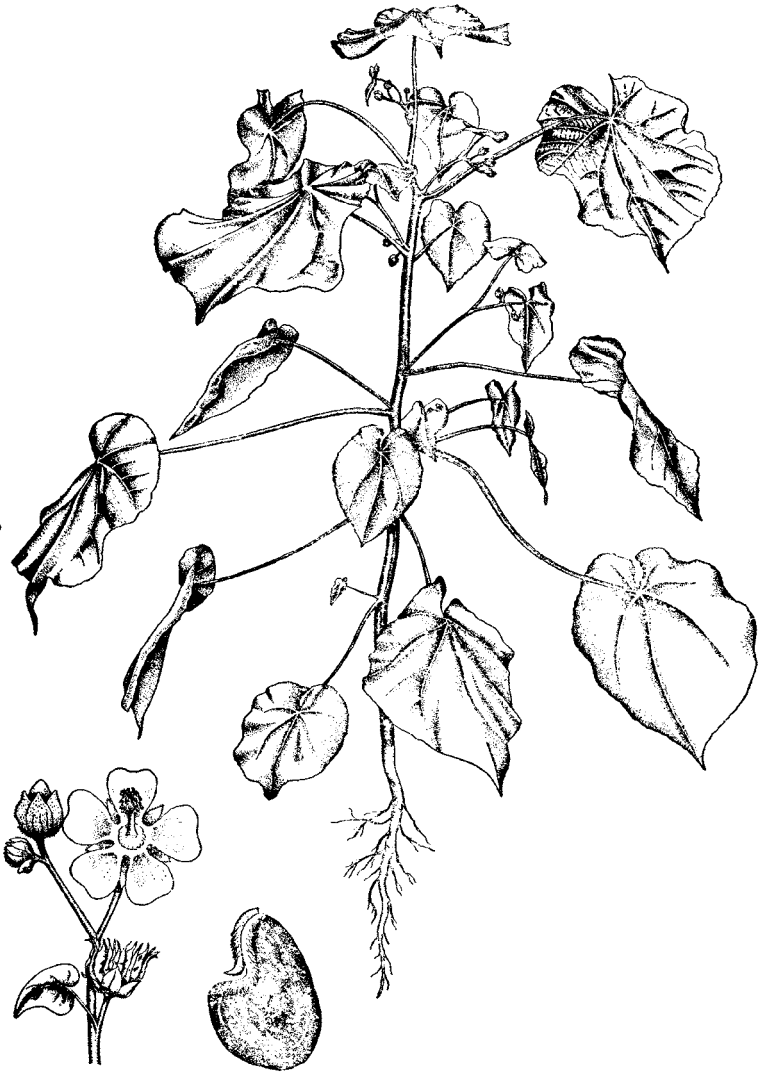
2024 Weed Control

Field Test Data

Eric Jones | Assistant Professor and SDSU Extension Weed Management Specialist
Dave A. Vos | SDSU Ag Research Manager/Specialist
Jill K. Alms | SDSU Ag Research Manager/Specialist



South Dakota State University Extension

Department of **Agronomy, Horticulture & Plant Science**

Acknowledgements

Extension educators identify needs, assist with tours, and utilize the data in education programs. The cooperation and assistance of station personnel is acknowledged.

- Southeast Experiment Station-Beresford
- Northeast Experiment Station-South Shore
- Volga Experiment Station-Volga

Program input and partial support for field programs is also acknowledged.

- South Dakota Soybean Research and Promotion Council
- South Dakota Wheat Commission
- Crop Protection Industries

Herbicide use information is available in the following extension publications.

- Pest Management Guide: Corn
- Pest Management Guide: Soybean
- Pest Management Guide: Wheat (Small grains)
- Weed Control in Sorghum
- Noxious Weed Control
- Pest Management Guide: Sunflower & Oilseed Crops/Alfalfa
- Weed Control in Pulse Crops
- Weed Control in Pasture & Range

These publications may also be found on the Internet at the following location: extension.sdstate.edu

(You will need to have Acrobat to read PDF files. It can be downloaded from that page.)

NOTE: Data reported in this publication are results from field tests that include labeled product uses, experimental products or experimental rates, combinations or other unlabeled uses for herbicide products. Users are responsible for applying herbicides according to label directions. Refer to the appropriate weed control fact sheet, available from extension regional centers, for herbicide recommendations.

S-0030-2024-Row Crop

Table of Contents

ABBREVIATIONS

Alfa	Alfalfa
Arko	ALS Resistant Kochia
Bare	Bareground
Bdlf	General broadleaf
Bikw	Biennial knapweed
Bisa	Biennial sage
Biww	Biennial wormwood
Blmu	Blue mustard
Blns	Black nightshade
Blvv	Blue vervain
Brgr	Brome grass
Bygr	Barnyardgrass
Cath	Canada thistle
Cocb	Common cocklebur
Colq	Common lambsquarters
Comu	Common mullein
Comw	Common milkweed
Corw	Common ragweed
Cosf	Common sunflower
Cowh	Common waterhemp
Crgr	Crabgrass
Cudo	Curly dock
Dali	Dandelion
Dobr	Downy brome
Fibw	Field bindweed
Fipc	Field pennycress
Fisb	Field sandbur
Ftba	Foxtail barley
Fxtl	General foxtail
Gift	Giant foxtail
Grft	Green foxtail
Guwe	Gumweed
Hocr	Hoary cress
Jabr	Japanese brome
Kocz	Kochia
Lesp	Leafy spurge
Llsa	Lanceleaf sage
Mael	Marshelder
Mata	Marestail
Muth	Musk thistle
Perw	Perennial ragweed
Pesw	Pennsylvania smartweed
Prle	Prickly lettuce
Prpw	Prostrate pigweed
Pumu	Purple mustard
Qugr	Quackgrass
Recl	Red clover
Rrpw	Redroot pigweed
Roft	Robust foxtail
Ruth	Russian thistle
Scru	Scouring rush
Shpu	Shepherdspurse
Stjw	St. Johnswort
Tamu	Tansymustard
Tawh	Tall waterhemp
Tosp	Toothed spurge
VCRR	Visual Crop Response Rating
Vele	Velvetleaf
Vema	Venice mallow
Voal	Volunteer alfalfa
Voca	Volunteer canola
Voco	Volunteer corn
Vomi	Volunteer millet
Vosg	Volunteer sorghum
Vosw	Volunteer Spring wheat
Voww	Volunteer Winter wheat
Wibw	Wild buckwheat
Wimu	Wild mustard
Wioa	Wild oat
Wisf	Wild sunflower
Whcl	White clover
Wocg	Woolly cupgrass
Wwsa	Wormwood sage
Yeft	Yellow foxtail
Yetf	Yellow toadflax

SURFACTANTS

COC	Crop oil concentrate	0.125%	1 pint/100 gallons
MSO	Methylated seed oil	0.25%	1 quart/100 gallons
NIS	Nonionic surfactant	0.5%	2 quart/100 gallons
		1%	1 gallon/100 gallons
AMS	Ammonium sulfate	2%	2 gallon/100 gallons
		4%	4 gallon/100 gallons

VCRR

Crop response ratings (VCRR) of 20% or less usually represents an acceptable level of stunting, discoloration or other effect. Ratings over 30% are considered excessive; 100% represents complete kill. Yields are harvested and reported for studies designed with replications.

PLOT APPLICATIONS

Herbicide treatments are applied with special plot sprayers. Unless otherwise noted, applications are made at 20 gpa and 35 psi using flat fan tips. Each treatment component is measured separately and mixed with water at application. Weed evaluations consist of visual ratings; averaged over replications or multiple ratings per plot. Ratings below 70-75% are considered less than commercially acceptable control; ratings greater than 90% represent a high level of effectiveness and generally reduce significant competition effects.

South Dakota State University Extension

2024 Corn Herbicide Demonstration
Northeast Research Farm

Treatment	Rate/A	6/24/24				7/29/24				10/1/24		10/22/24
		Corw	Rrpw	Yeft	Wocg	Corw	Rrpw	Yeft	Wocg	Yeft	Wocg	Yield Bu/A
Check	---	0	0	0	0	0	0	0	0	0	0	15
Pre & Post												
Maverick + Aatrex & DiFlexx Duo + RU Powermax 3 + COC + AMS	18 oz + 16 oz & 24 oz + 30 oz + 1% + 3 lb	95	98	88	43	99	99	92	78	87	86	215
Harness & Maverick + Aatrex + RU Powermax 3 + NIS + AMS	32 oz & 14 oz + 16 oz + 30 oz + 0.25% + 3 lb	68	97	95	72	99	99	97	92	99	97	220
Restraint + Atrazine + COC & Shieldex + Atrazine + RU Powermax 3 + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 30 oz + 1% + 2.5%	88	99	95	76	99	98	96	84	90	89	221
Restraint + Atrazine + COC & Shieldex + Atrazine + Liberty + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 29 oz + 1% + 2.5%	82	99	95	73	99	99	98	84	95	86	227
Storen + Aatrex & Storen + Aatrex + RU Powermax 3 + NIS + AMS	1.4 qt + 1 pt & 1 qt + 1 pt + 30 oz + 0.5% + 1.7 lb	88	99	96	66	99	99	99	97	99	99	222
Acuron & Acuron + RU Powermax 3 + NIS + AMS	1.75 qt & 1.25 qt + 30 oz + 0.5% + 1.7 lb	93	99	96	59	99	99	99	99	99	99	222
Lumax & Acuron GT + Aatrex + NIS + AMS	1.5 qt & 3.75 pt + 0.5 pt + 0.5% + 1.7 lb	92	99	92	63	99	99	99	96	99	99	226
Storen + Aatrex & Halex GT + Aatrex + NIS + AMS	1.7 qt + 1 pt & 3.6 pt + 1 pt + 0.5% + 1.7 lb	93	99	93	75	99	99	99	97	99	99	222
RU Powermax 3 + Intrava DX + Moccasin II Plus + NIS + AMS & Intermoc + AMS	30 oz + 21 oz + 1.33 pt + 0.25% + 3 lb & 64 oz + 3 lb	95	99	98	81	99	99	99	93	99	99	229
RU Powermax 3 + Intrava DX + Motif + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 4.5 oz + 0.25% + 3 lb & 64 oz + 3 lb	94	99	88	49	99	99	96	92	99	97	221
RU Powermax 3 + Intrava DX + Coyote + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 2.4 qt + 0.25% + 3 lb & 64 oz + 3 lb	99	99	98	84	99	99	99	94	99	98	227
Trivolt + Atrazine & Laudis + Atrazine + RU Pmax 3 + Amsol + Superb HC	12.5 oz + 1 pt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	96	99	96	81	99	99	99	96	97	97	225
Balance Flexx + Harness Xtra 6L & Laudis + Atrazine + RU Pmax 3 + Amsol + Superb HC	4 oz + 1.25 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	99	99	99	93	99	99	99	92	98	96	225
Harness Xtra 6L & Capreno + Atrazine + RU Pmax 3 + Amsol + Superb HC	1.8 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	94	99	96	79	99	99	99	96	97	93	227
Anthem Maxx + Callisto + Atrazine & Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	3 oz + 3 oz + 0.5 qt & 2.5 oz + 3 oz + 0.5 qt + 30 oz + 1.7 lb + 0.25%	93	98	88	55	99	99	99	96	99	97	221
Armezon Pro & Clarity + RU Powermax 3 + Atrazine + COC	20 oz & 16 oz + 30 oz + 16 oz + 1%	61	99	90	71	99	99	95	85	98	87	209
Surestart II & 2,4-D amine + RU Powermax 3 + Atrazine + COC	32 oz & 16 oz + 30 oz + 16 oz + 1%	77	99	95	68	99	99	94	77	91	80	205
Epost												
Harness Max + Atrazine + RU Powermax 3 + Amsol	55 oz + 1 pt + 30 oz + 2.5%	–	–	–	–	99	99	92	81	94	88	219
Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	4 oz + 3 oz + 1 qt + 30 oz + 1.7 lb + 0.25%	–	–	–	–	99	99	96	80	95	90	227
LSD (0.05)		7	2	6	14	1	1	4	9	5	4	9

RCB: 4 reps
Variety: DKC 45-74RIB
Planting Date: 5/13/24
Pre: 5/13/24
Epost: 6/7/24 Corn V2, 5 in; Corw 0.5-1.5 in; Yeft 1-4 in
Post: 6/19/24 Corn V4, 10-12 in; Corw 1-5 in; Yeft 1-7 in

Soil: Clay Loam; 3.9% OM; 6.2 pH

Precipitation: (inches)
Pre: 1st week 0.42; 2nd week 1.78

Corw=Common ragweed
Rrpw=Redroot pigweed
Yeft=Yellow foxtail
Wocu=Woolly cupgrass

Comments: The objective of this study was to evaluate various herbicide programs in corn. Preemergence control was variable for common ragweed and woolly cupgrass. Weed control was greater than 85% with postemergence herbicides for all weed species except woolly cupgrass. End of the season control of woolly cupgrass increased to at least 80%. All programs yielded similarly and quite well.

South Dakota State University Extension

2024 Corn Herbicide Demonstration
Southeast Research Farm

Treatment	Rate/A	6/5/24				6/26/24				10/17/24
		Vele	Colq	Cowh	Grft	Vele	Colq	Cowh	Grft	Yield Bu/A
Check	---	0	0	0	0	0	0	0	0	206
Pre & Post										
Maverick + Aatrex & DiFlexx Duo + RU Powermax 3 + COC + AMS	18 oz + 16 oz & 24 oz + 30 oz + 1% + 3 lb	97	99	99	96	99	99	99	99	219
Harness & Maverick + Aatrex + RU Powermax 3 + NIS + AMS	32 oz & 14 oz + 16 oz + 30 oz + 0.25% + 3 lb	80	99	99	99	99	99	99	99	219
Restraint + Atrazine + COC & Shieldex + Atrazine + RU Powermax 3 + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 30 oz + 1% + 2.5%	92	99	99	99	99	99	99	99	216
Restraint + Atrazine + COC & Shieldex + Atrazine + Liberty + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 29 oz + 1% + 2.5%	93	99	99	99	99	99	99	99	217
Storen + Aatrex & Storen + Aatrex + RU Powermax 3 + NIS + AMS	1.4 qt + 1 pt & 1 qt + 1 pt + 30 oz + 0.5% + 1.7 lb	99	99	99	99	99	99	99	99	219
Acuron & Acuron + RU Powermax 3 + NIS + AMS	1.75 qt & 1.25 qt + 30 oz + 0.5% + 1.7 lb	97	99	99	99	99	99	99	99	221
Lumax & Acuron GT + Aatrex + NIS + AMS	1.5 qt & 3.75 pt + 0.5 pt + 0.5% + 1.7 lb	99	99	99	99	99	99	99	99	220
Storen + Aatrex & Halex GT + Aatrex + NIS + AMS	1.7 qt + 1 pt & 3.6 pt + 1 pt + 0.5% + 1.7 lb	99	99	99	99	99	99	99	99	216
RU Powermax 3 + Intrava DX + Moccasin II Plus + NIS + AMS & Intermoc + AMS	30 oz + 21 oz + 1.33 pt + 0.25% + 3 lb & 64 oz + 3 lb	92	99	99	99	99	99	99	99	205
RU Powermax 3 + Intrava DX + Motif + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 4.5 oz + 0.25% + 3 lb & 64 oz + 3 lb	99	99	90	96	99	99	99	99	214
RU Powermax 3 + Intrava DX + Coyote + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 2.4 qt + 0.25% + 3 lb & 64 oz + 3 lb	99	99	99	99	99	99	99	99	213
Trivolt + Atrazine & Laudis + Atrazine + RU Powermax 3 + Amsol + Superb HC	12.5 oz + 1 pt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	98	99	99	99	99	99	99	99	225
Balance Flexx + Harness Xtra 6L & Laudis + Atrazine + RU Powermax 3 + Amsol + Superb HC	4 oz + 1.25 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	97	99	99	99	99	99	99	99	220
Harness Xtra 6L & Capreno + Atrazine + RU Powermax 3 + Amsol + Superb HC	1.8 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	90	99	99	99	99	99	99	99	220
Anthem Maxx + Callisto + Atrazine & Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	3 oz + 3 oz + 0.5 qt & 2.5 oz + 3 oz + 0.5 qt + 30 oz + 1.7 lb + 0.25%	98	99	99	98	99	99	99	99	215
Armezon Pro & Clarity + RU Pmax 3 + Atrazine + COC	20 oz & 16 oz + 30 oz + 16 oz + 1%	90	96	99	99	99	99	99	99	208
Surestart II & 2,4-D amine + RU Powermax 3 + Atrazine + COC	32 oz & 16 oz + 30 oz + 16 oz + 1%	89	99	99	99	99	99	99	99	177
Epost										
Harness Max + Atrazine + RU Powermax 3 + Amsol	55 oz + 1 pt + 30 oz + 2.5%	–	–	–	–	91	99	99	99	220
Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	4 oz + 3 oz + 1 qt + 30 oz + 1.7 lb + 0.25%	–	–	–	–	99	99	99	99	218
LSD (0.05)		7	1	5	2	3	–	–	–	–

RCB: 4 reps
Variety: DKC 101-33RIB
Planting Date: 5/10/24
Pre: 5/11/24
Epost: 5/28/24 Corn V2, 4-6 in; Vele 0.5-1 in; Cowh 0.5 in; Colq 0.5-1 in; Grft 0.25-0.5 in.
Post: 6/10/24 Corn V4, 17-19 in; Vele cot-4 in; Cowh cot; Grft 2 in.

Precipitation: (inches)
Pre: 1st week 0.15; 2nd week 3.31

Soil: Silty Clay; 4.6% OM; 6.8 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to evaluate various herbicide programs in corn. All preemergence herbicides resulted in 80% or greater control for all weed species. All weed species were effectively controlled after the postemergence herbicide application. Most herbicide programs yielded similarly and quite well. The Surestart II & 2,4-D amine + RU Powermax 3 + Atrazine + COC program yielded the lowest, likely attributable to injury from high 2,4-D rates with the inclusion of COC.

South Dakota State University Extension

2024 Corn Herbicide Demonstration
Volga Research Farm

Treatment	Rate/A	6/3/24			7/29/24			9/17/24		10/21/24
		Colq	Cowh	Gift	Cowh	Gift	Wocg	Cowh	Gift	Yield Bu/A
Check	---	0	0	0	0	0	0	0	0	143
Pre & Post										
Maverick + Aatrex & DiFlexx Duo + RU Powermax 3 + COC + AMS	18 oz + 16 oz & 24 oz + 30 oz + 1% + 3 lb	99	99	69	99	96	88	99	86	221
Harness & Maverick + Aatrex + RU Powermax 3 + NIS + AMS	32 oz & 14 oz + 16 oz + 30 oz + 0.25% + 3 lb	96	99	79	99	98	95	99	98	210
Restraint + Atrazine + COC & Shieldex + Atrazine + RU Powermax 3 + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 30 oz + 1% + 2.5%	99	99	71	99	99	94	99	91	222
Restraint + Atrazine + COC & Shieldex + Atrazine + Liberty + COC + Amsol	36 oz + 16 oz + 1% & 1.35 oz + 16 oz + 29 oz + 1% + 2.5%	99	99	74	99	97	92	99	92	222
Storen + Aatrex & Storen + Aatrex + RU Powermax 3 + NIS + AMS	1.4 qt + 1 pt & 1 qt + 1 pt + 30 oz + 0.5% + 1.7 lb	99	99	78	99	99	99	99	99	211
Acuron & Acuron + RU Powermax 3 + NIS + AMS	1.75 qt & 1.25 qt + 30 oz + 0.5% + 1.7 lb	99	99	71	99	99	99	99	99	224
Lumax & Acuron GT + Aatrex + NIS + AMS	1.5 qt & 3.75 pt + 0.5 pt + 0.5% + 1.7 lb	99	99	68	99	97	95	99	97	219
Storen + Aatrex & Halex GT + Aatrex + NIS + AMS	1.7 qt + 1 pt & 3.6 pt + 1 pt + 0.5% + 1.7 lb	99	99	72	99	98	97	99	99	217
RU Powermax 3 + Intrava DX + Moccasin II Plus + NIS + AMS & Intermoc + AMS	30 oz + 21 oz + 1.33 pt + 0.25% + 3 lb & 64 oz + 3 lb	99	99	82	99	98	97	99	99	220
RU Powermax 3 + Intrava DX + Motif + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 4.5 oz + 0.25% + 3 lb & 64 oz + 3 lb	99	99	65	99	96	90	99	91	218
RU Powermax 3 + Intrava DX + Coyote + NIS + AMS & Intermoc + AMS	30 oz + 16 oz + 2.4 qt + 0.25% + 3 lb & 64 oz + 3 lb	99	99	84	99	99	99	99	99	219
Trivolt + Atrazine & Laudis + Atrazine + RU Powermax 3 + Amsol + Superb HC	12.5 oz + 1 pt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	99	99	73	99	99	98	95	97	231
Balance Flexx + Harness Xtra 6L & Laudis + Atrazine + RU Powermax 3 + Amsol + Superb HC	4 oz + 1.25 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	99	99	86	98	99	98	98	93	219
Harness Xtra 6L & Capreno + Atrazine + RU Powermax 3 + Amsol + Superb HC	1.8 qt & 3 oz + 1 pt + 30 oz + 2.5% + 0.5%	99	99	73	99	99	99	99	99	226
Anthem Maxx + Callisto + Atrazine & Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	3 oz + 3 oz + 0.5 qt & 2.5 oz + 3 oz + 0.5 qt + 30 oz + 1.7 lb + 0.25%	99	99	65	99	99	95	99	94	224
Armezon Pro & Clarity + RU Powermax 3 + Atrazine + COC	20 oz & 16 oz + 30 oz + 16 oz + 1%	98	99	70	93	94	88	86	81	213
Surestart II & 2,4-D amine + RU Powermax 3 + Atrazine + COC	32 oz & 16 oz + 30 oz + 16 oz + 1%	99	99	76	93	86	84	89	76	201
Epost										
Harness Max + Atrazine + RU Powermax 3 + Amsol	55 oz + 1 pt + 30 oz + 2.5%	–	–	–	99	81	76	99	75	214
Anthem Maxx + Callisto + Atrazine + RU Pmax 3 + AMS + Induce	4 oz + 3 oz + 1 qt + 30 oz + 1.7 lb + 0.25%	–	–	–	99	78	77	99	79	224
LSD (0.05)		2	–	8	2	4	5	2	8	15

RCB: 4 reps
Variety: DKC 45-74RIB
Planting Date: 5/9/24
Pre: 5/9/24
Epost: 6/1/24 Corn V2-3, 4 in; Cowh cot-0.5 in; Colq 0.5-1 in; Gift 0.25-0.5 in.
Post: 6/10/24 Corn V3-4, 8-10 in; Cowh 1 in; Colq 1-2 in; Gift 0.5-7 in.

Precipitation: (inches)
Pre: 1st week 0.04; 2nd week 1.8

Soil: Clay Loam; 4.4% OM; 5.5 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail
Wocg=Woolly cupgrass

Comments: The objective of this study was to evaluate various herbicide programs in corn. The broadleaf weeds were effectively controlled by preemergence herbicides but giant foxtail control was lower and more variable. Waterhemp was effectively controlled with postemergence herbicides although minor differences between treatments were noted. Most postemergence herbicides controlled the grass weeds at least by 84%, but the Surestart II & 2,4-D amine + RU Powermax 3 + Atrazine + COC program resulted in the lowest control compared to the other treatments. Grass control with the early postemergence programs were low throughout the season. All programs yielded similarly and quite well.

South Dakota State University Extension

2024 Rapidicil Preplant Burndown in No-Till Corn
Southeast Research Farm

Treatment	Rate/A	5/23/24			6/5/24			6/26/24		10/17/24
		Fipc	Prle	Kocz	Fipc	Kocz	Yeft	Kocz	Yeft	Yield Bu/a
Check	---	0	0	0	0	0	0	0	0	1
EPP1										
Harness Xtra 6L + RU Pmax 3 + Callisto + NIS + AMS	48 oz + 32 oz + 3 oz + 0.25% + 3 lb	70	83	94	99	99	75	95	52	54
Rapidicil + Maverick + RU Powermax 3 + COC + AMS	5 oz + 32 oz + 32 oz + 1% + 3 lb	89	99	96	99	99	96	95	73	80
Rapidicil + Perpetuo + RU Powermax 3 + COC + AMS	5 oz + 8 oz + 32 oz + 1% + 3 lb	89	99	98	99	99	73	87	64	77
EPP1 & Post										
Rapidicil + Bicep II Magnum + RU Powermax 3 + COC + AMS & Maverick + RU Powermax 3	5 oz + 2.1 qt + 32 oz + 1% + 3 lb & 14 oz + 32 oz	80	99	99	99	99	78	98	97	130
EPP7										
Rapidicil + Fierce EZ + RU Powermax 3 + COC + AMS	5 oz + 6 oz + 32 oz + 1% + 3 lb	99w	99	99	99	99	96	95	65	73
LSD (0.05)		14	5	5	–	–	14	8	9	47

RCB: 3 reps
Variety: DKC 101-33
Planting Date: 5/17/24
EPP7: 5/11/24 Fipc 8-20 in; Prle 5-10 in; Kocz 0.5-1 in.
EPP1: 5/16/24 Fipc 9-22 in; Prle 6-12 in diam; Kocz 0.5-1.5 in.
Post: 6/10/24 Yeft 1 in.

Soil: Clay; 3.1% OM; 7.1 pH

Precipitation: (inches)
EPP7: 1st week 0.15; 2nd week 3.31
EPP1: 1st week 1.64; 2nd week 1.74

Fipc=Field pennycress
Prle=Prickly lettuce
Kocz=Kochia
Yeft=Yellow foxtail

Comments: The objective of this study was to determine the best burndown application timing for Rapidicil before corn planting. The exclusion of Rapidicil (Harness Xtra 6L + RU Pmax 3 + Callisto + NIS + AMS) provided the least weed control at the first evaluation timing but effectiveness increased over time. Rapidicil applied EPP1 followed by POST provided the greatest weed control and corn yield. This result highlights the importance of multiple herbicides applied at different timings to increase weed control and protect corn yield.

South Dakota State University Extension

2024 Storen and Acuron Flexi vs. Competitors
Volga Research Farm

Treatment	Rate/A	5/30/24				6/10/24	6/25/24				7/24/24			10/16/24
		VCRR	Colq	Cowh	Gift	VCRR	VCRR	Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	0	0	0	144
Pre														
Storen	2.1 qt	0	99	99	83	0	0	99	99	77	96	96	67	210
Storen	2.4 qt	0	99	99	84	0	0	99	99	79	95	95	72	209
Acuron Flexi	2.25 qt	0	99	99	77	0	0	99	99	80	97	97	72	210
Resicore	2.5 qt	0	99	99	76	0	0	99	99	74	96	95	70	209
Resicore	3 qt	0	99	99	79	0	0	99	99	79	95	95	65	203
TriVolt	17.5 oz	0	99	99	82	0	0	99	99	90	94	87	86	210
TriVolt	20 oz	0	99	99	76	0	0	99	99	87	96	86	87	221
Maverick	24 oz	0	99	99	66	0	0	99	99	60	96	96	59	195
Maverick	32 oz	0	99	99	67	0	0	99	99	66	95	94	63	203
Pre & Post														
Storen & Storen + Clarity + RU Powermax 3 + Amsol	1.05 qt & 1.05 qt + 8 oz + 24 oz + 2.5%	0	99	99	73	0	0	99	99	94	99	99	87	212
Storen & Storen + Clarity + RU Powermax 3 + Amsol	1.2 qt & 1.2 qt + 8 oz + 24 oz + 2.5%	0	99	99	81	0	0	99	99	96	99	99	93	215
Storen & Halex GT + Clarity + NIS + Amsol	1.7 qt & 3.6 pt + 8 oz + 0.25% + 2.5%	0	99	99	75	0	0	99	99	98	99	99	94	214
Post														
Storen + Clarity + RU Powermax 3 + Amsol	2.1 qt + 8 oz + 24 oz + 2.5%	0	–	–	–	0	0	99	99	91	99	99	86	218
LSD (0.05)		–	–	–	7	–	–	–	–	7	2	2	8	15

RCB: 4 reps
Variety: DKC 45-74RIB
Planting Date: 5/9/24
Pre: 5/9/24
Post: 6/1/24 Corn V2-3, 4 in; Cowh cot-0.5 in; Colq 0.5-1 in; Gift 0.25-0.5 in.

Precipitation: (inches)
Pre: 1st week 0.04; 2nd week 1.8

Soil: Clay Loam; 4.4% OM; 5.5 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

Comments: The objective of this study was to determine the effectiveness of Storen and Acuron Flexi compared to various corn herbicide programs. Common lambsquarters and waterhemp were effectively controlled for the duration of the study with all treatments. Giant foxtail control with preemergence treatments was variable with minor differences noticed between select treatments. Pre & Post and Post treatments effectively controlled giant foxtail of at least 86% or greater. Yield differences between treatments were not noticed.

South Dakota State University Extension

2024 Halex GT Doselock Technology Compared to Generic Tankmixes
Volga Research Farm

Treatment	Rate/A	6/19/24				6/25/24			7/2/24			10/16/24
		VCRR	Cowh	Gift	Colq	VCRR	Cowh	Gift	VCRR	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	0	133
Post												
Halex GT + Aatrex + NIS + AMS	3.6 pt + 1 qt + 0.25% + 1.7 lb	2	76	50	68	1	99	90	0	99	93	214
Bellum + Atrazine + Strelius II + RU Powermax 3 + NIS + AMS	3 oz + 1 qt + 1 pt + 25 oz + 0.25% + 1.7 lb	1	77	56	63	3	99	92	0	99	95	207
Post-Tankmixed 3 days before application												
Halex GT + Aatrex + NIS + AMS	3.6 pt + 1 qt + 0.25% + 1.7 lb	1	79	59	65	0	99	93	0	99	96	215
Bellum + Atrazine + Strelius II + RU Powermax 3 + NIS + AMS	3 oz + 1 qt + 1 pt + 25 oz + 0.25% + 1.7 lb	5	79	59	71	1	99	94	0	99	97	204
LSD (0.05)		3	3	6	12	1	–	5	–	–	4	31

RCB: 4 reps
Variety: DKC 45-74 RIB
Planting Date: 5/9/24
Post: 6/14/24 Corn V4, 12-15 in; Cowh 1-6 in; Gift 4-10 in.

Soil: Clay Loam; 4.4% OM; 5.5 pH

Precipitation: (inches)
Pre: 1st week; 2nd week

Cowh=Common waterhemp
Gift=Giant foxtail
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

Comments: The objective of this study was to determine the safety and effectiveness of Halex GT + Aatrex (premixture) versus Bellum + atrazine + Roundup Powermax 3 (tank mixture) immediately after mixing or delayed spraying after mixing. Minor injury was noticed with the tank mixture initially with tank mixture with delayed spraying but the injury subsided over time. No control differences were noted with any treatment on either weed species. No corn yield differences were noted.

South Dakota State University Extension

2024 Speedagro Adjuvant Study with Corn Herbicides
Volga Research Farm

Treatment	Rate/A	6/19/24			6/25/24			7/2/24		
		VCRR	Cowh	Gift	VCRR	Cowh	Gift	VCRR	Cowh	Gift
Pre & Post										
Acuron & Resicore + Atrazine + Speedagro Adj	1 qt & 1.5 qt + 1 pt + 0.075%	16	90	66	10	99	64	0	99	43
Acuron & Resicore + Atrazine + MSO + AMS	1 qt & 1.5 qt + 1 pt + 0.5% + 1.7 lb	14	90	78	16	99	68	0	99	44
Acuron & Impact + Atrazine + Speedagro Adj	1 qt & 1 oz + 1 pt + 0.075%	0	90	75	0	99	70	0	99	65
Acuron & Impact + Atrazine + MSO + AMS	1 qt & 1 oz + 1 pt + 0.5% + 1.7 lb	1	90	72	3	99	80	0	99	83
Acuron & Acuron + Speedagro Adj	1 qt & 1.5 qt + 0.075%	0	90	66	0	99	64	0	99	60
Acuron & Acuron + MSO + AMS	1 qt & 1.5 qt + 0.5% + 1.7 lb	9	90	73	2	99	70	0	99	71
Acuron & Laudis + Atrazine + Speedagro Adj	1 qt & 3 oz + 1 pt + 0.075%	1	90	72	0	99	62	0	99	58
Acuron & Laudis + Atrazine + MSO + AMS	1 qt & 3 oz + 1 pt + 0.5% + 1.7 lb	0	90	73	0	99	87	0	99	80
Check	—	0	0	0	0	0	0	0	0	0
LSD (0.05)		6	–	6	3	–	4	–	–	16

RCB: 4 reps
Variety: DKC 45-74 RIB
Planting Date: 5/9/24
Pre: 5/9/24
Post: 6/14/24 Corn V4, 12-15 in; Gift 2-7 in.

Soil: Clay Loam; 4.4% OM; 5.5 pH

Precipitation: (inches)
Pre: 1st week 0.04; 2nd week 1.8

Cowh=Common waterhemp
Gift=Giant foxtail
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

Comments: The objective of this study was to determine crop safety of the Speedagro adjuvant compared to MSO. Minor injury was noted with both the Speedagro adjuvant and MSO in the initial ratings. However, all injury subsided at the end of the study.

South Dakota State University Extension

2024 Roundup Ready Soybean Demonstration
Northeast Research Farm

Treatment	Rate/A	7/1/24			8/2/24				10/1/24		10/10/24
		Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Corw	Corw	Yeft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	9
Pre & Post											
Authority Supreme & Cobra + RU Powermax 3 + COC + AMS	9 oz & 12 oz + 30 oz + 1% + 3 lb	97	90	54	99	99	86	98	98	86	45
Tendovo & Flexstar GT + AMS	2.35 qt & 56 oz + 3 lb	97	96	75	99	99	94	96	94	93	50
Dimetric Charged & RU Powermax 3 + Avalanche Ultra + COC + AMS	18 oz & 30 oz + 24 oz + 1% + 3 lb	99	94	75	99	99	83	98	99	89	43
Fierce MTZ & Cobra + RU Powermax 3 + Dual Magnum + COC + AMS	16 oz & 12 oz + 30 oz + 16 oz + 1% + 3 lb	99	93	69	99	99	89	97	96	94	44
Dual Magnum & RU Powermax 3 + AMS	1.67 pt & 30 oz + 3 lb	81	94	50	99	99	97	71	71	99	49
LSD (0.05)		15	3	11	–	–	6	6	5	13	3

RCB: 4 reps
Variety: AE 1030
Planting Date: 6/7/24
Pre: 6/7/24
Post: 7/13/24 Soy 3 tri, 7-9 in; Yeft 2-3 in.

Soil: Clay Loam; 4.1% OM; 5.8 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Rrpw=Redroot pigweed
Yeft=Yellow foxtail
Wocu=Woolly cupgrass
Corw=Common ragweed

Comments: The objective of this study was to compare various Roundup herbicide programs in Roundup Ready soybean. All preemergence treatments were effect on redroot pigweed and yellow foxtail but no treatment provided greater than 75% control for woolly cupgrass. Woolly cupgrass control improved with postemergence treatments but Roundup Max3 + Avalanche Ultra provided lower control compared with the other treatments. Redroot pigweed and yellow foxtail were effectively controlled with all postemergence treatments. Roundup Powermax3 applied alone provided poor control of common ragweed due to resistance. This result highlights that Roundup herbicide still provides utility in weed management programs but needs to be used with other herbicides to be effective.

South Dakota State University Extension

2024 Roundup Ready Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	6/12/24				7/16/24			9/20/24		10/2/24
		Vele	Colq	Cowh	Grft	Vele	Cowh	Grft	Vele	Cowh	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	16
Pre & Post											
Authority Supreme & Cobra + RU Powermax 3 + COC + AMS	9 oz & 12 oz + 30 oz + 1% + 3 lb	97	99	99	97	99	99	99	97	97	41
Tendovo & Flexstar GT + AMS	2.35 qt & 56 oz + 3 lb	99	99	99	99	99	99	99	99	99	42
Dimetric Charged & RU Powermax 3 + Avalanche Ultra + COC + AMS	18 oz & 30 oz + 24 oz + 1% + 3 lb	97	99	98	92	99	99	99	93	99	38
Fierce MTZ & Cobra + RU Powermax 3 + Dual Magnum + COC + AMS	16 oz & 12 oz + 30 oz + 16 oz + 1% + 3 lb	97	99	98	98	98	99	99	94	99	39
Dual Magnum & RU Powermax 3 + AMS	1.67 pt & 30 oz + 3 lb	78	97	95	99	99	94	99	97	96	44
LSD (0.05)		3	3	3	4	1	3	–	9	3	6

RCB: 4 reps
Variety: Apex AE 1900
Planting Date: 5/16/24
Pre: 5/16/24
Post: 6/26/24 Soy V4, 8-11 in; Vele 4-9 in; Cowh 2-4 in; Grft 2-4 in.

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Soil: Clay; 4.3% OM; 7.2 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to compare various Roundup herbicide programs in Roundup Ready soybean. All preemergence treatments provided greater than 90% control for all weed species except for Dual Magnum on velvetleaf (78%). All postemergence herbicide treatments provided greater than 90% control. While waterhemp control was effective with the Roundup Powermax3 alone treatment, much of the control is attributed to the Dual Magnum treatment applied preemergence. Most of the waterhemp in South Dakota is glyphosate-resistant and this herbicide should be applied with other herbicides.

South Dakota State University Extension

2024 Roundup Ready Soybean Demonstration
Volga Research Farm

Treatment	Rate/A	6/10/24			7/18/24			9/17/24			9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	19
Pre & Post											
Authority Supreme & Cobra + RU Powermax 3 + COC + AMS	9 oz & 12 oz + 30 oz + 1% + 3 lb	99	99	91	99	99	99	99	99	99	47
Tendovo & Flexstar GT + AMS	2.35 qt & 56 oz + 3 lb	99	99	99	99	99	99	99	99	99	46
Dimetric Charged & RU Powermax 3 + Avalanche Ultra + COC + AMS	18 oz & 30 oz + 24 oz + 1% + 3 lb	99	99	91	99	99	99	99	99	99	43
Fierce MTZ & Cobra + RU Powermax 3 + Dual Mag + COC + AMS	16 oz & 12 oz + 30 oz + 16 oz + 1% + 3 lb	99	99	91	99	99	99	99	99	99	45
Dual Magnum & RU Powermax 3 + AMS	1.67 pt & 30 oz + 3 lb	94	93	90	99	95	99	99	92	99	46
LSD (0.05)		6	5	11	–	3	–	–	3	–	4

RCB: 4 reps
Variety: Apex AE 1520
Planting Date: 5/14/24
Pre: 5/14/24
Post: 6/25/24 Soy V4-5, 10 in; Cowh 1-6 in; Colq 4-6 in; Gift 6-10 in.

Precipitation: (inches)
Pre: 1st week 0.21; 2nd week 1.92

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to compare various Roundup herbicide programs in Roundup Ready soybean. All preemergence treatments provided at least 90% control of all weed species. Similarly, all postemergence treatments provided at least 90% control of all species. While waterhemp control was effective with the Roundup Powermax 3 alone treatment, much of the control is attributed to the Dual Magnum treatment applied preemergence. Most of the waterhemp in South Dakota is glyphosate-resistant and this herbicide should be applied with other herbicides.

South Dakota State University Extension

2024 Enlist Soybean Demonstration
Northeast Research Farm

Treatment	Rate/A	7/1/24			8/2/24			10/1/24		10/10/24
		Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Yeft	Wocg	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	10
Pre & Post										
Fierce EZ & Enlist One + RU Powermax 3 + Perpetuo + Select Max + NIS + Amsol	6 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	99	92	76	99	99	96	99	99	45
Fierce MTZ & Enlist One + RU Powermax 3 + Perpetuo + Select Max + NIS + Amsol	16 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	99	92	77	99	99	96	99	99	46
Experimental & Liberty + COC + AMS	32 oz & 29 oz + 1% + 3 lb	88	90	61	99	98	99	99	99	52
Experimental & Liberty + RU Powermax 3 + COC + AMS	32 oz & 29 oz + 30 oz + 1% + 3 lb	94	90	61	99	99	99	99	99	51
Experimental & Experimental + Liberty + COC + AMS	24 oz & 16 oz + 29 oz + 1% + 3 lb	88	86	61	96	93	98	96	99	48
Authority Edge & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	8 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	99	84	62	99	99	98	99	99	48
Authority Supreme & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	6 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	92	88	59	99	99	99	99	99	47
Enlist One + Sonic & Flexstar + Fusilade DX + COC + AMS	32 oz + 6 oz & 12 oz + 12 oz + 1% + 3 lb	95	85	50	99	60	50	82	26	38
Sonic & Enlist Duo + AMS	6 oz & 4.75 pt + 3 lb	90	83	48	99	99	99	99	99	48
LSD (0.05)		8	6	9	3	4	4	5	2	3

RCB: 4 reps
Variety: AE1030
Planting Date: 6/7/24
Pre: 6/7/24
Post: 7/13/24 Soy 3 tri, 7-9 in; Yeft 2-13 in.

Soil: Clay Loam; 4.1% OM; 5.8 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Rrpw=Redroot pigweed
Yeft=Yellow foxtail
Wocu=Woolly cupgrass

Comments: The object of this study was to compare various herbicide programs in 2,4-D-tolerant (i.e., Enlist) soybean. Redroot pigweed and yellow foxtail were controlled with at least 83% or greater with all preemergence treatments. Woolly cupgrass control was low and variable compared to the other weed species with all preemergence treatments. Most postemergence treatments provided 93% or greater control on all species. Enlist One + Sonic & Flexstar + Fusilade DX + COC + AMS provided poor control (50-60%) of yellow foxtail and woolly cupgrass. In return, this treatment (Enlist One + Sonic & Flexstar + Fusilade DX + COC + AMS) yielded the lowest compared to several other herbicide programs. Yields were largely not different when compared across the other tested herbicide programs.

South Dakota State University Extension

2024 Enlist Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	6/12/24				7/16/24			9/20/24		10/2/24
		Vele	Colq	Cowh	Grft	Vele	Colq	Cowh	Cowh	Grft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	12
Pre & Post											
Fierce EZ & Enlist One + RU Pmax 3 + Perpetuo + Select Max + NIS + Amsol	6 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	97	97	97	96	99	99	99	99	99	36
Fierce MTZ & Enlist One + RU Pmax 3 + Perpetuo + Select Max + NIS + Amsol	16 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	99	97	97	96	99	99	98	99	99	35
Experimental & Liberty + COC + AMS	32 oz & 29 oz + 1% + 3 lb	99	98	99	98	99	99	99	99	99	39
Experimental & Liberty + RU Pmax 3 + COC + AMS	32 oz & 29 oz + 30 oz + 1% + 3 lb	99	99	99	98	99	99	99	99	99	36
Experimental & Experimental + Liberty + COC + AMS	24 oz & 16 oz + 29 oz + 1% + 3 lb	99	99	98	99	99	99	99	99	99	35
Authority Edge & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	8 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	99	99	99	99	99	99	99	99	99	34
Authority Supreme & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	6 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	99	99	99	95	99	99	99	99	99	34
Enlist One + Sonic & Flexstar + Fusilade DX + COC + AMS	32 oz + 6 oz & 12 oz + 12 oz + 1% + 3 lb	99	99	99	99	99	99	98	98	96	35
Sonic & Enlist Duo + AMS	6 oz & 4.75 pt + 3 lb	99	99	99	99	99	99	99	99	99	35
LSD (0.05)		2	3	3	4	–	–	1	1	2	3

RCB: 4 reps
Variety: Apex AE1900
Planting Date: 5/16/24
Pre: 5/16/24
Post: 6/26/24 Soy V4, 8-12 in; Cowh 1-3 in; Grft 1-2 in.

Soil: Clay; 4.3% OM; 7.0 pH

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The object of this study was to compare various herbicide programs in 2,4-D-tolerant (i.e., Enlist) soybean. All herbicide programs provided at least 96% or greater control for the duration of the season. Soybean yields were not different across the herbicide programs, but yields were relatively low.

South Dakota State University Extension

2024 Enlist Soybean Demonstration
Volga Research Farm

Treatment	Rate/A	6/10/24			7/18/24			9/17/24			9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	19
Pre & Post											
Fierce EZ & Enlist One + RU Pmax 3 + Perpetuo + Select Max + NIS + Amsol	6 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	98	96	95	99	99	99	99	99	99	43
Fierce MTZ & Enlist One + RU Pmax 3 + Perpetuo + Select Max + NIS + Amsol	16 oz & 2 pt + 30 oz + 6 oz + 9 oz + 0.25% + 2.5%	99	98	99	99	99	99	99	99	99	43
Experimental & Liberty + COC + AMS	32 oz & 29 oz + 1% + 3 lb	99	99	96	99	99	99	99	99	99	44
Experimental & Liberty + RU Pmax 3 + COC + AMS	32 oz & 29 oz + 30 oz + 1% + 3 lb	99	99	98	99	99	99	99	99	99	43
Experimental & Experimental + Liberty + COC + AMS	24 oz & 16 oz + 29 oz + 1% + 3 lb	99	99	99	99	99	99	99	99	99	43
Authority Edge & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	8 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	99	99	98	99	99	99	99	99	99	42
Authority Supreme & Anthem Maxx + RU Pmax 3 + Enlist One + Amsol	6 oz & 2.8 oz + 30 oz + 2 pt + 2.5%	99	99	97	99	99	99	99	99	99	43
Enlist One + Sonic & Flexstar + Fusilade DX + COC + AMS	32 oz + 6 oz & 12 oz + 12 oz + 1% + 3 lb	99	99	97	99	99	99	99	99	99	42
Sonic & Enlist Duo + AMS	6 oz & 4.75 pt + 3 lb	99	99	97	99	99	99	99	99	99	46
LSD (0.05)		1	2	3	–	–	0.5	–	–	–	3

RCB: 4 reps
Variety: Apex AE1520
Planting Date: 5/14/24
Pre: 5/14/24
Post: 6/25/24 Soy V4-5, 10 in; Cowh 1-6 in; Colq 4-6 in; Gift 6-10 in.

Precipitation: (inches)
Pre: 1st week 0.21; 2nd week 1.92

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The object of this study was to compare various herbicide programs in 2,4-D-tolerant (i.e., Enlist) soybean. All herbicide programs provided at least 96% or greater control for the duration of the season. Soybean yields were not different across the herbicide programs.

South Dakota State University Extension

2024 Liberty Link Soybean Demonstration
Northeast Research Farm

Treatment	Rate/A	7/1/24			8/2/24			10/1/24			10/10/24
		Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	6
Pre & Post											
Broadaxe XC + Tricor DF & Dual Mag + Liberty + NIS + AMS	28 oz + 5 oz & 1.5 pt + 32 oz + 0.5% + 1.7 lb	97	92	66	99	99	99	99	98	95	46
Broadaxe XC + Tricor DF & Prefix + Liberty + NIS + AMS	28 oz + 5 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	99	93	69	99	99	98	99	99	99	42
Tendovo & Dual Mag + Liberty + NIS + AMS	1.75 qt & 1.5 pt + 32 oz + 0.5% + 1.7 lb	99	95	61	99	99	99	99	98	97	47
Tendovo & Prefix + Liberty + NIS + AMS	2 qt & 2 pt + 32 oz + 0.5% + 1.7 lb	99	93	73	99	98	99	97	99	96	42
Broadaxe XC + Tricor DF & Dual Mag + Liberty + NIS + AMS	32 oz + 6 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	99	95	77	99	99	99	99	98	95	43
Preview & Intermoc + Velexi + AMS	21 oz & 64 oz + 12.8 oz + 3 lb	99	91	57	99	99	98	99	99	99	43
Preview + Moccasin & Intermoc + Velexi + AMS	21 oz + 1.1 pt & 64 oz + 12.8 oz + 3 lb	99	96	76	99	99	98	99	98	95	45
Preview + Satellite Hydrocap & Intermoc + Velexi + AMS	21 oz + 2 pt & 64 oz + 12.8 oz + 3 lb	99	88	55	99	98	99	99	99	92	44
Fierce EZ + Firstrate & Zalo + Dual II Mag + COC + AMS	6 oz + 0.6 oz & 32 oz + 1 pt + 1% + 3 lb	99	93	70	99	99	98	99	98	97	45
LSD (0.05)		2	4	8	0.3	1	1	2	2	8	4

RCB: 4 reps
Variety: AG09XF3
Planting Date: 6/7/24
Pre: 6/7/24
Post: 7/13/24 Soy 3 tri, 6-8 in; Yeft 2-13 in

Soil: Clay Loam; 4.1% OM; 5.8 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Rrpw=Redroot pigweed
Yeft=Yellow foxtail
Wocu=Woolly cupgrass

Comments: The objective of this study was to compare various Liberty (glufosinate) herbicide programs in Liberty Link soybean. Redroot pigweed and yellow foxtail were controlled by at least 90% with all preemergence treatments. Woolly cupgrass control was much lower with all treatments but the level of effectiveness did not differ between treatments. All weed species were controlled by at least 90% or greater with the postemergence treatments.

South Dakota State University Extension

2024 Liberty Link Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	6/12/24				7/16/24			9/20/24		10/2/24
		Vele	Colq	Cowh	Grft	Vele	Cowh	Grft	Vele	Cowh	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	18
Pre & Post											
Broadaxe XC + Tricor DF & Dual Magnum + Liberty + NIS + AMS	28 oz + 5 oz & 1.5 pt + 32 oz + 0.5% + 1.7 lb	85	99	99	94	97	96	99	98	97	45
Broadaxe XC + Tricor DF & Prefix + Liberty + NIS + AMS	28 oz + 5 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	94	99	99	97	99	99	99	97	99	47
Tendovo & Dual Magnum + Liberty + NIS + AMS	1.75 qt & 1.5 pt + 32 oz + 0.5% + 1.7 lb	93	99	99	96	99	99	99	99	97	46
Tendovo & Prefix + Liberty + NIS + AMS	2 qt & 2 pt + 32 oz + 0.5% + 1.7 lb	97	99	98	99	99	99	99	99	99	44
Broadaxe XC + Tricor DF & Dual Magnum + Liberty + NIS + AMS	32 oz + 6 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	96	99	99	95	99	99	99	99	99	46
Preview & Intermoc + Velexi + AMS	21 oz & 64 oz + 12.8 oz + 3 lb	92	99	99	85	98	99	99	99	99	51
Preview + Moccasin & Intermoc + Velexi + AMS	21 oz + 1.1 pt & 64 oz + 12.8 oz + 3 lb	95	99	99	96	99	99	99	99	99	48
Preview + Satellite Hydrocap & Intermoc + Velexi + AMS	21 oz + 2 pt & 64 oz + 12.8 oz + 3 lb	93	99	99	88	99	99	99	97	99	47
Fierce EZ + Firstrate & Zalo + Dual II Magnum + COC + AMS	6 oz + 0.6 oz & 32 oz + 1 pt + 1% + 3 lb	99	98	99	95	99	98	99	99	99	46
LSD (0.05)		7	1	1	7	1	3	1	3	2	5

RCB: 4 reps
Variety: AG21XF0
Planting Date: 5/16/24
Pre: 5/16/24
Post: 6/26/24 Soy V4, 7-12 in; Vele 2-11 in; Cowh 2-4 in; Grft 2-7 in.

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Soil: Clay; 4.5% OM; 6.7 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to compare various Liberty (glufosinate) herbicide programs in Liberty Link soybean. Preemergence treatments provided 85% or greater control of the tested weed species. All weed species were controlled 97% or greater with the postemergence treatments.

South Dakota State University Extension

2024 Liberty Link Soybean Demonstration
Volga Research Farm

Treatment	Rate/A	6/10/24			7/18/24			9/17/24		9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	15
Pre & Post										
Broadaxe XC + Tricor DF & Dual Mag + Liberty + NIS + AMS	28 oz + 5 oz & 1.5 pt + 32 oz + 0.5% + 1.7 lb	99	98	92	99	99	99	99	99	59
Broadaxe XC + Tricor DF & Prefix + Liberty + NIS + AMS	28 oz + 5 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	99	99	91	99	99	99	99	99	57
Tendovo & Dual Mag + Liberty + NIS + AMS	1.75 qt & 1.5 pt + 32 oz + 0.5% + 1.7 lb	98	99	94	99	99	99	99	99	60
Tendovo & Prefix + Liberty + NIS + AMS	2 qt & 2 pt + 32 oz + 0.5% + 1.7 lb	99	99	95	99	99	99	99	99	57
Broadaxe XC + Tricor DF & Dual Mag + Liberty + NIS + AMS	32 oz + 6 oz & 2 pt + 32 oz + 0.5% + 1.7 lb	99	99	96	99	99	99	99	99	59
Preview & Intermoc + Velexi + AMS	21 oz & 64 oz + 12.8 oz + 3 lb	99	99	91	99	99	99	99	99	61
Preview + Moccasin & Intermoc + Velexi + AMS	21 oz + 1.1 pt & 64 oz + 12.8 oz + 3 lb	99	98	99	99	99	99	99	99	61
Preview + Satellite Hydrocap & Intermoc + Velexi + AMS	21 oz + 2 pt & 64 oz + 12.8 oz + 3 lb	99	97	94	99	99	99	99	99	60
Fierce EZ + Firstrate & Zalo + Dual II Mag + COC + AMS	6 oz + 0.6 oz & 32 oz + 1 pt + 1% + 3 lb	99	99	96	99	99	99	99	99	59
LSD (0.05)		1	2	6	–	0.5	0.2	–	0.2	4

RCB: 4 reps
Variety: AG12XF3
Planting Date: 5/14/24
Pre: 5/14/24
Post: 6/25/24 Soy V3, 10-12 in; Cowh 1-6 in; Colq 4-6 in; Gift 6-10 in.

Precipitation: (inches)
Pre: 1st week 0.21; 2nd week 1.92

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to compare various Liberty (glufosinate) herbicide programs in Liberty Link soybean. All treatments applied pre- and postemergence provided 91% or greater control of all tested weed species. Soybean yields were relatively high, likely due to season long weed management.

South Dakota State University Extension

2024 Dicamba Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	6/12/24				7/16/24			9/20/24		10/2/24
		Vele	Colq	Cowh	Grft	Vele	Cowh	Grft	Vele	Cowh	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	26
Pre & Post											
Engenia + Pursuit + Zidua SC + Sentris & Liberty + RU Pmax 3 + Outlook + AMS	12.8 oz + 4 oz + 3.25 oz + 8 oz & 32 oz + 30 oz + 10 oz + 3 lb	97	99	99	95	99	98	99	99	99	46
Warrant + Mauler & Xtendimax + RU Powermax 3 + Volt-Edge + Intact + Class Act Ridion	48 oz + 8 oz & 22 oz + 30 oz + 26 oz + 0.5% + 1%	81	99	95	87	98	98	99	99	99	49
Fierce MTZ & RU Pmax 3 + Xtendimax + Perpetuo + Intact + Induce + Volt-Edge	1 pt & 30 oz + 22 oz + 6 oz + 0.5% + 0.25% + 26 oz	90	99	99	92	99	99	99	99	99	47
Xtendimax + Vaporgrip Xtra Agent + Warrant & Liberty + Select Max + Induce + AMS	22 oz + 20 oz + 48 oz & 32 oz + 9 oz + 0.25% + 3 lb	69	98	92	76	94	97	99	99	97	48
Zidua Pro & Xtendimax + RU Powermax 3 + Cobra + Volt-Edge + Intact + Class Act Ridion	6 oz & 22 oz + 30 oz + 12 oz + 26 oz + 0.5% + 1%	93	99	99	94	99	99	99	99	99	44
Outlook & Engenia + RU Powermax 3 + Volt-Edge + Intact + Class Act Ridion	16 oz & 12.8 oz + 30 oz + 26 oz + 0.5% + 1%	70	99	95	96	94	96	96	99	99	46
LSD (0.05)		11	1	4	10	4	3	2	1	3	4

RCB: 4 reps
Variety: AG21XF0
Planting Date: 5/16/24
Pre: 5/16/24
Post: 6/26/24 Soy V4, 7-12 in; Vele 2-11 in; Cowh 2-4 in; Grft 2-7 in.

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Soil: Clay; 4.5% OM; 6.7 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to compare various herbicide programs in dicamba-tolerant (i.e., Xtend) soybean. Velvet control was the lowest with several preemergence treatments relying on Outlook or Warrant. Green foxtail control was variable with Xtendimax and Warrant applied preemergence. All other preemergence treatments provided at least 87% or greater control. All postemergence treatments controlled the tested weed species 94% or greater. Soybean yields were not different between treatments.

South Dakota State University Extension

2024 Dicamba Soybean Demonstration
Volga Research Farm

Treatment	Rate/A	6/10/24			7/18/24			9/17/24		9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	5
Pre & Post										
Engenia + Pursuit + Zidua SC + Sentris & Liberty + RU Powermax 3 + Outlook + AMS	12.8 oz + 4 oz + 3.25 oz + 8 oz & 32 oz + 30 oz + 10 oz + 3 lb	99	94	91	99	93	99	94	99	55
Warrant + Mauler & Xtendimax + RU Pmax 3 + Volt-Edge + Intact + Class Act Ridion	48 oz + 8 oz & 22 oz + 30 oz + 26 oz + 0.5% + 1%	99	96	77	99	91	95	92	97	58
Fierce MTZ & RU Pmax 3 + Xtendimax + Perpetuo + Intact + Induce + Volt-Edge	1 pt & 30 oz + 22 oz + 6 oz + 0.5% + 0.25% + 26 oz	99	96	76	99	99	98	99	99	57
Xtendimax + Vaporgrip Xtra Agent + Warrant & Liberty + Select Max + Induce + AMS	22 oz + 20 oz + 48 oz & 32 oz + 9 oz + 0.25% + 3 lb	95	91	76	98	76	79	78	78	55
Zidua Pro & Xtendimax + RU Pmax 3 + Cobra + Volt-Edge + Intact + Class Act Ridion	6 oz & 22 oz + 30 oz + 12 oz + 26 oz + 0.5% + 1%	99	95	83	99	99	93	99	96	55
Outlook & Engenia + RU Pmax 3 + Volt-Edge + Intact + Class Act Ridion	16 oz & 12.8 oz + 30 oz + 26 oz + 0.5% + 1%	90	87	82	97	83	84	90	82	57
LSD (0.05)		6	7	9	2	7	10	8	10	4

RCB: 4 reps
Variety: AG12XF3
Planting Date: 5/14/24
Pre: 5/14/24
Post: 6/19/24 Soy 2-3 tri, 5-7 in; Cowh 0.5-5 in; Colq 2-4 in; Gift 2-6 in.

Precipitation: (inches)
Pre: 1st week 0.21; 2nd week 1.92

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to compare various herbicide programs in dicamba-tolerant (i.e., Xtend) soybean. Common lambsquarters was effectively controlled with herbicide programs. Common waterhemp was controlled atleast 87% or greater with all preemergence treatments. Giant foxtail controlled was relatively lower and more variable with the preemergence treatments compared to the other weed species. Waterhemp control was lower with the Liberty + Select Max and Engenia + Roundup Powermax3 treatments compared to the other programs. The Liberty + Select Max treatment provided the lowest control of waterhemp and giant foxtail for the entire season. Soybean yields were not different across the herbicide programs.

South Dakota State University Extension

2024 Conventional Soybean Demonstration
Northeast Research Farm

Treatment	Rate/A	7/1/24			8/2/24			10/1/24			10/10/24
		Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Rrpw	Yeft	Wocg	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	5
PPI & Post											
Prowl H20 + Dimetric 3L & Avalanche Ultra + Select Max + NIS	3 pt + 10.7 oz & 24 oz + 16 oz + 0.25%	79	76	64	85	97	84	88	91	94	47
Pre & Post											
Tendovo & Flexstar + Fusilade DX + NIS	1.2 qt & 12 oz + 12 oz + 0.25%	86	82	66	92	92	72	92	86	82	42
Zidua Pro & Avalanche Ultra + Poast + COC	6 oz & 24 oz + 1.5 pt + 1%	86	89	54	95	99	81	97	93	83	45
Authority Supreme & Marvel + Select Max + NIS	9 oz & 7.25 oz + 16 oz + 0.25%	98	91	66	99	97	86	99	91	84	45
Warrant + Mauler & Cobra + Select Max + NIS	48 oz + 8 oz & 12.5 oz + 16 oz + 0.25%	97	93	63	99	95	75	99	85	32	35
Verdict & Cobra + Pursuit + COC	5 oz & 12.5 oz + 6 oz + 1%	75	76	50	99	81	46	97	83	16	25
Broadaxe XC & Flexstar +Fusilade DX +Dual Mag +NIS	28 oz & 12 oz + 12 oz + 1 pt + 0.25%	92	89	58	97	94	71	97	90	58	41
Fierce MTZ & Cobra + Perpetuo + Select Max + COC	1 pt & 12.5 oz + 6 oz + 16 oz + 1%	99	95	70	99	97	78	99	83	74	33
Mauler & Cobra + Zidua SC + Pursuit + COC	8 oz & 12.5 oz + 3 oz + 6 oz + 1%	78	55	48	99	64	38	99	85	18	24
Dual Magnum & Flexstar + COC	1.33 pt & 12 oz + 1%	71	93	61	97	50	38	97	82	5	26
Zidua Pro & Basagran + Cobra + Pursuit + COC	6 oz & 1.5 pt + 12.5 oz + 6 oz + 1%	94	86	55	98	96	60	99	96	65	36
LSD (0.05)		8	5	10	4	5	10	5	5	16	4

RCB: 4 reps
Variety: AG09XF3
Planting Date: 6/7/24
PPI/Pre: 6/7/24
Post: 7/2/24 Soy V1-2, 4-5 in; Yeft 1-4 in; Rrpw 1-2 in

Soil: Clay Loam; 4.1% OM; 5.8 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Rrpw=Redroot pigweed
Yeft=Yellow foxtail
Wocu=Woolly cupgrass

Comments: The objective of this study was to compare various herbicide programs in conventional soybean. Preemergence redroot pigweed control was at least 86% or greater with most treatments with more than one herbicide group. Three treatments (Dual Magnum, Mauler, Verdict) provided less than 78% redroot pigweed control when only one herbicide chemistry was utilized for residual control. All preemergence treatments, except for Mauler, provided 82% or better yellow foxtail control. Redroot pigweed was effectively controlled with all postemergence treatments. Yellow foxtail control was at least 82% or greater with all postemergence treatments but differences were noted among some treatments. Woolly cupgrass control was variable and low with many pre- and postemergence treatments. Yield differences were observed where woolly cupgrass was not effectively controlled.

South Dakota State University Extension

2024 Conventional Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	6/12/24				7/16/24			9/20/24			10/2/24
		Vele	Colq	Cowh	Grft	Vele	Cowh	Grft	Colq	Cowh	Grft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	0	18
PPI & Post												
Prowl H20 + Dimetric 3L & Avalanche Ultra + Select Max + NIS	3 pt + 10.7 oz & 24 oz + 16 oz + 0.25%	89	88	88	83	95	95	90	86	90	98	41
Pre & Post												
Tendovo & Flexstar + Fusilade DX + NIS	1.2 qt & 12 oz + 12 oz + 0.25%	97	99	99	97	99	99	97	92	99	99	40
Zidua Pro & Avalanche Ultra + Poast + COC	6 oz & 24 oz + 1.5 pt + 1%	99	98	99	97	99	99	99	77	99	99	36
Authority Supreme & Marvel + Select Max + NIS	9 oz & 7.25 oz + 16 oz + 0.25%	96	99	99	96	99	99	98	99	99	99	41
Warrant + Mauler & Cobra + Select Max + NIS	48 oz + 8 oz & 12.5 oz + 16 oz + 0.25%	94	93	99	92	97	99	94	80	99	99	39
Verdict & Cobra + Pursuit + COC	5 oz & 12.5 oz + 6 oz + 1%	86	86	99	75	99	92	69	66	87	63	35
Broadaxe XC & Flexstar + Fusilade DX + Dual Magnum + NIS	28 oz & 12 oz + 12 oz + 1 pt + 0.25%	92	99	99	92	96	99	94	97	99	92	37
Fierce MTZ & Cobra + Perpetuo + Select Max + COC	1 pt & 12.5 oz + 6 oz + 16 oz + 1%	99	95	99	91	99	99	98	84	99	99	38
Mauler & Cobra + Zidua SC + Pursuit + COC	8 oz & 12.5 oz + 3 oz + 6 oz + 1%	95	94	96	75	99	97	72	86	93	64	33
Dual Magnum & Flexstar + COC	1.33 pt & 12 oz + 1%	68	77	97	92	90	98	81	60	91	71	37
Zidua Pro & Basagran + Cobra + Pursuit + COC	6 oz & 1.5 pt + 12.5 oz + 6 oz + 1%	99	99	99	97	99	99	95	97	96	97	40
LSD (0.05)		10	10	4	8	6	4	9	24	7	13	6

RCB: 4 reps
Variety: AG21XF0
Planting Date: 5/16/24
PPI/Pre: 5/16/24
Post: 6/26/24 Soy V5, 11-13 in; Vele 2-12 in; Cowh 2-6 in; Colq 2-6 in; Grft 1-12 in.

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Soil: Clay; 4.5% OM; 6.7 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to compare various herbicide programs in conventional soybean. Velvetleaf and common lambsquarters control was 86% or greater with most preemergence treatments excluding Mauler where control was lower for both species. Waterhemp was effectively controlled with all preemergence treatments where control was 96% or greater. Green foxtail control was greater than 90% for all preemergence treatments excluding Verdict and Mauler where control was only 75%. Velvetleaf was effectively controlled with all postemergence treatments. Common lamsbquarters control was highly variable but not different across all postemergence treatments. Common waterhemp was effectively controlled with all postemergence treatments where control was at least 87% or greater. Yield differences were not noted when comparing all herbicide programs.

South Dakota State University Extension

2024 Conventional Soybean Demonstration
Volga Research Farm

Treatment	Rate/A	6/10/24			7/8/24			9/17/24			9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	11
PPI & Post											
Prowl H20 + Dimetric 3L & Avalanche Ultra + Select Max + NIS	3 pt + 10.7 oz & 24 oz + 16 oz + 0.25%	95	82	76	92	91	98	84	91	96	51
Pre & Post											
Tendovo & Flexstar + Fusilade DX + NIS	1.2 qt & 12 oz + 12 oz + 0.25%	98	91	83	97	97	90	98	99	90	59
Zidua Pro & Avalanche Ultra + Poast + COC	6 oz & 24 oz + 1.5 pt + 1%	99	96	94	99	99	99	99	99	99	56
Authority Supreme & Marvel + Select Max + NIS	9 oz & 7.25 oz + 16 oz + 0.25%	99	96	78	99	99	98	99	99	97	56
Warrant + Mauler & Cobra + Select Max + NIS	48 oz + 8 oz & 12.5 oz + 16 oz + 0.25%	99	99	80	99	99	96	94	98	95	56
Verdict & Cobra + Pursuit + COC	5 oz & 12.5 oz + 6 oz + 1%	98	93	72	98	99	75	95	93	68	50
Broadaxe XC & Flexstar + Fusilade DX + Dual Magnum + NIS	28 oz & 12 oz + 12 oz + 1 pt + 0.25%	99	99	93	99	99	99	99	99	99	54
Fierce MTZ & Cobra + Perpetuo + Select Max + COC	1 pt & 12.5 oz + 6 oz + 16 oz + 1%	99	99	78	99	99	99	99	99	98	53
Mauler & Cobra + Zidua SC + Pursuit + COC	8 oz & 12.5 oz + 3 oz + 6 oz + 1%	99	99	64	99	99	78	99	99	72	53
Dual Magnum & Flexstar + COC	1.33 pt & 12 oz + 1%	96	95	84	91	96	76	93	93	52	53
Zidua Pro & Basagran + Cobra + Pursuit + COC	6 oz & 1.5 pt + 12.5 oz + 6 oz + 1%	99	99	88	99	99	96	99	98	95	50
LSD (0.05)		3	7	8	4	2	5	7	4	10	3

RCB: 4 reps
Variety: AG12XF3
Planting Date: 5/14/24
PPI/Pre: 5/14/24
Post: 6/14/24 Soy 2 tri, 3-5 in; Cowh 1-3 in; Colq 1-4 in; Gift 1-6 in.

Precipitation: (inches)
Pre: 1st week 0.21; 2nd week 1.92

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to compare various herbicide programs in conventional soybean. Common lambsquarters and waterhemp where effectively controlled with all preemergence treatments where control was 82% or greater. Giant foxtail control was more variable with preemergence herbicides, however most herbicides provided similar levels of control. Mauler was the least effective preemergence treatment for giant foxtail. All postemergence treatments were effective on common lambsquarters and waterhemp. Giant foxtail control was poorest with Flexstar where control was 52%. Many other postemergence treatments (including Fulsilade, Poast, and Select Max) controlled giant foxtail substantially better. Yield differences were not noted when comparing all herbicide programs.

South Dakota State University Extension

2024 No-Till Conventional Soybean Demonstration
Southeast Research Farm

Treatment	Rate/A	5/29/24		6/26/24			7/26/24			9/20/24	10/2/24
		Vele	Kocz	Vele	Kocz	Yeft	Vele	Kocz	Yeft	Kocz	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	7
EPP & Post											
Authority Supreme & Marvel + Select Max + NIS	11.5 oz & 7.25 oz + 16 oz + 0.25%	99	93	69	78	69	88	90	91	87	34
Prowl H20 + Dimetric 3L & Cobra + Raptor + NIS	3 pt + 10.7 oz & 12.5 oz + 5 oz + 0.25%	77	87	64	67	55	94	85	71	81	25
Fierce EZ & Cobra + Select Max + NIS	9 oz & 12.5 oz + 16 oz + 0.25%	97	98	70	92	61	76	92	73	86	38
Pre & Post											
Zidua Pro & Avalanche Ultra + Select Max + NIS	6 oz & 24 oz + 16 oz + 0.25%	–	–	99	74	96	99	64	99	53	31
Tendovo & Flexstar + Dual Magnum + Fusilade DX + NIS	2.35 pt & 12 oz + 1 pt + 12 oz + 0.25%	–	–	87	78	80	82	73	81	65	36
Warrant + Mauler & Cobra + Perpetuo + Raptor + NIS	48 oz + 8 oz & 12.5 oz + 6 oz + 5 oz + 0.25%	–	–	73	79	63	99	96	62	99	35
Dual Magnum & Flexstar + COC	1.67 pt & 12 oz + 1%	–	–	82	65	83	80	61	59	52	33
EPP & Pre & Post											
Prowl H2O & Zidua Pro & Avalanche Ultra + Poast + COC	3 pt & 6 oz & 24 oz + 1.5 pt + 1%	89	80	99	80	94	99	66	98	53	37
Prowl H2O & Fierce EZ & Cobra + Perpetuo + Select Max + NIS	3 pt & 6 oz & 12.5 oz + 6 oz + 16 oz + 0.25%	71	72	72	92	71	80	98	84	95	35
Warrant & Mauler & Avalanche Ultra + Select Max + NIS	48 oz & 8 oz & 24 oz + 16 oz + 0.25%	71	66	66	79	59	66	78	74	61	29
LSD (0.05)		14	9	12	10	15	8	12	14	15	9

RCB: 4 reps
Variety: AG21XF0
Planting Date: 5/29/24
EPP: 5/11/24
Pre: 5/28/24 Kocz 0.5-1.5 in.
Post: 6/26/24 Soy V2, 5-6 in; Vele 2-5 in; Kocz 0.5-4 in; Yeft 2-6 in.

Precipitation: (inches)
EPP: 1st week 0.15; 2nd week 3.31
Pre: 1st week 1.81; 2nd week 0.14

Soil: Silty Clay; 3.7% OM; 6.6 pH

Vele=Velvetleaf
Kocz=Kochia
Yeft=Yellow foxtail

Comments: The objective of this study was to compare various conventional herbicide programs with different application timings in soybean. Weed control was not influenced by the timing of the preemergence herbicide but the herbicide selection dictated weed control. Postemergence velvetleaf control was dependent on herbicide selection; Raptor increased control when mixed with Cobra. Postemergence kochia control was dependent on herbicide selection as well; Avalanche Ultra and Flexstar were not effective. Yellow foxtail control was poor without a graminicide (i.e., Fusilade FX, Poast or Select Max). The results of this study suggest that a strong pre- and postemergence herbicide program is critical to produce conventional soybean. While the yield was not different across treatments, the implications of weeds surviving to produce seeds to be managed in future growing seasons should be a great concern.

South Dakota State University Extension

2024 Enversa Post Tankmixes in E3 Soybeans
Volga Research Farm

Treatment	Rate/A	7/8/24			7/23/24			8/9/24			9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/a
Check	—	0	0	0	0	0	0	0	0	0	26
Pre											
Sonic	6 oz	98	75	81	99	72	70	90	60	59	45
Pre & Post											
Sonic & Enlist One + RU Powermax 3 + Amsol	6 oz & 32 oz + 30 oz + 2.5%	99	99	99	99	99	97	99	99	99	52
Sonic & Enversa + Enlist One + RU Powermax 3 + Amsol	6 oz & 48 oz + 32 oz + 30 oz + 2.5%	99	99	99	99	99	97	99	99	99	52
Sonic & Warrant + Enlist One + RU Powermax 3 + Amsol	6 oz & 48 oz + 32 oz + 30 oz + 2.5%	99	99	99	99	99	99	99	99	99	51
Sonic & Dual Magnum + Enlist One + RU Powermax 3 + Amsol	6 oz & 1 pt + 32 oz + 30 oz + 2.5%	99	99	99	99	99	99	99	99	99	50
Sonic & Enlist One + Liberty + Amsol	6 oz & 32 oz + 32 oz + 2.5%	99	99	96	99	99	92	99	99	96	51
Sonic & Enversa + Enlist One + Liberty + Amsol	6 oz & 48 oz + 32 oz + 32 oz + 2.5%	99	99	99	99	99	98	99	99	99	51
Sonic & Warrant + Enlist One + Liberty + Amsol	6 oz & 48 oz + 32 oz + 32 oz + 2.5%	99	99	99	99	99	98	99	99	99	50
Sonic & Dual Magnum + Enlist One + Liberty + Amsol	6 oz & 1 pt + 32 oz + 32 oz + 2.5%	99	98	99	99	99	97	99	99	97	51
LSD (0.05)		1	3	7	–	7	7	–	7	7	4

RCB: 4 reps
Variety: B152EE
Planting Date: 5/29/24
Pre: 5/29/24
Post: 6/25/24 Soy 2 tri, 5-7 in; Cowh 1-3 in; Gift 2-6 in.

Soil: Clay Loam; 4.5% OM; 5.9 pH

Precipitation: (inches)
Pre: 1st week 0.41; 2nd week 0.23

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to determine the effectiveness of Enversa (encapsulated acetochlor) compared to other post residual herbicides (Dual Magnum and Warrant). Control with all postemergence treatments was greater than the preemergence herbicide-only treatment. All postemergence treatments effectively managed all weeds. Yields were similar across treatments. The results suggest that the tested post residual herbicides provide similar levels of effectiveness.

2024 Liberty Ultra Yield Protection in Soybeans
Southeast Research Farm

Treatment	Rate/A	6/12/24		7/11/24				7/26/24				10/2/24
		Vele	Cowh	Vele	Colq	Cowh	Grft	Vele	Colq	Cowh	Grft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	0	11
Pre												
Zidua Pro	6 oz	99	99	99	99	97	89	99	99	97	94	42
Epost												
Surmise 5 + Amsol	16.4 oz + 0.88 gal	–	–	99	61	86	96	99	59	91	99	34
Liberty Ultra + Amsol	24 oz + 0.88 gal	–	–	99	84	88	96	99	94	91	97	42
Surmise 5 + Outlook + Amsol	16.4 oz + 12.8 oz + 0.88 gal	–	–	99	72	89	98	99	78	90	99	41
Liberty Ultra + Outlook + Amsol	24 oz + 12.8 oz + 0.88 gal	–	–	99	91	90	98	99	91	92	99	42
Epost & Post												
Surmise 5 + Outlook + Amsol & Surmise 5 + Amsol	16.4 oz + 12.8 oz + 0.88 gal & 16.4 oz + 0.88 gal	–	–	99	83	88	98	99	95	99	99	44
Liberty Ultra + Outlook + Amsol & Liberty Ultra + Amsol	24 oz + 12.8 oz + 0.88 gal & 24 oz + 0.88 gal	–	–	99	95	96	98	99	99	99	99	44
Pre & Post												
Zidua SC & Surmise 5 + Outlook + Amsol	3.25 oz & 16.4 oz + 12.8 oz + 0.88 gal	96	99	93	89	99	89	99	96	99	99	43
Zidua SC & Liberty Ultra + Outlook + Amsol	3.25 oz & 24 oz + 12.8 oz + 0.88 gal	90	99	92	89	98	86	99	99	99	99	43
LSD (0.05)		3	–	6	7	5	5	1	5	4	3	4

RCB: 4 reps
Variety: AG21XF0
Planting Date: 5/16/24
Pre: 5/16/24
Epost: 6/26/24 Soy V5 12-14 in; Vele 4-10 in; Cowh 4-12 in; Colq 2-10 in; Grft 4-12 in.
Post: 7/9/24 Soy R1, 17-20 in; Vele 19-21 in; Cowh 14-20 in; Colq 12-25 in; Grft 14-26 in.

Precipitation: (inches)
Pre: 1st week 1.64; 2nd week 1.74

Soil: Clay; 4.3% OM; 7.2 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to determine the effectiveness of Liberty Ultra compared with Surmise in different programs. Surmise alone applied at EPOST resulted in the lowest common lambsquarters control and yield. Surmise + Outlook provided poor common lambsquarters control, but yield was not decreased. Liberty Ultra was effective when applied alone and in combination of other residual herbicides. Other herbicides should be utilized to increase the effectiveness of weed management programs. Note: Liberty Ultra has been approved by the EPA but is awaiting labeling at the state level.

South Dakota State University Extension

2024 2,4-D and Glufosinate Interactions in Enlist Soybeans Northeast Research Farm

Treatment	Rate/A	7/29/24		8/21/24		10/10/24
		Rrpw	Yeft	Rrpw	Yeft	Yield Bu/A
Check	—	0	0	0	0	7
Epost & Lpost						
Enlist One & Select Max + COC	32 oz & 16 oz + 1%	84	–	91	–	46
Epost						
Liberty + AMS	29 oz + 1.7 lb	92	85	90	78	43
Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb	96	93	98	83	46
Epost & Post & Lpost						
Enlist One & Enlist One & Select Max + COC	32 oz & 32 oz & 16 oz + 1%	83	–	94	–	43
Epost & Post						
Enlist One & Liberty + AMS	32 oz & 29 oz + 1.7 lb	97	50	99	87	34
Enlist One & Enlist One + Liberty + AMS	32 oz & 32 oz + 29 oz + 1.7 lb	96	58	99	90	38
Liberty + AMS & Enlist One	29 oz + 1.7 lb & 32 oz	99	89	99	79	47
Liberty + AMS & Liberty + AMS	29 oz + 1.7 lb & 29 oz + 1.7 lb	99	97	99	99	47
Liberty + AMS & Enlist One + Liberty + AMS	29 oz + 1.7 lb & 32 oz + 29 oz + 1.7 lb	99	98	99	99	49
Enlist One + Liberty + AMS & Enlist One	32 oz + 29 oz + 1.7 lb & 32 oz	98	75	99	57	47
Enlist One + Liberty + AMS & Liberty + AMS	32 oz + 29 oz + 1.7 lb & 29 oz + 1.7 lb	99	98	99	99	45
Enlist One + Liberty + AMS & Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb & 32 oz + 29 oz + 1.7 lb	99	96	99	98	47
Post & Lpost						
Enlist One & Select Max + COC	32 oz & 16 oz + 1%	56	–	63	–	46
Post						
Liberty + AMS	29 oz + 1.7 lb	93	58	94	82	34
Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb	93	51	93	70	30
LSD (0.05)		7	7	8	10	5

RCB: 4 reps
Variety: AE1030
Planting Date: 6/7/24
Epost: 7/11/24 Soy 3 tri, 9-10 in; Rrpw 6-10 in; Yeft 6-15 in.
Lpost: 7/12/24
Post: 7/24/24 Soy V6/R1, 12-16 in; Rrpw 14-22 in; Yeft 22-28 in.

Soil: Clay Loam; 4.1% OM; 5.8 pH

Rrpw=Redroot pigweed
Yeft=Yellow foxtail

Comments: The objective of this research was to determine the effectiveness of Enlist and Liberty applied alone, sequentially, and tank-mixed. Redroot pigweed control was poor (56-63%) when Enlist One was applied at the Post timing (12-16 in). All other treatments were effective and provided similar control (83-99%). Yellow foxtail control was generally the least when Liberty was applied only once and control increased with two applications of Liberty. Yield loss was noted with the Post-only timing treatments compared to other treatments. Otherwise, yield was similar across the other treatments.

South Dakota State University Extension

2024 2,4-D and Glufosinate Interactions in Enlist Soybeans Southeast Research Farm

Treatment	Rate/A	7/16/24				8/8/24				10/2/24
		Vele	Colq	Cowh	Grft	Vele	Colq	Cowh	Grft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	11
Epost & Lpost										
Enlist One & Select Max + COC	32 oz & 16 oz + 1%	80	83	80	–	88	98	95	–	25
Epost										
Liberty + AMS	29 oz + 1.7 lb	98	85	75	99	99	86	72	99	33
Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb	98	98	93	96	99	99	96	99	36
Epost & Post & Lpost										
Enlist One & Enlist One & Select Max + COC	32 oz & 32 oz & 16 oz + 1%	91	82	83	–	99	99	99	–	27
Epost & Post										
Enlist One & Liberty + AMS	32 oz & 29 oz + 1.7 lb	97	93	91	90	99	99	99	99	31
Enlist One & Enlist One + Liberty + AMS	32 oz & 32 oz + 29 oz + 1.7 lb	97	92	90	88	99	99	99	99	34
Liberty + AMS & Enlist One	29 oz + 1.7 lb & 32 oz	98	97	93	99	99	99	99	99	35
Liberty + AMS & Liberty + AMS	29 oz + 1.7 lb & 29 oz + 1.7 lb	98	99	98	99	99	99	99	99	33
Liberty + AMS & Enlist One + Liberty + AMS	29 oz + 1.7 lb & 32 oz + 29 oz + 1.7 lb	99	99	98	99	99	99	99	99	35
Enlist One + Liberty + AMS & Enlist One	32 oz + 29 oz + 1.7 lb & 32 oz	99	99	94	99	99	99	99	99	35
Enlist One + Liberty + AMS & Liberty + AMS	32 oz + 29 oz + 1.7 lb & 29 oz + 1.7 lb	99	99	99	99	99	99	99	99	35
Enlist One + Liberty + AMS & Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb & 32 oz + 29 oz + 1.7 lb	99	99	99	99	99	99	99	99	34
Post & Lpost										
Enlist One & Select Max + COC	32 oz & 16 oz + 1%	77	81	63	–	98	99	74	–	27
Post										
Liberty + AMS	29 oz + 1.7 lb	91	89	80	86	99	88	82	99	32
Enlist One + Liberty + AMS	32 oz + 29 oz + 1.7 lb	97	95	83	87	98	96	93	99	32
LSD (0.05)		6	5	5	3	5	4	5	1	5

RCB: 4 reps
Variety: AE1900
Planting Date: 5/16/24
Epost: 6/24/24 Soy 4 tri, 10-12 in; Vele 2-10 in; Cowh 2-10 in; Grft 4-12 in.
Post: 7/9/24 Soy R1, 18 in; Vele 20 in; Cowh 15-18 in; Grft 18-24 in; Colq 20-26 in.
Lpost: 7/11/24

Soil: Clay; 4.3% OM; 7.0 pH

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this research was to determine the effectiveness of Enlist and Liberty applied alone, sequentially, and tank-mixed. Enlist One provided lower velvetleaf control at the beginning of the study but control increased by the end of the study. All other treatments provided velvetleaf control ranging from 80 to 99% for the duration of the study. Common lambsquarters control was lower with Enlist One initially but control increased by the end of the study or with a sequential application. Liberty applied at the Epost and Post timing provided the lowest common lambsquarters control compared to all other treatments. Waterhemp control was lowest with Enlist One applied Post and Liberty applied at both timings. All other treatments provided 95% or greater waterhemp control. Yield was similar across treatments.

South Dakota State University Extension

2024 2,4-D and Glufosinate – Day or Night
Volga Research Farm

Treatment	Rate/A	7/2/24			7/17/24			9/26/24
		Colq	Cowh	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	0	0	0	0	0	0	20
Day 1:30 pm								
Enlist One	32 oz	60	61	–	95	81	–	53
Liberty + AMS	32 oz + 3 lb	91	79	76	97	84	95	49
Enlist One + Liberty + AMS	32 oz + 32 oz + 3 lb	91	81	77	99	97	92	48
Enlist One + Liberty + AMS	32 oz + 43 oz + 3 lb	94	82	78	99	97	96	51
Night 9:30 pm								
Enlist One	32 oz	55	36	–	97	64	–	52
Liberty + AMS	32 oz + 3 lb	89	56	75	95	63	93	47
Enlist One + Liberty + AMS	32 oz + 32 oz + 3 lb	87	60	77	99	84	92	50
Enlist One + Liberty + AMS	32 oz + 43 oz + 3 lb	89	67	77	99	85	91	51
LSD (0.05)		7	7	3	4	8	7	4

RCB: 4 reps
Variety: AE1520
Planting Date: 5/14/24
Day: 6/25/24 Soy V4-5; Colq 4-7 in; Cowh 3-6 in; Gift 8-12 in.
Night: 6/25/24 Soy V4-5; Colq 4-7 in; Cowh 3-6 in; Gift 8-12 in.

Soil: Clay Loam; 4.2% OM; 5.8 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The objective of this study was to determine the effect of applying Enlist, Liberty, and Enlist+Liberty during the day or night. All treatments provided similar common lambsquarters and giant foxtail control. Waterhemp control was least when Enlist and Liberty were applied at night but control increased when the two herbicides were tank mixed and applied at night. While the yields across treatments were not different, the implications of surviving waterhemp producing seeds to be managed in future growing seasons is of great concern.

South Dakota State University Extension

2024 Nitrogen Fertilizer Weed Germination and Control in Soybean
Northeast Research Farm

Treatment	Rate/A	7/1/24 Count/Ft²		8/2/24		10/10/24
		Rrpw	Yeft	Rrpw	Yeft	Yield Bu/A
Check	—	11	8	0	0	5
Pre & Post						
Dual Magnum & Liberty + AMS	1.67 pt & 29 oz + 1.7 lb	3	0	96	97	47
UAN 28% & Liberty + AMS	1.67 gal & 29 oz + 1.7 lb	11	9	97	89	39
UAN 28% & Liberty + AMS	3.34 gal & 29 oz + 1.7 lb	16	11	89	90	36
UAN 28% & Liberty + AMS	8.35 gal & 29 oz + 1.7 lb	9	5	91	92	38
UAN 28% & Liberty + AMS	16.67 gal & 29 oz + 1.7 lb	9	6	95	84	37
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 1.67 gal & 29 oz + 1.7 lb	2	0	94	98	46
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 3.34 gal & 29 oz + 1.7 lb	6	0	95	99	48
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 8.35 gal & 29 oz + 1.7 lb	2	0	98	99	47
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 16.67 gal & 29 oz + 1.7 lb	4	0	96	97	47
LSD (0.05)		8	7	6	6	4

RCB: 4 reps
Variety: AG09XF3
Planting Date: 6/7/24
Pre: 6/7/24
Post: 7/12/24 Soy V4, 9 in; Rrpw 4-6 lf, 6-8 in; Yeft 6-9 in.

Soil: Clay Loam; 4.1% OM; 5.8 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Rrpw=Redroot pigweed
Yeft=Yellow foxtail

Comments: The primary objective of this study was to determine if a specific UAN rate could stimulate weed germination and if the inclusion of Dual Magnum would increase control. The secondary objective was to determine if soil-applied UAN increased weed susceptibility to Liberty. UAN-alone did not increase germination of either species. Dual Magnum control with or without UAN was similar for both species. Control of both species with Liberty was similar with or without soil-applied UAN or Dual Magnum. Yield was similar across all treatments.

South Dakota State University Extension

2024 Nitrogen Fertilizer Weed Germination and Control in Soybean
Volga Research Farm

Treatment	Rate/A	6/19/24 Count/Ft²			7/24/24			10/7/24
		Cowh	Colq	Gift	Colq	Cowh	Gift	Yield Bu/A
Check	—	51	0	5	0	0	0	20
Pre & Post								
Dual Magnum & Liberty + AMS	1.67 pt & 29 oz + 1.7 lb	20	0	2	99	70	99	48
UAN 28% & Liberty + AMS	1.67 gal & 29 oz + 1.7 lb	66	1	1	99	65	98	45
UAN 28% & Liberty + AMS	3.34 gal & 29 oz + 1.7 lb	51	1	2	99	62	98	45
UAN 28% & Liberty + AMS	8.35 gal & 29 oz + 1.7 lb	79	3	9	99	69	98	44
UAN 28% & Liberty + AMS	16.67 gal & 29 oz + 1.7 lb	70	3	10	99	69	98	44
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 1.67 gal & 29 oz + 1.7 lb	21	1	5	99	72	99	47
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 3.34 gal & 29 oz + 1.7 lb	18	0	3	99	73	97	50
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 8.35 gal & 29 oz + 1.7 lb	32	1	5	98	77	98	51
Dual Magnum + UAN 28% & Liberty + AMS	1.67 pt + 16.67 gal & 29 oz + 1.7 lb	33	0	5	99	80	99	51
LSD (0.05)		24	3	7	1	7	2	3

RCB: 4 reps
Variety: AG12XF3
Planting Date: 5/29/24
Pre: 5/29/24
Post: 7/8/24 Soy V4-5; Cowh 4-6 in; Colq 6-7 in; Gift 8-12 in.

Precipitation: (inches)
Pre: 1st week 0.41; 2nd week 0.23

Soil: Clay Loam; 4.5% OM; 5.9 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail

Comments: The primary objective of this study was to determine if a specific UAN rate could stimulate weed germination and if the inclusion of Dual Magnum would increase control. The secondary objective was to determine if soil-applied UAN increased weed susceptibility to Liberty. UAN-alone increased waterhemp germination but not common lambsquarters or giant foxtail. Dual Magnum control with or without UAN was similar for all species. Control of all species with Liberty was similar with or without soil-applied UAN or Dual Magnum. Yield was similar across all treatments.

South Dakota State University Extension

2024 HG15 Post Residual Yield Drag
Northeast Research Farm

Treatment	Rate/A	10/10/24
		Yield Bu/A
Check	—	53
Pre		
Dual Magnum	1.33 pt	53
Warrant	1.5 qt	53
Epost		
Dual Magnum	1.33 pt	52
Warrant	1.5 qt	53
Mpost		
Dual Magnum	1.33 pt	51
Warrant	1.5 qt	53
Pre & Epost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	52
Warrant & Warrant	1.5 qt & 1.5 qt	53
Pre & Mpost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	53
Warrant & Warrant	1.5 qt & 1.5 qt	53
Epost & Mpost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	52
Warrant & Warrant	1.5 qt & 1.5 qt	52
Pre & Epost & Mpost		
Dual Magnum & Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt & 1.33 pt	52
Warrant & Warrant & Warrant	1.5 qt & 1.5 qt & 1.5 qt	53
LSD (0.05)		2

RCB: 4 reps
Variety: AG09XF3
Planting Date: 6/7/24
Pre: 6/7/24
Epost: 7/2/24 Soy V2, 4-6 in.
Mpost: 7/24/24 Soy V6/R1, 16-18 in.

Soil: Clay Loam; 3.9% OM; 6.2 pH

Precipitation: (inches)
Pre: 1st week 0.26; 2nd week 0.84

Comments: Postemergence applications of residual herbicides are becoming more common to control later emerging weeds. The objective of this study was to determine if multiple applications of Herbicide Group 15 herbicides (Dual Magnum and Warrant) affected soybean yield. All treatments had similar yields. While no yield drag was observed, caution should be taken not to solely rely on these herbicides each year to control weeds.

South Dakota State University Extension

2024 HG15 Post Residual Yield Drag
Volga Research Farm

Treatment	Rate/A	10/3/24
		Yield Bu/A
Check	---	51
Pre		
Dual Magnum	1.33 pt	51
Warrant	1.5 qt	53
Epost		
Dual Magnum	1.33 pt	50
Warrant	1.5 qt	51
Mpost		
Dual Magnum	1.33 pt	51
Warrant	1.5 qt	52
Pre & Epost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	52
Warrant & Warrant	1.5 qt & 1.5 qt	52
Pre & Mpost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	53
Warrant & Warrant	1.5 qt & 1.5 qt	53
Epost & Mpost		
Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt	48
Warrant & Warrant	1.5 qt & 1.5 qt	49
Pre & Epost & Mpost		
Dual Magnum & Dual Magnum & Dual Magnum	1.33 pt & 1.33 pt & 1.33 pt	52
Warrant & Warrant & Warrant	1.5 qt & 1.5 qt & 1.5 qt	52
LSD (0.05)		3

RCB: 4 reps
Variety: AG12XF3
Planting Date: 5/29/24
Pre: 5/29/24
Epost: 6/25/24 Soy 2 tri, 4-6 in.
Mpost: 7/11/24 Soy 5 tri, 9-11 in.

Precipitation: (inches)
Pre: 1st week 0.41; 2nd week 0.23

Soil: Clay Loam; 4.5% OM; 5.9 pH

Comments: Postemergence applications of residual herbicides are becoming more common to control later emerging weeds. The objective of this study was to determine if multiple applications of Herbicide Group 15 herbicides (Dual Magnum and Warrant) affected soybean yield. All treatments had similar yields. While no yield drag was observed, caution should be taken not to solely rely on these herbicides each year to control weeds.

South Dakota State University Extension

2024 Irongate Spring Application Efficacy Against Barnyardgrass Northeast Research Farm

Treatment	Rate/A	6/24/24				7/13/24			8/9/24		9/2/24
		VCRR	Bygr	Yeft	Wocg	VCRR	Bygr	Yeft	Bygr	Yeft	Yield Bu/A
Check	—	0	0	0	0	0	0	0	0	0	27
Post											
IronGate + Basic Blend	1.75 oz + 1%	0	55	63	57	0	87	77	90	76	41
PowerFlex HL + Basic Blend	2 oz + 1%	0	63	63	63	0	78	87	90	81	62
Axial Bold	15 oz	0	80	82	80	0	92	91	95	91	48
Everest 3.0 + Basic Blend	2 oz + 1%	0	67	63	63	0	73	72	90	74	62
LSD (0.05)		–	7	6	6	–	9	11	–	9	26

RCB: 3 reps
Variety: Brawn
Planting Date: 4/24/24
Post: 6/7/24 Sp Wht 10-12 in; Bygr 3-5 in; Yeft 3-4 in; Wocu 3-5 in.

Precipitation: (inches)
Pre: 1st week; 2nd week

Soil: Clay Loam; 3.0% OM; 6.1 pH

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)
Bygr=Barnyardgrass
Yeft=Yellow foxtail
Wocu=Woolly cupgrass

Comments: The objective of this study was to determine the effectiveness of Irongate on barnyardgrass compared to standard herbicides. All treatments provided similar weed control at the end of the season. All treatments resulted in similar yield. These results suggest that Irongate provides similar effectiveness compared with standard herbicides.

South Dakota State University Extension

2024 Huskie FX Tolerance and Efficacy on Broadleaves in Spring Wheat
Northeast Research Farm

Treatment	Rate/A	6/24/24					7/1/24			
		VCRR	Colq	Rrpw	Corw	Wibw	Colq	Rrpw	Corw	Wibw
Check	—	0	0	0	0	0	0	0	0	0
Post										
Huskie FX	15.5 oz	0	98	90	99	99	99	96	99	99
Huskie FX	18 oz	0	99	90	99	99	98	96	99	99
Talinor + Coact+	13.7 oz + 2.75 oz	0	96	89	99	99	98	91	99	89
Bison	16 oz	0	99	88	87	90	99	95	99	99
WideARmatch + MCPA ester	14 oz + 8 oz	0	83	80	77	83	99	93	99	99
Huskie FX + Varro FX	15.5 oz + 13.69 oz	0	90	84	96	98	92	91	99	99
Huskie	12.8 oz	0	98	88	93	89	95	98	99	99
LSD (0.05)		–	6	6	8	11	5	9	–	10

RCB: 3 reps
Variety: Brawn
Planting Date: 4/24/24
Post: 6/7/24 Sp Wht 10-12 in; Colq 1-5 in; Rrpw 2-3 in; Corw 3-5 in; Wibw 3-5 in.

Precipitation: (inches)
Pre: 1st week; 2nd week

Soil: Silty Clay Loam; 3.2% OM; 6.3 pH

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)
Colq=Common lambsquarters
Rrpw=Redroot pigweed
Corw=Common ragweed
Wibw=Wild buckwheat

Comments: The objective of this study was to determine Huskie FX tolerance on spring wheat and control of broadleaf weeds compared to commonly applied herbicides. No spring wheat injury was observed with any herbicide. WideARmatch + MCPA provided relatively low levels of common ragweed control initially but increased over time. At the end of the season, all treatments provided >90% on all test weed species.

South Dakota State University Extension

2024 Nitrogen Fertilizer Weed Germination and Control in Spring Wheat
Northeast Research Farm

Treatment	Rate/A	5/13/24 Count/Ft²				8/6/24	9/2/24
		Wimu	Corw	Yeft	Rrpw	Yeft	Yield Bu/A
Check	—	5	4	24	7	0	31
Pre & Post & Lpost							
Pre-Pare & Starane Ultra & Axial XL	0.3 oz & 6.4 oz & 16.4 oz	16	3	9	3	88	34
Zidua SC & Starane Ultra & Axial XL	4 oz & 6.4 oz & 16.4 oz	2	2	1	0	98	38
UAN 28% & Starane Ultra & Axial XL	1.67 gal & 6.4 oz & 16.4 oz	1	4	26	12	80	36
UAN 28% & Starane Ultra & Axial XL	3.34 gal & 6.4 oz & 16.4 oz	6	6	15	11	82	36
UAN 28% & Starane Ultra & Axial XL	8.35 gal & 6.4 oz & 16.4 oz	6	3	17	7	75	37
UAN 28% & Starane Ultra & Axial XL	16.7 gal & 6.4 oz & 16.4 oz	1	3	21	10	81	39
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 1.67 gal & 6.4 oz & 16.4 oz	1	1	22	4	83	36
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 3.34 gal & 6.4 oz & 16.4 oz	2	5	10	5	80	37
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 8.35 gal & 6.4 oz & 16.4 oz	4	1	16	3	81	39
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 16.7 gal & 6.4 oz & 16.4 oz	3	9	26	10	82	41
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 1.67 gal & 6.4 oz & 16.4 oz	0	3	0	0	98	39
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 3.34 gal & 6.4 oz & 16.4 oz	4	3	0	1	99	40
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 8.35 gal & 6.4 oz & 16.4 oz	0	3	0	0	98	40
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 16.7 gal & 6.4 oz & 16.4 oz	0	4	0	0	99	41
LSD (0.05)		10	6	14	6	7	5

RCB: 4 reps
Variety: Brawn
Planting Date: 4/24/24
Pre: 4/24/24
Post: 6/7/24
Lpost: 6/24/24 Yeft 2-3 lf, 6 in.

Soil: Silty Clay Loam; 3.2% OM; 6.3 pH

Precipitation: (inches)
Pre: 1st week 2.33; 2nd week 1.64

Yeft=Yellow foxtail
Wimu=Wild mustard
Corw=Common ragweed
Rrpw=Redroot pigweed

Comments: The primary objective of this study was to determine if a specific UAN rate could stimulate weed germination and if the inclusion of Pre-Pare or Zidua would increase control. The secondary objective was to determine if soil-applied UAN increased weed susceptibility to Axial XL. Starane Ultra was applied to control broadleaf weeds. UAN did not increase weed germination and UAN with a Pre herbicide did not increase control. UAN + Zidua followed by Axial XL had greater yellow foxtail control than UAN followed by Axial XL. Yield was similar across all treatments. Note: Zidua is not labeled for preeermgence application. Zidua must be applied to emerged spring wheat at least 1" tall.

South Dakota State University Extension

2024 Nitrogen Fertilizer Weed Germination and Control in Spring Wheat
Volga Research Farm

Treatment	Rate/A	5/13/24 Count/Ft²				8/7/24	8/23/24
		Wibw	Wocg	Yeft	Yeft	Wocg	Yield Bu/A
Check	—	5	6	3	0	0	25
Pre & Post & Lpost							
Pre-Pare & Starane Ultra & Axial XL	0.3 oz & 6.4 oz & 16.4 oz	2	5	2	73	90	35
Zidua SC & Starane Ultra & Axial XL	4 oz & 6.4 oz & 16.4 oz	1	2	1	90	93	37
UAN 28% & Starane Ultra & Axial XL	1.67 gal & 6.4 oz & 16.4 oz	6	4	1	75	90	37
UAN 28% & Starane Ultra & Axial XL	3.34 gal & 6.4 oz & 16.4 oz	8	5	4	61	89	32
UAN 28% & Starane Ultra & Axial XL	8.35 gal & 6.4 oz & 16.4 oz	5	6	2	68	90	35
UAN 28% & Starane Ultra & Axial XL	16.7 gal & 6.4 oz & 16.4 oz	4	6	2	73	90	35
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 1.67 gal & 6.4 oz & 16.4 oz	2	6	2	73	90	35
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 3.34 gal & 6.4 oz & 16.4 oz	5	7	1	70	90	35
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 8.35 gal & 6.4 oz & 16.4 oz	2	8	2	70	90	35
Pre-Pare + UAN 28% & Starane Ultra & Axial XL	0.3 oz + 16.7 gal & 6.4 oz & 16.4 oz	2	8	1	70	88	33
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 1.67 gal & 6.4 oz & 16.4 oz	1	3	1	84	90	36
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 3.34 gal & 6.4 oz & 16.4 oz	1	2	2	87	90	36
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 8.35 gal & 6.4 oz & 16.4 oz	2	2	1	89	91	38
Zidua SC + UAN 28% & Starane Ultra & Axial XL	4 oz + 16.7 gal & 6.4 oz & 16.4 oz	1	2	0	92	90	38
LSD (0.05)		6	4	3	7	3	5

RCB: 4 reps
Variety: Driver
Planting Date: 4/22/24
Pre: 4/24/24
Post: 6/8/24 Sp Wht 3 tiller, 10 in; Wibw 2-8 in; Yeft 1-2 tiller, 2-5 in.
Lpost: 6/24/24 Wocu 1-2 tiller, 8-10 in; Yeft 2-3 tiller, 6-8 in.

Precipitation: (inches)
Pre: 1st week 2.15; 2nd week 0.81

Soil: Clay Loam; 5.2% OM; 5.5 pH

Yeft=Yellow foxtail
Wibw=Wild buckwheat
Wocu=Woolly cupgrass

Comments: The primary objective of this study was to determine if a specific UAN rate could stimulate weed germination and if the inclusion of Pre-Pare or Zidua would increase control. The secondary objective was to determine if soil-applied UAN increased weed susceptibility to Axial XL. Starane Ultra was applied to control broadleaf weeds. UAN did not increase weed germination and UAN with a Pre herbicide did not increase control. UAN (3.34, 8.35, 16.7 gal/a) + Zidua followed by Axial XL had greater yellow foxtail control than UAN + Pre-Pare followed by Axial XL and UAN followed by Axial XL. Yield was similar across all treatments. Note: Zidua is not labeled for preeermgence application. Zidua must be applied to emerged spring wheat at least 1" tall.

South Dakota State University Extension

2024 Zidua Application Timing in Sunflower
Volga Research Farm

Treatment	Rate/A	7/24/24			8/23/24	10/15/24
		Colq	Cowh	Gift	VCRR Lodge	Yield Lb/A
Check	—	0	0	0	0	1365
Pre						
Broadaxe XC	30 oz	96	89	78	0	2037
Pre & Epost-V1						
Broadaxe XC & Zidua SC	30 oz & 3.25 oz	97	95	83	9	1973
Pre & Epost-V2						
Broadaxe XC & Zidua SC	30 oz & 3.25 oz	99	95	83	39	1594
Pre & Epost-V4						
Broadaxe XC & Zidua SC	30 oz & 3.25 oz	98	97	82	56	1225
Pre & Epost-V6						
Broadaxe XC & Zidua SC	30 oz & 3.25 oz	97	89	77	8	1881
Pre & Epost-V8						
Broadaxe XC & Zidua SC	30 oz & 3.25 oz	93	84	76	0	2307
LSD (0.05)		6	6	6	10	199

RCB: 4 reps
Variety: Cobalt II
Planting Date: 6/3/24
Pre: 6/3/24
Epost-V1: 6/19/24
Epost-V2: 6/25/24 Sunf V2, 2-4 in.
Epost-V4: 7/3/24 Sunf V4, 6-8 in; Gift 1-3 in; Cowh 0.5-3 in.
Epost-V6: 7/11/24 Sunf V6, 12-16 in; Gift 1-8 in; Cowh 2-7 in.
Epost-V8: 7/17/24 Sunf V8, 27-30 in; Gift 3-10 in; Cowh 4-9 in; Colq 4-9 in.

Precipitation: (inches)
Pre: 1st week 0.24; 2nd week 0.62

Soil: Clay Loam; 5.1% OM; 5.6 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

Comments: The objective of this study was to determine the most effective timing to apply Zidua in sunflower. Weed control was similar across all timings and compared to the preemergence-only treatment. The application timing at V2 and V4 resulted in severe lodging; more research is needed to determine if this injury is environmentally or herbicide related. Sunflower yield was similar across all treatments excluding the treatments that exhibited lodging.

South Dakota State University Extension

2024 Melatonin Safener in Sunflower
Volga Research Farm

Treatment	Rate/A	7/23/24				7/31/24				10/15/24
		VCRR	Colq	Cowh	Gift	VCRR	Colq	Cowh	Gift	Yield Lb/A
Check	—	0	0	0	0	0	0	0	0	726
Pre & Post										
Dual Magnum & Melatonin + NIS	1 pt & 40 g + 0.25%	0	0	0	0	0	0	0	0	1523
Dual Magnum & Ultra Blazer + NIS	1 pt & 1 pt + 0.25%	27	75	74	22	18	81	73	33	1890
Dual Magnum & Ultra Blazer + Melatonin + NIS	1 pt & 1 pt + 40 g + 0.25%	21	71	70	30	10	70	69	35	1814
Dual Magnum & Starane Ultra + NIS	1 pt & 0.4 pt + 0.25%	65	58	20	0	69	49	28	0	–
Dual Magnum & Starane Ultra + Melatonin + NIS	1 pt & 0.4 pt + 40 g + 0.25%	59	48	15	0	68	44	31	0	–
LSD (0.05)		9	13	6	7	8	12	9	14	566

RCB: 4 reps
Variety: Cobalt II
Planting Date: 6/3/24
Pre: 6/3/24
Post: 7/8/24 Sunf V5 10-14 in; Cowh 1-6 in; Colq 2-6 in; Gift 2-8 in.

Precipitation: (inches)
Pre: 1st week 0.24; 2nd week 0.62

Soil: Clay Loam; 5.1% OM; 5.6 pH

Cowh=Common waterhemp
Colq=Common lambsquarters
Gift=Giant foxtail
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

Comments: The objective of this study was to determine if melatonin could be used a safener to potentially reduce injury and yield loss from herbicides that are effective on kochia (Ultra Blazer and Starane Ultra). Melatonin alone did not cause any injury or yield loss. Weed control with and without melatonin was not different with each herbicide. Injury was observed with both herbicides with and without melatonin; the injury was much higher with Starane Ultra and sunflowers never produced a head. While the Ultra Blazer treatments did not reduce yield, this treatment is still not labeled for application in sunflower.

South Dakota State University Extension

2024 Bareground Group 15 Residual Comparison
Southeast Research Farm

Treatment	Rate/A	6/12/24				6/26/24				7/11/24		
		Vele	Colq	Cowh	Grft	Vele	Colq	Cowh	Grft	Colq	Cowh	Grft
Check	—	0	0	0	0	0	0	0	0	0	0	0
Pre												
Liberty + RU Powermax 3 + Amsol	36 oz + 30 oz + 2.5%	0	63	33	25	0	0	0	0	0	0	0
Ziuda SC + Liberty + RU Powermax 3 + Amsol	3.25 oz + 36 oz + 30 oz + 2.5%	79	92	95	95	76	90	88	89	68	79	73
Dual Magnum + Liberty + RU Powermax 3 + Amsol	21 oz + 36 oz + 30 oz + 2.5%	36	87	91	94	25	66	88	90	60	75	83
Outlook + Liberty + RU Powermax 3 + Amsol	14 oz + 36 oz + 30 oz + 2.5%	45	86	95	95	24	84	86	90	68	70	84
Warrant + Liberty + RU Powermax 3 + Amsol	48 oz + 36 oz + 30 oz + 2.5%	52	80	85	77	25	61	76	71	45	56	59
LSD (0.05)		22	17	8	5	24	12	9	3	18	13	13

RCB: 4 reps
Pre: 5/20/24

Soil: Clay; 4.3% OM; 7.0 pH

Precipitation: (inches)
Pre: 1st week 3.31; 2nd week 1.88

Vele=Velvetleaf
Cowh=Common waterhemp
Colq=Common lambsquarters
Grft=Green foxtail

Comments: The objective of this study was to compare the residual activity of several Group 15 herbicides (Dual Magnum, Outlook, Warrant and Zidua). Velvetleaf control was poor for the duration of study for all herbicides but Zidua was more effective. Common lambsquarters control over time was greatest with Zidua followed by Outlook, Warrant then Dual Magnum. Waterhemp control over time was greatest with Zidua followed by Outlook then Dual Magnum and Warrant. Green foxtail control over time was greatest with Zidua, Dual Magnum and Outlook; control was the least over time with Warrant. The results of the study suggest that residual activity for these herbicides is approximately 3 to 4 weeks after application.

South Dakota State University Extension

2024 Surfactants with Glufosinate-Noncrop
Volga Research Farm

Treatment	Rate/A	7/17/24		7/24/24		7/31/24	
		Cowh	Gift	Cowh	Gift	Cowh	Gift
Check	—	0	0	0	0	0	0
Post							
Liberty + AMS	16 oz + 3 lb	44	70	46	65	48	55
Liberty + Permeate + AMS	16 oz + 0.25% + 3 lb	58	73	58	68	48	64
Liberty + Activator 90 + AMS	16 oz + 0.25% + 3 lb	50	73	50	65	43	63
Liberty + Permeate + AMS	16 oz + 0.5% + 3 lb	52	76	49	79	38	68
Liberty + Activator 90 + AMS	16 oz + 0.5% + 3 lb	56	71	54	66	44	63
Liberty + Permeate + AMS	16 oz + 1% + 3 lb	54	63	51	66	39	56
Liberty + Activator 90 + AMS	16 oz + 1% + 3 lb	50	74	47	69	43	60
Liberty + Class Act NG	16 oz + 2.5%	51	69	46	68	38	61
LSD (0.05)		8	11	8	11	9	9

RCB: 4 reps
Post: 7/8/24 Cowh 1-6 in; Gift 6-12 in.

Soil: Clay Loam; 5.1% OM; 5.6 pH

Cowh=Common waterhemp
Gift=Giant foxtail

Comments: The objective of this study was to determine the effect of different adjuvants on weed control with Liberty. No differences of control were noted with any adjuvant on either weed species for the duration of the study.