031	0.002

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

Project Goals: Compare waterhemp burndown control of **Voraxor** to other common PPO-inhibitor containing herbicides.

***Voraxor** is a new herbicide from BASF containing two group 14 active ingredients, saflufenacil and trifludimoxazin. **Voraxor is not registered for commercial use in the United States at the time of this publication.**

Site Description:

Location: Brooklyn, WI	Crop: none
Field #: OB-10S	Variety: -
Soil type: sandy loam	Planting Date: -
% OM: 1.7	Emergence Date: -
pH: 6.5	Population: -
Fertilization: -	Depth: -
Previous crop: seed corn	Row spacing: -
Tillage: conventional	Plot Size: 8 x 25 ft
Weed species: gly-R waterhemp (AMATA)	

Herbicide Application Information:

Date:	6/23
Treatment:	POST (A)
Air Temp (°F):	94
2" Soil Temp (°F):	99
Soil moisture [surface]:	dry
RH %:	51
Cloud cover %	15
Wind speed (mph)/direction	8-20/S
Rainfall (in) 1 wk after APP:	1.10
Rainfall (in) 2 wks after APP:	1.65
GPA:	15
PSI:	40
Nozzle:	AIXR 110015
Nozzle spacing (in):	20
Boom Height (in):	24

Crop and weed information at application:

	Date:	6/23
waterhemp	Height:	0.5-7"
		Avg=2.5"
	Density:	136-184/m ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
3	Authority Supreme	4.16 lb/gal	14, 15	6.5 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
4	Fierce EZ	3.04 lb/gal	14, 15	7.5 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
5	Reviton	2.83 lb/gal	14	1 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
6	Sharpen	2.85 lb/gal	14	1 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
7	Voraxor	3.13 lb/gal	14	1.4 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
8	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Authority Supreme	4.16 lb/gal	14, 15	6.5 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
9	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Fierce EZ	3.04 lb/gal	14, 15	7.5 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
10	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Reviton	2.83 lb/gal	14	1 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
11	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Sharpen	2.85 lb/gal	14	1 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A
12	2,4-D LV6	5.6 lbae/gal	4	1 pt/a	POST	A
	Voraxor	3.13 lb/gal	14	1.4 fl oz/a	POST	A
	Zidua SC	4.17 lb/gal	15	3.25 fl oz/a	POST	A
	MSO			1% v/v	POST	A
	AMS			8.5 lb/100 gal	POST	A

Adjuvants: AMS = dry spray grade ammonium sulfate; MSO = Upland MSO

Trial Summary:

The trial was established at the O'Brien Hybrids farm located north of Brooklyn, WI to compare waterhemp burndown control of **Voraxor** to other common PPO-inhibitor (Group 14) containing herbicides. **Voraxor** is a new herbicide from BASF containing two group 14 active ingredients, saflufenacil and trifludimoxazin. ***Voraxor is not registered for commercial use in the United States at the time of this publication.*** The trial was conducted on bare soil (no crop) to simulate a preplant burndown application prior to planting corn or soybeans. The trial area was tilled on 5/26 and waterhemp was allowed to emerge before the herbicide application was made on 6/23 when average height reached ~3 inches.

Voraxor had greater burndown waterhemp control than all other PPO containing herbicides and 2,4-D LV6 (Table 30). Tank mixing 2,4-D with the other herbicides we evaluated improved waterhemp control; however, control of some treatments was still below 90%.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 30. Waterhemp burndown control ratings for trial #25-BRO-BG09 at Brooklyn, WI.^{ab}

Trt #	Herbicide (rate acre ⁻¹)	Waterhemp (%)			
		7 DAT	15 DAT	21 DAT	28 DAT
1	Untreated Check	0	0	0	0
One-Pass – POST (6/23)^c					
2	2,4-D LV6 (1 pt) + Zidua SC (3.25 oz) + MSO + AMS	85 c	65 c	59 c	49 c
3	Authority Supreme (6.5 oz) + MSO + AMS	85 c	60 c	43 d	41 c
4	Fierce EZ (7.5 oz) + MSO + AMS	93 ab	86 ab	79 ab	70 b
5	Reviton (1 oz) + Zidua SC (3.25 oz) + MSO + AMS	87 bc	61 c	56 c	48 c
6	Sharpen (1 oz) + Zidua SC (3.25 oz) + MSO + AMS	92 abc	75 bc	73 b	51 c
7	Voraxor* (1.4 oz) + Zidua SC (3.25 oz) + MSO + AMS	99 a	95 a	95 a	89 a
8	Authority Supreme (6.5 oz) + 2,4-D LV6 (1 pt) + MSO + AMS	94 ab	83 ab	81 ab	66 b
9	Fierce EZ (7.5 oz) + 2,4-D LV6 (1 pt) + MSO + AMS	99 a	95 a	96 a	89 a
10	Reviton (1 oz) + 2,4-D LV6 (1 pt) + Zidua SC (3.25 oz) + MSO + AMS	96 a	85 ab	81 ab	68 b
11	Sharpen (1 oz) + 2,4-D LV6 (1 pt) + Zidua SC (3.25 oz) + MSO + AMS	99 a	93 a	93 a	85 a
12	Voraxor* (1.4 oz) + 2,4-D LV6 (1 pt) + Zidua SC (3.25 oz) + MSO + AMS	100 a	98 a	98 a	94 a
LSD ($\alpha=0.10$)		5	11	12	10
p value		<.001	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

^cMSO (1% v/v) + AMS (8.5 lb/100 gal) was added to all herbicide treatments.

***Voraxor** is a new herbicide from BASF containing two group 14 active ingredients, saflufenacil and trifludimoxazin. *Voraxor is not registered for commercial use in the United States at the time of this publication.*

Project Goal: Compare Huskie FX weed control and crop safety against competitors.

Site Description:

Location:	Arlington, WI	Crop:	Spring Wheat
Field #:	362	Variety:	Shelley
Soil type:	Plano silt loam	Planting Date:	4/16
% OM:	3.3	Emergence Date:	-
pH:	6.5	Population:	103 lb/acre
Fertilization:	-	Depth:	1 in
Previous crop:	Corn Silage	Row spacing:	7.5 in
Tillage:	No-till	Plot Size:	10 x 30 ft
Weed species:	common lambsquarters (CHEAL); common ragweed (AMBEL)		

Herbicide Application Information:

Date:	5/23
Treatment:	POST (A)
Air Temp (°F):	67
2" Soil Temp (°F):	60
Soil moisture [surface]:	wet
RH %:	56
Cloud cover %	5
Wind speed (mph)/direction	1-5/N
Rainfall (in) 1 wk after APP:	0.13
Rainfall (in) 2 wks after APP:	1.07
GPA:	15
PSI:	40
Nozzle:	TT 110015
Nozzle spacing (in):	20
Boom Height (in):	24

Crop and weed information at application:

	Date:	5/23
spring wheat	Height:	4-6"
	Stage:	Feekes 2
lambsquarters	Height:	1-3" Avg=2"
	Density:	5-29/ft ²
common ragweed	Height:	1-5" Avg=4"
	Density:	1-7/ft ²

Trt #	Treatment	Formulation	SOA Group	Rate	App Timing	App Code
1	Untreated Check					
2	Huskie FX	2.3 lb/gal	4, 6, 27	15.5 fl oz/a	POST	A
3	Huskie FX	2.3 lb/gal	4, 6, 27	18 fl oz/a	POST	A
4	Talinor	1.77 lb/gal	6, 27	13.7 fl oz/a	POST	A
	CoAct+			2.75 fl oz/a	POST	A
5	Bison	4 lb/gal	4, 6	16 fl oz/a	POST	A
6	WideARmatch	1.88 lb/gal	4	14 fl oz/a	POST	A
	MCPA Ester	4 lb/gal	4	8 fl oz/a	POST	A

Adjuvants: CoAct+ = Talinor must be applied with CoAct+ additive to ensure precise delivery of the herbicide

Trial Summary:

The trial was established at the Arlington Agricultural Research Station located near Arlington, WI to compare two rates of Huskie FX weed control and crop safety against competitors. Spring wheat was no-till drilled on 4/16. The postemergence herbicide application was triggered when average weed height reached 3-4 inches.

WideARmatch + MCPA Ester 4 had the greatest crop response 7 and 14 days after application (Table 31). All other herbicide programs had only minor injury symptoms.

Huskie FX at both 15.5 and 18 fl oz provided excellent control of common lambsquarters and common ragweed (Table 31). All herbicide programs effectively controlled common lambsquarters by 20 days after application. Bison at 16 fl oz did not adequately control common ragweed.

Plot photos from throughout the year can be viewed [here](#) or on our website badgercropnetwork.com

Table 31. Lambsquarters and common ragweed visual control ratings for trial #25-ARL-SW01 at Arlington, WI.^{ab}

Trt #	Herbicide (rate acre ⁻¹)	Crop Injury (%)		Lambsquarters (%)			Common Ragweed (%)		
		7 DAT	14 DAT	14 DAT	20 DAT	49 DAT	14 DAT	20 DAT	49 DAT
1	Untreated Check	0	0	0	0	0	0	0	0
One-Pass – POST (5/23)									
2	Huskie FX (15.5 fl oz)	3 b	5 b	97 a	98 a	99	98 a	98 a	98 a
3	Huskie FX (18 fl oz)	5 b	4 b	94 a	99 a	99	96 a	98 a	96 a
4	Talinor (13.7 fl oz) + CoAct+ (2.75 fl oz)	4 b	3 b	89 b	98 a	99	85 b	91 b	94 a
5	Bison (16 fl oz)	3 b	3 b	97 a	99 a	99	66 c	76 c	79 b
6	WideARmatch (14 fl oz) + MCPA Ester 4 (8 fl oz)	13 a	13 a	85 b	96 b	99	94 a	95 ab	99 a
LSD (α=0.10)		2	2	5	1	ns	5	4	6
p value		<.001	<.001	0.002	0.002	ns	<.001	<.001	<.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bVisual control (%) ratings with the same letter are not statistically different.

Location	Month	Precipitation (in)			Average Temperature (F)		
		2025	30-year norm**	2025 departure	2025	30-year norm**	2025 departure
Arlington*	May	3.30	3.69	-0.39	56.0	55.7	0.3
	June	5.19	4.68	0.51	69.6	65.6	4.0
	July	3.16	4.16	-1.00	71.8	69.4	2.4
	August	3.26	3.90	-0.64	66.9	67.3	-0.4
	September	2.13	3.54	-1.41	62.5	59.3	3.2
	October	0.98	2.55	-1.57	52.2	47.5	4.7
	Total		18.02	22.52	-4.50	-	-
Brooklyn* (30-year norm from Stoughton NOAA station)	May	2.93	3.85	-0.92	56.9	57.8	-0.9
	June	2.99	4.34	-1.35	70.6	67.4	3.2
	July	5.54	3.85	1.69	72.7	71.7	1.0
	August	5.44	4.42	1.02	68.0	69.5	-1.5
	September	0.96	3.60	-2.64	63.8	61.2	2.6
	October	1.40	2.62	-1.22	53.2	48.9	4.3
	Total		19.26	22.68	-3.42	-	-
Janesville* (30-year norm from Beloit NOAA station)	May	2.82	3.80	-0.98	57.2	58.7	-1.5
	June	5.14	4.73	0.41	71.6	68.6	3.0
	July	5.89	3.85	2.04	73.4	72.5	0.9
	August	6.24	4.27	1.97	68.7	70.8	-2.1
	September	1.30	3.65	-2.35	64.5	62.9	1.6
	October	1.74	2.76	-1.02	54.2	51.0	3.2
	Total		23.13	23.06	0.07	-	-

*2024 data recorded from on-site weather stations.

**Source: Wisconsin State Climatology Office; 30-year normals from 1981 to 2010.

Index of Weed Species Evaluated

Weed (common name)	Bayer Code	Page Number(s)
cereal rye	-	33, 55
dandelion	TAROF	48
foxtail, giant	SETFA	9, 39, 99, 107, 113
lambsquarters, common	CHEAL	48, 63, 70, 107, 110, 113, 120
marestail	ERICA	48
ragweed, common	AMBEL	9, 39, 52, 63, 110, 120
ragweed, giant	AMBTR	15, 18, 22, 25, 29, 36, 44, 99
shepherd's purse	CAPBP	80
smallflower buttercup	RANAB	80
speedwell, purslane	VERPG	48, 80
velvetleaf	ABUTH	60, 77
waterhemp, common	AMATA	29, 43, 60, 67, 74, 77, 86, 90, 94, 104, 117
woolly cupgrass	ERBVI	9, 39

Index of Adjuvants

Adjuvant Brand	Adjuvant Type	Page Number(s)
Agridex	crop oil concentrate	31
Albaugh Experimental Adjuvant #1	-	106
AMS	ammonium sulfate (dry)	11, 20, 46, 53, 57, 65, 69, 72, 82, 88, 92, 96, 102, 106, 115
AMSOL	ammonium sulfate (liquid)	7, 11, 27, 31, 41, 50, 79
Brandt AMS	ammonium sulfate (dry)	109, 112
Brandt Experimental Adjuvant #1	biostimulant	109, 112
Class Act NG	AMS water conditioner + NIS blend	109, 112
Class Act Ridion	non-AMS water conditioner	7, 12
CoAct+	-	119
CropOil	crop oil concentrate	7, 12, 20, 27, 41, 46, 50, 57, 79, 82, 96
Destiny HC	high surfactant oil concentrate	57
Upland MSO	methyated seed oil	7, 12, 46, 57, 96, 115
Prefer 90	non-ionic surfactant	7, 11, 35, 50, 53, 57
Induce	non-ionic surfactant	20
Request	water conditioner	69
Superb HC	high surfactant oil concentrate	72, 82, 88, 92, 96
Uptake Plus	AMS + NIS + sugar release technology	109, 112
Verimax AMS	AMS + deposition aid	69

Index of Herbicides Evaluated

Herbicide	Active Ingredient(s)	Page Number(s)
2,4-D LV6	2,4-D	115
AAtrex 4L	atrazine	11, 17, 20, 27, 31, 50
Accent Q	nicosulfuron + safener	57
Acuron	bicyclopyrone+ mesotrione+ atrazine+ S-metolachlor	12, 17
Acuron Flexi	bicyclopyrone + mesotrione + S-metolachlor	7, 53
Acuron GT	bicyclopyrone + mesotrione + S-metolachlor+ glyphosate	11, 20
*Albaugh Experimental Glufosinate #1	glufosinate	106
Anthem Maxx	pyroxasulfone + fluthiacet	62
Armezon	topramezone	20, 41, 57
Armezon PRO	topramezone + dimethenamid-P	13, 20, 57
Authority Edge	sulfentrazone + pyroxasulfone	83
Authority First	sulfentrazone + cloransulam	97
Authority MTZ	sulfentrazone + metribuzin	76
Authority Supreme	sulfentrazone + pyroxasulfone	62, 79, 82, 115
Authority XL	sulfentrazone + chlorimuron	97
Basagran 5L	bentazon	41, 97
Bicep Lite II Magnum	S-metolachlor + atrazine	27
Bison	bromoxynil + MCPA ester	119
Boundary	S-metolachlor + metribuzin	62
Buccaneer Plus	glyphosate (isopropylamine salt)	109
Callisto	mesotrione	11, 13, 17, 20, 41, 46, 50, 57
Clarity	dicamba (DGA salt)	11, 20, 46
*Convintro	diflufenican	76
DiFlexx	dicamba (DGA salt)	7, 12, 35, 57
DiFlexx Duo	dicamba (DGA salt) + tembotrione	57
Dual II Magnum	S-metolachlor	46, 58, 65, 72, 82, 88, 92, 96, 102
Enlist One	2,4-D (choline salt)	72, 79, 82, 83, 88, 92, 96, 97, 102
Enversa	acetochlor	83
Fierce EZ	flumioxazin + pyroxasulfone	62, 76, 82, 84, 102, 115
Fierce MTZ	flumioxazin + pyroxasulfone + metribuzin	76, 79, 82
Fierce XLT	flumioxazin + pyroxasulfone + chlorimuron	82, 96
FirstRate	cloransulam	96
*Flexion	dicamba (DGA salt)	35
Flexstar	fomesafen	82, 88, 96
GlyStar 5 Extra	glyphosate (isopropylamine salt)	7
Gramoxone SL2.0	paraquat	31
Halex GT	S-metolachlor + mesotrione + glyphosate	11
Harness	acetochlor	7, 12, 38
Harness MAX	acetochlor + mesotrione	7, 11, 57

***Pending approval for use in Wisconsin as of February 2026.**

Herbicide	Active Ingredient(s)	Page Number(s)
Hornet WDG	flumetsulam + clopyralid	50
Huskie FX	bromoxynil + pyrasulfotole + fluroxypyr	119
Interline	glufosinate	72
Intrava DX	amicarbazone + metribuzin	38
Kyber PRO	flumioxazin + pyroxasulfone + metribuzin	83
Kyro	topramezone + acetochlor + clopyralid	12, 57
Laudis	tembotrione	7, 12, 20, 57
Lexar EZ	mesotrione + atrazine + S-metolachlor	11
Liberty	glufosinate	41, 46, 102, 106
Liberty ULTRA	glufosinate	65, 69, 72, 82, 88, 92, 96
Mauler	metribuzin	76
Maverick	mesotrione + clopyralid + pyroxasulfone	24, 27, 58
MCPA Ester	MCPA ester	119
Metricor DF	metribuzin	41, 97, 102
Moccasin II Plus	S-metolachlor	38
Moxy 2E	bromoxynil	11, 41, 50, 58
Outlook	dimethenamid	65, 82
Perpetuo	flumiclorac + pyroxasulfone	27, 82, 96
Poast	sethoxydim	97
Prefix	S-metolachlor + fomesafen	65, 82, 96
Preview 2.1SC	sulfentrazone + metribuzin	102
Princep 4L	simazine	7, 24, 38, 57
Priority MA	mesotrione + metolachlor + atrazine	11
Priority Meso	metolachlor + mesotrione	7
Priority S MA	mesotrione + S-metolachlor + atrazine	11
Priority S Meso	S-metolachlor + mesotrione	7
Pursuit	imazethapyr	82, 96
*Rapidicil	epyrifenacil	27, 31, 79
Resicore REV	clopyralid + acetochlor + mesotrione	7, 11, 17, 20, 24, 57
Reviton	tiafenacil	115
Roundup PowerMAX3	glyphosate (potassium salt)	7, 11, 20, 27, 31, 41, 46, 53, 79, 82, 92, 96
Select MAX	clethodim	88
Sharpen	saflufenacil	46, 115
Sonic	sulfentrazone + cloransulam	62, 65, 92, 96
Sonic Boom	sulfentrazone + metribuzin	83
Spartan 4F	sulfentrazone	76, 82, 102
Status	dicamba (sodium salt) + diflufenzopyr	7, 35, 57
Storen	mesotrione + S-metolachlore + pyroxasulfone + bicyclopyrone	11, 17, 24, 27, 57
Storm	acifluorfen + bentazon	97
Surestart II	acetochlor + clopyralid + flumetsulam	13

***Pending approval for use in Wisconsin as of February 2026.**

Herbicide	Active Ingredient(s)	Page Number(s)
Surmise 5	glufosinate	65, 106, 112
Surpass NXT	acetochlor	57
Surtain	saflufenacil + pyroxasulfone	7, 13, 17, 20, 57
Surveil	flumioxazin + cloransulam	97
Talinor	bromoxynil + bicyclopyrone	119
Tendovo	S-metolachlor + cloransulam + metribuzin	76, 82, 88, 96
Tough 5EC	pyridate	46, 50
TripleFlex II	acetochlor + clopyralid + flumetsulam	12
TriVolt SC	isoxaflutole + flufenacet + thien carbazon	7, 11, 17, 24, 57
Valor EZ	flumioxazin	76
Valor XLT	flumioxazin + chloriumuron	96
Verdict	saflufenacil + dimethenamid-P	13, 57, 72
*Voraxor	saflufenacil + trifludimoxazin	115
Warrant	acetochlor	7, 12, 76
WideARmatch	fluroxypyr + halauxifen + clopyralid	119
*Zidua PLUS	pyroxasulone + imazethapyr	62, 82
Zidua PRO	pyroxasulfone + saflufenacil + imazethapyr	65, 79, 83, 97
Zidua SC	pyroxasulfone	7, 72, 92, 115

***Pending approval for use in Wisconsin as of February 2026.**

Index of Trial Sponsors

Company	Trial Number (s)*
Albaugh	BG01, CN01, CN02, CN10
BASF	BG09, BG10, BG11, CN01, CN02, CN04, CN05, CN06, CN22, SB01, SB02, SB03, SB04, SB05, SB06, SB07, SB13, SB21
Bayer Crop Science	BG08, CN01, CN02, CN03, CN22, SB08, SB09, SW01
Belchim USA	CN18, CN19, SB11
Brandt	BG02, BG03, BG04, BG05, CN14, CN15, CN16, SB14, SB15, SB16
CHS Agronomy	BG06, BG07
Corteva Agriscience	CN01, CN02, CN22, SB13
Exacto	BG13, BG14, BG16, BG17, SB23
FMC	SB13, SB21, SB26
Helm	CN24
Rosens	SB24, SB25
Stepan	BG20, BG21, BG22, CN17
Syngenta	CN02, CN13, CN22, SB10, SB13, SB17, SB18, SB21
United Soybean Board	USB01, USB02, USB03, USB04
UPL	CN11
Valent	BG18, CN07, CN08, CN09, SB12, SB13, SB21
Winfield United	BG12, CN20
Wisconsin Corn Growers Association	CN12
Wisconsin Weed Science	CN01, CN02, CN12, CN21, CN22, SB13, SB19, SB21

*Not all trials listed are presented in this research report.