

# 2024 Noxious & Pasture Weed Plot Data Report

Eric Jones | Assistant Professor and SDSU Extension Weed Management Specialist

Dave Vos | SDSU Ag Research Manager/Specialist

Jill Alms | SDSU Ag Research Manager/Specialist

Mike Moechnig | former SDSU Extension Weed Specialist

Darrell Deneke | former SDSU Extension IPM Coordinator



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

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

### **Supported by:**

South Dakota Weed and Pest Control Commission

### **Acknowledgements**

The assistance from Extension Field Specialists and Weed/Pest Supervisors in cooperating counties is acknowledged.

**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. Refer to the appropriate weed control fact sheet available from county extension offices for herbicide recommendations.

# Table of Contents

## Statewide Noxious

### Canada Thistle:

2022-2023 Canada Thistle Control, Hughes County . .	2
2018-2023 2,4-D on Canada Thistle, Grant County . .	3
2020 Canada Thistle Control, Grant County. . . . .	4

### Leafy Spurge:

2024 Leafy Spurge Control with Duracor + Tordon, Brown County . . . . .	5
2024 Leafy Spurge Control, Brown County . . . . .	6
2024 Sharpen + Auxins on Leafy Spurge, Brown County . . . . .	7
2023-2024 Sharpen + Auxins on Leafy Spurge, Codington County . . . . .	8
2022-2024 Leafy Spurge Control with Aminocyclopyrachlor, Codington County . . . . .	9
2020-2023 Leafy Spurge Control, Grant County . . .	10
2018-2023 2,4-D on Leafy Spurge, Roberts County .	11
2016-2018 Leafy Spurge Control, Roberts County. .	12

### Absinth Wormwood:

2024 Aminocyclopyrachlor for Absinth Wormwood Control, Codington County . . . . .	13
2024 Wormwood Demonstration, Brown County . . .	14
2021-2022 Absinth Wormwood Control, Miner County. . . . .	15
2017-2019 Absinth Wormwood Control, Codington County . . . . .	16

## Locally Noxious

### Musk Thistle:

2018-2019 Musk Thistle Control, Codington County . . . . .	17
2016-2017 Musk Thistle Control, Codington County . . . . .	18

### Yellow Toadflax:

2024 Sharpen + Auxins on Yellow Toadflax, McPherson County . . . . .	19
2023-2024 Sharpen + Auxins on Yellow Toadflax, McPherson County . . . . .	20
2023-2024 Yellow Toadflax Control with Aminocyclopyrachlor, McPherson County. . . . .	21
2022-2023 Yellow Toadflax Control with Aminocyclopyrachlor, McPherson County. . . . .	22
2018-2022 Yellow Toadflax Control, Edmunds County. . . . .	23
2018-2022 Yellow Toadflax Control, McPherson County . . . . .	24
2022 Yellow Toadflax Control in Lawns, Brown County . . . . .	25

### Chicory:

2019-2020 Chicory Control, Lawrence County. . . . .	26
-----------------------------------------------------	----

### Common Mullein:

2016-2017 Common Mullein Control, Jackson County. . . . .	27
--------------------------------------------------------------	----

### Spotted Knapweed:

2020-2021 Spotted Knapweed Control, Grant County. . . . .	28
--------------------------------------------------------------	----

### Sulfur Cinquefoil:

2014-2015 Sulfur Cinquefoil Control, Meade County. . . . .	29
---------------------------------------------------------------	----

### Common Burdock:

2020 Common Burdock Control, Grant County . . . .	30
---------------------------------------------------	----

## General Weed Control

### Wild Parsnip:

2019 Wild Parsnip Control, Kingsbury County . . . .	31
-----------------------------------------------------	----

### Invasive:

2020-2021 Deptford Pink Control, Lawrence County. . . . .	32
--------------------------------------------------------------	----

### Pasture/Grasslands:

2022-2023 Buckbrush Control, Grant County . . . . .	33
2021-2023 Buckbrush Control, Grant County . . . . .	34
2016-2017 Goldenrod Control, Grant County. . . . .	35



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2022-2023 Canada Thistle Control Hughes County

Treatment	Rate/A	Cath 9/15/22	Cath-Regrowth 9/15/22	VCRR 9/15/22	Cath 7/31/23
<b>Check</b>	—	0	0	0	0
2,4-D ester	2 qt	96	61	0	70
Freelexx	2 qt	96	48	0	65
Tordon + 2,4-D ester	1 pt + 1 qt	98	70	0	78
Tordon	2 qt	99	98	0	88
Milestone + NIS	5 oz + 0.5%	99	85	0	85
Milestone + NIS	7 oz + 0.5%	99	90	0	89
GrazonNext HL + NIS	34 oz + 0.5%	99	87	0	91
Transline + NIS	1 pt + 0.25%	99	80	0	88
Duracor + NIS	1 pt + 0.5%	99	81	0	88
Method + MSO	8 oz + 1%	99	96	20	87
<b>LSD (0.05)</b>		1	8	—	11

**Applied:** 6/30/22 Cath 12-34 in.

Cath=Canada thistle

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of the study was to determine Canada thistle control with various herbicides. All treatments provided similar control that was greater than 95% at the first evaluation. The least control was provided by 2,4-D ester and Freelexx at the subsequent evaluations (48 to 70%). All other treatments provided similar control at the second and third evaluations. Canada thistle control at the third evaluation ranged from 78 to 91% control.



## 2018-2023 2,4-D on Canada Thistle Grant County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Cath 7/26/18	Cath 9/19/18	Cath 6/5/19	Cath 8/15/19	Cath 9/25/19	Cath 6/25/20	Cath 8/26/20	Cath 6/7/21	Cath 9/29/21	Cath 6/29/22	Cath 6/13/23
<b>Check</b>	—	0	0	0	0	0	0	0	0	0	0	0
2,4-D amine	2 qt	97	65	61	80	58	49	49	43	63	75	73
2,4-D ester	2 qt	97	60	57	86	60	51	49	40	33	69	74
Rugged	2 qt	98	61	63	90	58	55	48	43	51	71	65
Freelexx	2 qt	98	58	52	86	59	50	35	23	40	70	66
Enlist One	2 qt	98	54	52	82	54	44	40	30	50	69	74
Weedone LV-4 Solventless	2 qt	96	54	56	95	54	59	53	40	45	71	74
<b>LSD (0.05)</b>		1	11	4	6	11	6	11	6	22	11	13

**Applied:** 6/21/18 Cath 8-24 in. Cath=Canada thistle  
 7/3/19 Cath 9-48 in.  
 7/1/20 Cath 5-33 in.  
 6/17/21 Cath 4-32 in.  
 10/8/21 Cath 6-27 in.  
 7/21/22 Cath 6-30 in.  
 9/27/22 Cath 6-12 in.

**Comments:** The objective of this study was to determine if various 2,4-D formulations recurrently applied provided differential Canada thistle control. In the first year, all treatments provided similar control and was greater than 90%. In the subsequent years, control continued to decrease but remained similar across the treatments. The results of this study suggest that recurrent applications of 2,4-D may not effectively control Canada thistle.



## 2020 Canada Thistle Control Grant County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Cath 8/26/20
<b>Check</b>	—	0
2,4-D ester	2 qt	40
Freelexx	2 qt	35
Tordon + 2,4-D Ester	1 pt + 1 qt	60
Tordon	2 qt	90
Milestone + NIS	5 oz + 0.5%	60
Milestone + NIS	7 oz + 0.5%	70
GrazonNext HL + NIS	34 oz + 0.5%	65
Transline + NIS	1 pt + 0.25%	70
Duracor + NIS	1 pt + 0.5%	60
Method + MSO	8 oz + 1%	90

**Applied:** 7/1/20 Cath 25-36 in. Cath=Canada thistle

**Comments:** This test was a strip trial to look at new and old treatments for control comparisons.



## 2024 Leafy Spurge Control with Duracor + Tordon Brown County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Lesp 7/22/24	Lesp 9/10/24
Duracor + NIS	20 oz + 0.25%	68	52
Tordon + NIS	16 oz + 0.25%	48	56
Tordon + NIS	20 oz + 0.25%	50	53
Duracor + Tordon + NIS	16 oz + 16 oz + 0.25%	58	64
Duracor + Tordon + NIS	20 oz + 16 oz + 0.25%	48	80
Duracor + Tordon + NIS	20 oz + 20 oz + 0.25%	72	83
Duracor + Tordon + MSO	16 oz + 16 oz + 1%	79	75
Duracor + Tordon + MSO	20 oz + 16 oz + 1%	81	80
Duracor + Tordon + MSO	20 oz + 20 oz + 1%	87	83
Tordon + Freelexx + NIS	32 oz + 32 oz + 0.25%	93	95
<b>Check</b>	—	0	0
<b>LSD (0.05)</b>		10	12

**Applied:** 6/13/24 Lesp 12-25 in, flowering Lesp=Leafy spurge

**Comments:** The objective of this study was to determine the effectiveness of Duracor (aminopyralid [Milestone] and florpyrauxifen) compared to Tordon (picloram) and the two herbicides mixed together with different adjuvants. While Duracor is not labeled to control leafy spurge, this herbicide is applied to control other weeds that could be present as well (i.e., Canada thistle). Duracor alone had similar effectiveness as Tordon alone at the lower rates. Duracor + Tordon treatments provided similar control regardless of the adjuvant. Tordon + Freelexx was the most effective treatment. Some Duracor + Tordon treatments were as effective as Tordon + Freelexx.



## 2024 Leafy Spurge Control Brown County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Lesp 7/22/24	Lesp 9/10/24
<b>Check</b>	—	0	0
Detail	1 oz	60	35
Detail	2 oz	73	39
Plateau	4 oz	45	43
Plateau	6 oz	40	38
Detail + Plateau	1 oz + 6 oz	74	50
Detail + Plateau	2 oz + 6 oz	78	61
Freelexx	32 oz	90	46
Detail + Freelexx	1 oz + 32 oz	94	62
Detail + Freelexx	2 oz + 32 oz	96	73
<b>LSD (0.05)</b>		19	22

**Applied:** 6/13/24 Lesp 12-25 in, flowering Lesp=Leafy spurge

**Comments:** The objective of this study was to determine the effectiveness of Detail (saflufenacil) tank-mixed with Plateau or Freelex on leafy spurge. Adjuvants were excluded from the study to be able to detect small differences in control. Control was similar but variable across all treatments. Despite a lack of difference between other treatments, Detail should not be relied on alone at any rate. These results suggest that Detail mixed with Plateau or Freelex will likely be equally as effective.





**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2024 Sharpen + Auxins on Leafy Spurge Brown County

Treatment	Rate/A	Lesp 7/22/24	Lesp Height (in.) 7/22/24	Lesp 9/10/24	Lesp Height (in.) 9/10/24
<b>Check</b>	—	0	26	0	24
Sharpen + COC	2 oz + 1%	96	18	50	13
Tordon	1 pt	62	19	50	13
2,4-D Ester	1 qt	85	22	52	12
Plateau + MSO	8 oz + 0.5%	62	17	76	16
Sharpen + Tordon + COC	2 oz + 1 pt + 1%	99	17	71	10
Sharpen + 2,4-D Ester + COC	2 oz + 1 qt + 1%	98	22	72	10
Sharpen + Plateau + COC	2 oz + 8 oz + 1%	99	10	96	3
<b>LSD (0.05)</b>		18	8	16	5

**Applied:** 6/13/24 Lesp 12-25 in, flower Lesp=Leafy spurge

**Comments:** The objective of this study was to determine the effectiveness of Sharpen (saflufenacil) alone and mixed with various herbicides on leafy spurge. Sharpen is a contact herbicide with no soil residual activity but the herbicide exhibits rapid activity to kill treated-vegetation. Overtime, Sharpen-treated leafy spurge control decreased and growth was similar to the nontreated check. Initially, all treatments effectively managed leafy spurge. Sharpen + Plateau was more effective than Sharpen, Tordon, and 2,4-D in the second evaluation. Leafy spurge heights were all reduced compared to the nontreated check in the second evaluation. Sharpen + Plateau reduced height more than Plateau alone. Evaluations will continue in Spring 2025 to determine the length of control with these treatments. However, it should be noted that currently Sharpen is only labeled for use with Plateau and 2,4-D.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2023-2024 Sharpen + Auxins on Leafy Spurge Codington County

Treatment	Rate/A	Lesp 7/13/23	VCRR 7/13/23	Lesp 10/6/23	Lesp Height (in.) 10/6/23	Lesp 6/28/24	Lesp Height (in.) 6/28/24	Lesp Count (plant/sq ft) 6/28/24
<b>Check</b>	—	0	0	0	16	0	25	10.8
Sharpen + COC	2 oz + 1%	98	0	62	6	47	20	6.0
Tordon	1 pt	35	0	57	10	48	23	7.2
Method + MSO	8 oz + 0.5%	98	0	94	2	97	12	0.7
Tordon + 2,4-D Ester	1 pt + 1 qt	96	0	58	9	67	21	6.2
Plateau + MSO	8 oz + 0.5%	33	0	76	8	53	23	4.8
Sharpen + Tordon + COC	2 oz + 1 pt + 1%	98	0	65	10	68	19	6.2
Sharpen + Method + COC	2 oz + 8 oz + 1%	98	0	88	3	98	5	0.3
Sharpen + Tordon + 2,4-D Ester + COC	2 oz + 1 pt + 1 qt + 1%	98	15	78	8	76	17	3.3
Sharpen + Plateau + COC	2 oz + 8 oz + 1%	98	12	97	2	85	13	2.3
<b>LSD (0.05)</b>		3	7	27	5	32	11	3

**Applied:** 6/27/23 Lesp 5-28 in, late bloom

Lesp=Leafy spurge

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of this study was to determine the effectiveness of Sharpen (saflufenacil) alone and mixed with various herbicides on leafy spurge. Sharpen is a contact herbicide with no soil residual activity but the herbicide exhibits rapid activity to kill treated-vegetation. Overtime, Sharpen-treated leafy spurge control decreased and growth was similar to the nontreated check. Initially, all treatments effectively managed leafy spurge except for Plateau. Leafy spurge control was similar between the treatments for the next two evaluations. Method, Sharpen + Method, and Sharpen + Plateau exhibited less regrowth compared to the other treatments at the first evaluation (10-6-24) but plants exhibited similar size at the final evaluation (6-28-24). Method, Sharpen + Method, Sharpen + Tordon + 2,4-D, Sharpen + Plateau resulted in the lowest plant count compared to the nontreated check at the end of the study. Results provide evidence that some herbicide effectiveness can be increased with the additions of Sharpen. However, it should be noted that currently Sharpen is only labeled for use with Plateau and 2,4-D.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2022-2024 Leafy Spurge Control with Aminocyclopyrachlor Codington County

Treatment	Rate/A	Lesp 9/1/22	Lesp 9/20/22	Lesp 6/13/23	VCRR Brome 6/13/23	Lesp 7/13/23	VCRR Brome 7/13/23	Lesp 6/28/24
<b>Check</b>	—	0	0	0	0	0	0	0
<b>Spring</b>								
Method + Induce	4 oz + 0.25%	77	68	73	0	50	0	58
Method + Induce	6 oz + 0.25%	88	87	73	0	48	0	64
Method + Induce	8 oz + 0.25%	94	91	81	0	67	0	68
Tordon + Induce	32 oz + 0.25%	53	50	60	0	45	0	43
Tordon + 2,4-D ester LV6 + Induce	32 oz + 32 oz + 0.25%	60	52	58	0	40	0	50
<b>Fall</b>								
Method + Induce	4 oz + 0.25%	—	—	71	17	67	8	53
Method + Induce	6 oz + 0.25%	—	—	84	23	86	20	65
Method + Induce	8 oz + 0.25%	—	—	83	18	77	15	50
Tordon + Induce	32 oz + 0.25%	—	—	71	10	38	0	52
Tordon + 2,4-D ester LV6 + Induce	32 oz + 32 oz + 0.25%	—	—	77	12	40	0	47
<b>LSD (0.05)</b>		22	16	18	4	15	5	20

**Applied:** Spring: 6/22/22 Lesp 12-36 in. Lesp=Leafy Spurge  
Fall: 9/20/22 Lesp 4-20 in. VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of the study was to determine the control of leafy spurge with aminocyclopyrachlor (Method) and other herbicides applied in the spring and in the fall. Method (6 and 8 oz) applied in the spring provided the greatest control in 2022. Method (8 oz) applied in the spring still exhibited the greatest control in 2023 compared to the other treatments. The other spring applied treatments did not provide control over 70% at the last evaluation. The fall applied treatments provided similar control at the first evaluation (71 to 84%). Method (6 and 8 oz) applied in the fall provided the greatest control compared to all the treatments applied in the spring and most of the fall-applied treatments. While leafy spurge control with Method was greatest when applied in the fall, substantial injury to the grass was observed. At the end of the study (spring 2024), control was relatively low (43 to 68%). The results of this study provides evidence that Method is effective on leafy spurge but other control tactics will likely have to be implemented one year after application.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

**2020-2023 Leafy Spurge Control  
Grant County**

Treatment	Rate/A	Lesp 8/26/20	Cath 8/26/20	Lesp 6/7/21	Lesp 9/29/21	Cath 9/29/21	Lesp 6/28/22	Lesp 6/13/23
<b>Check</b>	—	0	0	0	0	0	0	0
<b>Spring</b>								
2,4-D ester	2 qt	42	73	37	40	60	83	68
2,4-D amine	2 qt	45	70	33	42	86	85	62
Freelexx	2 qt	33	57	20	62	63	72	89
Tordon + 2,4-D ester	1.5 pt + 1 qt	64	88	83	57	96	96	77
Tordon	2 qt	82	95	99	82	96	98	72
Duracor + MSO	20 oz + 1%	42	87	57	62	96	76	72
Facet L + MSO	32 oz + 1 qt	68	50	82	53	33	92	88
Plateau + MSO + 28% N	8 oz + 1 qt + 1 qt	67	13	70	62	0	95	75
Method + MSO	8 oz + 1%	75	88	98	99	96	98	87
Tordon + Plateau + 2,4-D ester + NIS	1 pt + 4 oz + 1 qt + 0.25%	73	78	77	60	87	94	85
<b>Spring &amp; Fall</b>								
2,4-D ester & 2,4-D ester	1.5 qt & 1.5 qt	37	72	53	40	72	98	65
Tordon + 2,4-D ester & 2,4-D ester	1.5 pt + 1 qt & 1.5 qt	50	87	88	67	99	98	74
2,4-D ester & Tordon + 2,4-D ester	1.5 qt & 1.5 pt + 1 qt	33	57	93	43	70	94	72
<b>Fall</b>								
Plateau + MSO + 28% N	8 oz + 1 qt + 1 qt	—	—	82	43	0	96	82
<b>LSD (0.05)</b>		15	16	13	27	23	13	18

**Applied:** Spring: 7/1/20 Lesp 15-23 in. Lesp=Leafy Spurge  
Fall: 9/21/20 Lesp 10-18 in. Cath=Canada thistle  
Spring: 6/17/21 Lesp 7-28 in.

**Comments:** The objective of this study was to determine treatments that effectively control both Canada thistle and leafy spurge applied in the spring and/or fall. The least control of either species with most treatments was observed in 2020. Inconsistent control for both species was observed in 2021. Canada thistle control was not evaluated in 2022. Greatest control of leafy spurge was observed in 2022 with most treatments providing greater than 80% control. The treatments applied in the spring and fall provided the greatest leafy spurge control. Leafy spurge control in 2023 began to decline with all treatments which provide evidence that leafy spurge and Canada thistle will likely have to be treated every two years.



## 2018-2023 2,4-D on Leafy Spurge Roberts County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Lesp 7/26/18	Lesp 9/19/18	Lesp 6/27/19	Lesp 8/15/19	Lesp 9/25/19	Lesp 6/12/20	Lesp 8/26/20	Lesp 6/22/21	Lesp 9/29/21	Lesp 6/29/22	Lesp 6/13/23
<b>Check</b>	—	0	0	0	0	0	0	0	0	0	0	0
2,4-D amine	2 qt	96	58	66	89	69	72	78	73	71	63	74
2,4-D ester	2 qt	97	60	72	91	64	80	87	86	83	74	87
Rugged	2 qt	98	56	69	93	58	79	86	86	73	63	88
Freelexx	2 qt	97	55	61	91	66	74	82	79	80	65	91
Enlist One	2 qt	97	57	66	91	60	71	85	70	75	59	80
Weedone LV-4 Solventless	2 qt	97	65	59	91	75	74	79	81	76	71	87
<b>LSD (0.05)</b>		1	8	11	5	11	4	9	9	8	14	8

**Applied:** 6/21/18 Lesp flower, 10-28 in. Lesp=Leafy spurge  
 7/3/19 Lesp 50% flower, 8-32 in.  
 7/10/20 Lesp 6-19 in.  
 7/15/21 Lesp 3-22 in.  
 7/21/22 Lesp 12-28 in.

**Comments:** The objective of this study was to determine if various 2,4-D formulations recurrently applied provided differential leafy spurge control. In the first year, all treatments provided similar control and was greater than 90%. In the subsequent years, control was not consistent as control increased and decreased without a clear pattern but remained similar across the treatments. The results of this study suggest that recurrent applications of 2,4-D may effectively control leafy spurge, but inconsistencies of control are likely.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2016-2018 Leafy Spurge Control Roberts County

Treatment	Rate/A	%Lesp 8/11/16	%Lesp 9/20/16	%Lesp 6/2/17	%Lesp 9/15/17	%Lesp 6/7/18	%VCRR 6/7/18	%Lesp 9/19/18
<b>Spring (2016 &amp; 2017)</b>								
Paramount + MSO	1 lb + 1 qt	71 d	63 bc	36 d	41 d	59 f	0 b	43 def
Tordon + NIS	1 qt + 0.25%	79 cd	58 bc	48 c	75 b	76 e	0 b	53 cd
Tordon + NIS	2 qt + 0.25%	96 a	91 a	90 a	93 a	94 ab	0 b	80 a
Tordon + 2,4-D ester	1.5 pt + 1 qt	85 bc	76 ab	67 b	86 ab	88 bc	0 b	73 ab
Plateau + MSO + 28% N	8 oz + 1 qt + 1 qt	79 cd	86 a	69 b	79 b	61 f	0 b	46 cde
2,4-D ester	1.5 qt	58 e	41 c	33 de	36 d	46 g	0 b	33 ef
Clarity	2 qt	55 e	44 c	24 e	23 e	35 h	0 b	30 f
Tordon + Plateau + 2,4-D ester + MSO	1 pt + 4 oz + 1 qt + 1 qt	93 ab	87 a	70 b	84 ab	79 de	0 b	54 cd
Plateau + Sharpen + NIS	6 oz + 2 oz + 0.25%	91 ab	90 a	74 b	75 b	82 de	0 b	59 bcd
<b>Spring &amp; Fall (2016 &amp; 2017)</b>								
2,4-D ester & Tordon + 2,4-D ester	1.5 qt & 1.5 pt + 1 qt	59 e	52 bc	95 a	58 c	94 ab	0 b	80 a
2,4-D ester & 2,4-D ester	1.5 qt & 1.5 qt	59 e	54 bc	73 b	58 c	84 cd	0 b	63 bc
Tordon + NIS & 2,4-D ester	1 qt + 0.25% & 1 qt	79 cd	53 bc	78 b	79 b	84 cd	0 b	80 a
<b>Fall (2016 &amp; 2017)</b>								
Plateau + MSO + 28% N	8 oz + 1 qt + 1 qt	—	—	95 a	58 c	97 a	41 a	73 ab
<b>Check</b>	—	0 f	0 d	0 f	0 f	0 i	0 b	0 g

**Applied:** Spring: 6/13/16      Lesp=Leafy spurge  
Fall: 9/20/16      %VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)  
Spring: 6/20/17  
Fall: 9/27/17      P = 0.05

**Comments:** The leafy spurge site was run for two sprayings and now on the final rating is one full year after any treatments. Three treatments are still providing 80 percent stand reduction. These treatments have Tordon as part of the program for control.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2024 Aminocyclopyrachlor for Absinth Wormwood Control Codington County

Treatment	Rate/A	Abww 6/14/24	Abww 8/12/24
<b>Check</b>	—	0	0
Method + Induce	4 oz + 0.25%	43	42
Method + Induce	6 oz + 0.25%	53	32
Method + Induce	8 oz + 0.25%	67	78
Method + Telar XP + Induce	4 oz + 0.53 oz + 0.25%	48	42
Method + Escort XP + Induce	4 oz + 0.53 oz + 0.25%	50	27
Method + 2,4-D amine + Induce	4 oz + 1 pt + 0.25%	58	39
Method + Telar XP + Induce	6 oz + 0.8 oz + 0.25%	62	58
Method + Escort XP + Induce	6 oz + 0.8 oz + 0.25%	72	62
Method + 2,4-D amine + Induce	6 oz + 1.5 pt + 0.25%	74	59
Duracor + Induce	1.26 pt + 0.25%	80	76
Tordon + Induce	1 qt + 0.25%	88	95
GrazonNext HL + Induce	1.5 pt + 0.25%	80	77
<b>LSD (0.05)</b>		11	31

**Applied:** 5/17/24 Abww 5-15 in. Abww=Absinth wormwood

**Comments:** The primary objective of this study was to determine the effectiveness of Method (aminocyclopyrachlor) alone and mixed with various herbicides on absinth wormwood. The secondary objective of this study was to evaluate the residual activity of Rujuvra (indaziflam) applied with and without each treatment. Method alone (all rates) provided lower and more variable control. Higher Method and tank-mix herbicides provided greater and more consistent control. The residual activity of Rejuvra will be evaluated in the spring of 2025. Note that absinth wormwood is not currently labeled to be controlled with Method or Rejuvra.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2024 Wormwood Demonstration Brown County

Treatment	Rate/A	Abww 8/12/24	Abww 9/11/24
<b>Check</b>	—	0	0
Tordon	16 oz	74	70
Freelexx	32 oz	69	59
Grazon PD3	32 oz	85	87
Milestone + NIS	7 oz + 0.5%	75	73
Duracor + NIS	20 oz + 0.5%	78	65
GrazonNext HL + NIS	24 oz + 0.5%	79	69
Chaparral + NIS	3.3 oz + 0.5%	82	70
<b>LSD (0.05)</b>		6	24

**Applied:** 6/23/24 Abww 10-30 in. Abww=Absinth wormwood

**Comments:** The objective of this study was to determine the effectiveness of various herbicides on absinth wormwood. All treatments provided similar control of absinth wormwood. Control was more variable in the second evaluation.





**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2021-2022 Absinth Wormwood Control Miner County

Treatment	Rate/A	Abww 6/17/21	Abww 8/20/21	Abww 6/3/22
<b>Check</b>	—	0	0	0
Freelexx	2 qt	70	53	30
2,4-D amine	2 qt	68	65	53
2,4-D ester	2 qt	78	77	67
Tordon	1 pt	80	63	76
Graslan L	2 pt	68	75	78
Milestone + NIS	6 oz + 0.25%	55	63	70
Duracor	20 oz	57	60	60
GrazonNext HL + NIS	1.5 pt + 0.25%	60	68	65
Chaparral + NIS	3 oz + 0.25%	67	67	80
Overdrive + NIS	6 oz + 0.25%	40	43	40
Clarity	1 pt	47	50	33
Clarity + 2,4-D ester	1 pt + 1 qt	73	72	57
Overdrive + Tordon + NIS	3 oz + 8 oz + 0.25%	70	58	55
Tordon + Escort XP + NIS	8 oz + 1 oz + 0.25%	47	30	60
<b>LSD (0.05)</b>		11	23	18

**Applied:** 5/26/21 Abww 2-12 in. Abww=Absinth wormwood

**Comments:** Purpose of study was to evaluate treatments for spring control of Absinth wormwood. Very dry conditions throughout the year may have reduced control. Stand reduction was reduced compared to other control we have seen in the past only three treatments produced over 75 percent stand reduction.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2017-2019 Absinth Wormwood Control Codington County

Treatment	Rate/A	Abww 7/26/18	Abww 9/18/18	Abww 5/14/19	Abww 8/20/19	Abww 9/25/19
<b>Check</b>	—	0 g	0 g	0 e	0 e	0 g
<b>Fall (2017 &amp; 2018)</b>						
Tordon	1 pt	87 abc	94 ab	98 a	99 a	88 abc
Clarity	1 pt	27 f	27 e	60 b	63 c	55 e
Milestone + NIS	6 oz + 0.25%	99 a	95 a	98 a	96 ab	92 ab
Chaparral + NIS	3 oz + 0.25%	99 a	97 a	99 a	99 a	91 ab
Escort XP + NIS	1 oz + 0.25%	13 f	10 f	10 e	13 d	15 f
<b>Fall (2017&amp;18) &amp; Spring (2018&amp;19)</b>						
2,4-D ester & 2,4-D ester	2 qt + 2 qt	99 a	96 a	99 a	99 a	88 abc
<b>Spring (2018 &amp; 2019)</b>						
2,4-D ester	2 qt	97 a	95 a	88 a	92 ab	91 ab
2,4-D amine	2 qt	86 abc	88 abc	37 cd	77 bc	77 bcd
Freelexx	2 qt	73 bcd	82 bc	25 d	70 c	65 de
Tordon	1 pt	84 abc	90 abc	94 a	90 ab	93 ab
Graslan L	2 pt	87 abc	89 abc	88 a	98 a	96 a
Milestone + NIS	6 oz + 0.25%	90 ab	88 abc	91 a	91 ab	90 abc
Chaparral + NIS	3 oz + 0.25%	68 d	82 bc	67 b	93 ab	93 ab
Escort XP + NIS	1 oz + 0.25%	20 f	13 f	8 e	23 d	17 f
GrazonNext HL	1.5 pt	72 cd	78 c	63 b	97 a	95 ab
Clarity	1 pt	50 e	65 d	50 bc	70 c	73 cd
Clarity + 2,4-D ester	1 pt + 1 qt	99 a	95 a	93 a	96 ab	87 abc
Overdrive + NIS	6 oz + 0.25%	62 d	60 d	40 cd	73 c	82 abc
Overdrive + Tordon + NIS	3 oz + 0.5 pt + 0.25%	86 abc	92 ab	96 a	92 ab	97 a

**Applied:** Fall 17: 9/29/17 Abww 1-10 in. Abww=Absinth wormwood  
 Spring 18: 6/4/18 Abww 6-14 in.  
 Fall 18: 10/6/18 Abww 2-5 in.  
 Spring 19: 6/24/19 Abww 10-24 in. P = 0.05

**Comments:** Absinth wormwood continues to be a locally noxious weed with concern on control. Several treatments provided above 90 percent control. Control varied with timing. For example, in the fall Chaparral had the highest rated control but in the spring it was an average treatment. In the spring the 2,4-D treatments looked very good, also other residual treatments looked good. Escort alone did not show good control in spring or fall but in mixes provided acceptable control. In year two, several treatments showed excellent control. Chaparral in the second year looked good both spring and fall. Again, the spring spraying needs to be done before wormwood is a foot tall and most treatments will provide good to excellent control.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2018-2019 Musk Thistle Control Codington County

Treatment	Rate/A	Muth 7/26/18	Muth 9/18/18	Muth 5/14/19
<b>Check</b>	—	0 c	0 d	0 d
2,4-D ester	2 qt	97 b	15 c	50 c
Graslan L	1.25 pt	99 a	93 a	99 a
Tordon	1 pt	99 a	99 a	95 a
Tordon	1 qt	99 a	99 a	99 a
GrazonNext HL + NIS	1.2 pt + 0.5%	99 a	99 a	94 a
Milestone + NIS	3 oz + 0.5%	99 a	92 a	94 a
Milestone + NIS	7 oz + 0.5%	99 a	99 a	99 a
Escort XP + NIS	0.5 oz + 0.5%	99 a	96 a	98 a
Escort XP + NIS	1 oz + 0.5%	99 a	99 a	99 a
Chaparral + NIS	1 oz + 0.25%	99 a	97 a	99 a
Chaparral + NIS	3 oz + 0.25%	99 a	99 a	99 a
Clarity + 2,4-D amine	1 pt + 1 qt	99 a	50 b	75 b
Clarity	1 qt	99 a	80 a	98 a
Curtail	1 qt	99 a	88 a	90 a
Curtail	2 qt	99 a	88 a	97 a

**Applied:** 6/4/18 Muth 6-12 in rosette, 6-12 in early bolt. Muth=Musk thistle

P = 0.05

**Comments:** A musk thistle control study was started to look at some higher rates to see if control can be extended to see if spraying can be done only every two years and still maintain good control. All but two treatments provided excellent control of rosettes the fall after spraying in the spring. Several treatments were still providing excellent control of musk thistle one year after application, indicating that treatments may be able to be sprayed once every two years instead of every year.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2016-2017 Musk Thistle Control Codington County

Treatment	Rate/A	%Muth 7/14/16	%Muth 9/23/16	%Muth Rosette 9/23/16	%Muth 6/2/17	%Muth Rosette 9/19/17
<b>Check</b>	—	0 f	0 d	0 d	0 f	0 c
2,4-D ester	2 qt	88 cd	97 a	0 d	0 f	0 c
Clarity + 2,4-D amine	1 pt + 1 qt	85 de	96 a	25 c	30 cde	0 c
Graslan	1.25 pt	88 cd	99 a	88 a	56 ab	50 b
Tordon	1 pt	94 b	99 a	98 a	74 a	58 a
Curtail	1 qt	91 c	99 a	94 a	45 bcd	0 c
GrazonNext HL + NIS	1.5 pt + 0.5%	99 a	99 a	91 a	41 b-e	0 c
Milestone + NIS	3 oz + 0.5%	96 ab	96 a	88 a	41 b-e	0 c
Milestone + NIS	5 oz + 0.5%	99 a	99 a	95 a	60 ab	0 c
Escort XP + NIS	0.5 oz + 0.25%	97 ab	99 a	20 c	0 f	0 c
Chaparral + NIS	1 oz + 0.25%	88 cd	99 a	73 b	28 de	0 c
Cimarron Plus + NIS	0.25 oz + 0.25%	82 e	75 c	0 d	0 f	0 c
Transline + NIS	0.33 pt + 0.25%	87 cde	99 a	94 a	51 bc	0 c
Cimarron Max Part A + Cim. Max Part B + NIS	0.25 oz + 1 pt + 0.25%	85 de	90 b	0 d	0 f	0 c
Overdrive + NIS	4 oz + 0.25%	87 cde	99 a	84 ab	20 ef	0 c

**Applied:** 4/26/16

Muth=Musk thistle

P = 0.05

**Comments:** Moderate musk thistle pressure. Conditions were cool and damp when treatments were applied in spring of 2016. Musk thistle was slow to show control however final results were excellent. The study was followed for a second year to determine residual control which may allow for treatment in alternating years. Two treatments showed some control of rosettes in the fall of the second year.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2024 Sharpen + Auxins on Yellow Toadflax McPherson County

Treatment	Rate/A	Yetf 10/22/24	Yetf Height (in.) 10/22/24
<b>Check</b>	—	0	17
Sharpen + COC	2 oz + 1%	72	14
Tordon	1 pt	69	16
Method + MSO	8 oz + 0.5%	88	13
Sharpen + Tordon + COC	2 oz + 1 pt + 1%	90	11
Sharpen + Method + MSO	2 oz + 8 oz + 1%	91	14
<b>LSD (0.05)</b>		7	4

**Applied:** 9/11/24 Yetf 10-16in, bloom Yetf=yellow toadflax

**Comments:** The objective of this study was to determine the effectiveness of Sharpen (saflufenacil) alone and mixed with various herbicides on yellow toadflax. Sharpen is a contact herbicide with no soil residual activity but the herbicide exhibits rapid activity to kill treated-vegetation. Sharpen + Tordon and Sharpen + Method were more effective than Sharpen and Tordon. Differences in plant height was not observed. Evaluations will continue in Summer 2025 to determine the length of control with these treatments. However, it should be noted that currently Sharpen is not labeled to control yellow toadflax.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2023-2024 Sharpen + Auxins on Yellow Toadflax McPherson County

Treatment	Rate/A	Yetf 9/19/23	Yetf Height (in.) 9/19/23	Yetf 10/16/23	Yetf Height (in.) 10/16/23	Yetf 8/12/24	Yetf Height (in.) 8/12/24	Yetf Count (plant/sq ft) 8/12/24
<b>Check</b>	—	0	15	0	15	0	12	13.5
Sharpen + COC	2 oz + 1%	49	11	50	10	15	11	10.2
Tordon	1 pt	63	11	35	12	67	11	7.0
Method + MSO	8 oz + 0.5%	83	11	76	11	94	5	1.2
Sharpen + Tordon + COC	2 oz + 1 pt + 1%	88	9	87	9	62	11	7.2
Sharpen + Method + COC	2 oz + 8 oz + 1%	90	9	91	9	92	5	2.0
<b>LSD (0.05)</b>		20	2	8	3	17	6	4

**Applied:** 8/8/23 Yetf 14-17 in, bud-flower      Yetf=Yellow toadflax  
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of this study was to determine the effectiveness of Sharpen (saflufenacil) alone and mixed with various herbicides on yellow toadflax. Sharpen is a contact herbicide with no soil residual activity but the herbicide exhibits rapid activity to kill treated-vegetation. Overtime, Sharpen-treated leafy spurge control decreased. Initially, all treatments provided similar control but Sharpen control was less than Sharpen + Method. At the second evaluation, Sharpen and Tordon provided the least control. Control was similar but variable between all the treatments except for Sharpen alone. Heights of treated plants were largely not different for the duration of the study. Method and Sharpen + Method reduced yellow toadflax stand counts the greatest at the end of the study. The results of the study provide evidence that the inclusion of Sharpen may not increase yellow toadflax control. However, it should be noted that currently Sharpen is not labeled to control yellow toadflax.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2023-2024 Yellow Toadflax Control with Aminocyclopyrachlor McPherson County

Treatment	Rate/A	Yetf 9/19/23	VCRR Grass 9/19/23	Yetf 8/12/24
<b>Check</b>	—	0	0	0
Method + Induce	8 oz + 0.25%	86	25	97
Method + Induce	12 oz + 0.25%	83	17	99
Method + Telar XP + Induce	6 oz + 0.8 oz + 0.25%	82	5	99
Method + Escort XP + Induce	6 oz + 0.8 oz + 0.25%	80	2	97
Method + 2,4-D amine + Induce	6 oz + 24 oz + 0.25%	82	12	84
Method + Telar XP + Induce	8 oz + 1 oz + 0.25%	78	6	89
Method + Escort XP + Induce	8 oz + 1 oz + 0.25%	82	8	92
Method + 2,4-D amine + Induce	8 oz + 32 oz + 0.25%	77	7	95
Telar XP + Induce	1.3 oz + 0.25%	74	2	86
Tordon + Induce	32 oz + 0.25%	83	5	82
Tordon + Duracor + 2,4-D amine + Induce	16 oz + 16 oz + 16 oz + 0.25%	74	6	69
<b>LSD (0.05)</b>		7	6	12

**Applied:** 8/8/23 Yetf bud-flower, 12-17 in. Yetf=Yellow toadflax  
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of the study was to determine the control of yellow toadflax with Method (aminocyclopyrachlor) alone and mixed with other herbicides. Most treatments provided similar yellow toadflax control (>75 to 86%). However, Telar and Tordon + Duracor + 2,4-D were not as effective as Method (8 or 12 oz). While Method alone and in mixtures controlled the yellow toadflax, these treatments caused noticeable injury on the grass. Control evaluations one year after treatment followed a similar pattern as 2023. However, Method + Telar and Method + Escort provided increased residual control. Yellow toadflax control evaluations will continue in 2025.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2022-2023 Yellow Toadflax Control with Aminocyclopyrachlor McPherson County

Treatment	Rate/A	VCRR Brome 9/7/22	Yetf 7/17/23
<b>Check</b>	—	0	0
Method + Induce	4 oz + 0.25%	0	37
Method + Induce	6 oz + 0.25%	0	60
Method + Induce	8 oz + 0.25%	3	78
Telar XP + Induce	1 oz + 0.25%	3	58
Method + Telar XP + Induce	4 oz + 1 oz + 0.25%	0	71
Method + Telar XP + Induce	6 oz + 1 oz + 0.25%	0	80
Method + Telar XP + Induce	8 oz + 1 oz + 0.25%	3	77
Tordon + Induce	32 oz + 0.25%	55	62
Tordon + Telar XP + Induce	32 oz + 1 oz + 0.25%	27	65
Tordon + Induce	64 oz + 0.25%	72	88
Method + Overdrive + Induce	6 oz + 4 oz + 0.25%	0	80
<b>LSD (0.05)</b>		7	11

**Applied:** 8/9/22 Yetf 6-18 in.

Yetf=Yellow toadflax

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of this study was to determine yellow toadflax control with aminocyclopyrachlor (Method) alone and with mixed with other herbicides. First evaluations showed great brome grass injury with treatments containing Tordon but no injury was observed with Method. Method applied at the high rate provided the greatest control compared to the lower rates of the herbicide. Method at the lower rates provided better control when mixed with other herbicides and control was similar or greater than other tested treatments. Yellow toadflax control evaluations will continue into 2024.





**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2018-2022 Yellow Toadflax Control Edmunds County

Treatment	Rate/A	Yetf 9/20/18	Yetf 7/22/19	Yetf 9/25/19	Yetf 6/25/20	Yetf 9/23/20	Yetf 7/14/21	Yetf 9/23/21	Yetf 7/22/22
<b>Check</b>	—	0	0	0	0	0	0	0	0
<b>Post (2018-20)</b>									
Tordon + 2,4-D ester	1 qt + 1 qt	75	48	71	89	75	90	85	84
Tordon	2 qt	74	64	84	97	92	94	97	94
Tordon + Telar XP + NIS	1 qt + 1 oz + 0.25%	64	30	65	70	53	50	54	50
Tordon + Overdrive + MSO	1 qt + 8 oz + 1 qt	75	60	85	97	91	93	95	93
Tordon + Escort XP + NIS	1 qt + 2 oz + 0.25%	69	51	68	68	58	68	76	50
Escort XP + 2,4-D ester + NIS	2 oz + 2 qt + 0.25%	53	30	53	43	40	20	10	5
Telar XP + 2,4-D ester + NIS	2 oz + 2 qt + 0.25%	68	50	68	56	55	51	33	36
<b>Post 2018 &amp; Post 2019-20</b>									
Method L+ MSO & Method L + MSO	4 oz + 1% & 8 oz + 1%	74	89	93	99	94	93	95	95
Method L + Telar XP + MSO & Method L + Telar XP + MSO	2 oz + 1 oz + 1% & 4 oz + 1 oz + 1%	73	51	69	71	71	69	71	83
Method L + Escort XP + MSO & Method L + Escort XP + MSO	2 oz + 2 oz + 1% & 4 oz + 2 oz + 1%	68	61	70	85	73	76	46	71
Method L + Overdrive + MSO & Method L + Overdrive + MSO	2 oz + 8 oz + 1% & 4 oz + 8 oz + 1%	77	93	90	97	95	95	91	90
<b>LSD (0.05)</b>		11	18	10	11	13	21	18	11

**Applied:** 7/26/18 Yetf 6-19 in. Yetf=Yellow toadflax  
 7/22/19 Yetf 8-20 in.  
 8/5/20 Yetf 3-16 in.

**Comments:** Yellow toadflax in north central South Dakota is extremely hard to control. This test was started to evaluate several treatments to determine best control over time. No treatments provide over 75 percent control in the first year. In the second year, the toadflax appeared to be slower growing. It appears that the third time spraying with Method at higher rates gave improved results for Method alone and the tankmix of Method and Overdrive. The same is true for the Tordon alone and the tankmix of Tordon and Overdrive mix. In 2021 no spraying was done but four treatments still are maintaining over 90 percent control. 2022 will be the last year to evaluate these treatments no spraying has been done since 2020 and there are still four treatments that are holding 90 percent or better control. These are the best long-term treatments.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

**2018-2022 Yellow Toadflax Control  
McPherson County**

Treatment	Rate/A	Yetf 9/20/18	VCRR-Smbr 7/22/19	Yetf 9/25/19	VCRR-Smbr 9/25/19	Yetf 9/23/20	VCRR-Smbr 9/23/20	Yetf 7/14/21	VCRR-Smbr 7/14/21	Yetf 9/23/21	Yetf 7/22/22
<b>Check</b>	—	0	0	0	0	0	0	0	0	0	0
<b>Post (2018 &amp; 2019)</b>											
Tordon	1 qt	47	0	58	13	37	0	37	0	40	62
Tordon + 2,4-D ester	1 qt + 1 qt	58	0	72	15	65	0	50	0	70	80
Tordon	2 qt	65	12	82	17	93	0	90	0	93	94
Tordon + Telar XP + NIS	1 qt + 1 oz + 0.25%	57	10	65	25	75	0	67	0	60	65
Tordon + Overdrive + MSO	1 qt + 8 oz + 1 qt	60	3	80	13	91	0	60	0	78	88
Tordon + Escort XP + NIS	1 qt + 2 oz + 0.25%	48	3	72	7	48	0	30	0	3	45
Escort XP + 2,4-D ester + NIS	2 oz + 2 qt + 0.25%	62	0	60	10	47	0	38	0	7	42
Telar XP + 2,4-D ester + NIS	2 oz + 2 qt + 0.25%	55	0	75	18	73	0	65	0	72	63
<b>Post 2018 &amp; Post 2019</b>											
Method + MSO & Method L + MSO	4 oz + 1% & 8 oz + 1%	70	53	87	47	73	43	73	10	60	75
Method + Telar XP + MSO & Method L + Telar XP + MSO	2 oz + 1 oz + 1% & 4 oz + 1 oz + 1%	47	7	72	22	65	23	67	0	57	67
Method + Telar XP + MSO & Method L + Telar XP + MSO	2 oz + 2 oz + 1% & 4 oz + 2 oz + 1%	55	27	83	40	82	53	90	13	90	72
Method + Escort XP + MSO & Method L + Escort XP + MSO	2 oz + 2 oz + 1% & 4 oz + 2 oz + 1%	43	7	72	20	80	0	73	0	57	73
Method + Escort XP + MSO & Method L + Escort XP + MSO	4 oz + 2 oz + 1% & 8 oz + 2 oz + 1%	77	35	93	48	72	47	67	13	70	72
Method + Overdrive + MSO & Method L + Overdrive + MSO	2 oz + 8 oz + 1% & 4 oz + 8 oz + 1%	77	17	85	22	87	7	67	10	55	77
<b>LSD (0.05)</b>		9	11	12	8	20	18	35	14	27	23

**Applied:** 7/26/18 Yetf 8-28 in.  
7/22/19 Yetf 7-15 in.

Yetf=Yellow toadflax  
Smbr=Smooth brome  
VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** Yellow toadflax in north central South Dakota is extremely hard to control. This test was started to evaluate several treatments to determine best control over time. No treatments provided over 70 percent control in the first year. This site was dry late but close to normal for precipitation. In year two, the toadflax that was sprayed was slower to emerge and develop. After the second treatment six treatments provided over 80 percent control; however, three of those treatments also had over 40 percent injury to the smooth brome grass. In year three control looked very good early so no applications were made that year. Some of the plots with a lot of grass injury had more toadflax coming back this fall. The plots have not been sprayed for the past two years. Early grass injury continues to have yellow toadflax coming back faster than in plots with good grass growth. The high rate of Tordon has shown low grass injury and the most consistent yellow toadflax control, that continues to ratings in 2022.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2022 Yellow Toadflax Control in Lawns Brown County

Treatment	Rate/A	Yetf 9/20/22
<b>Check</b>	—	0
<b>Post1 &amp; Post2 &amp; Post3 &amp; Post4</b>		
Trimec 0.73L + MSO & Trimec 0.73L + MSO & Trimec 0.73L + MSO & Trimec 0.73L + MSO	384.5 oz + 1% & 384.5 oz + 1% & 384.5 oz + 1% & 384.5 oz + 1%	92
2,4-D amine + MSO & 2,4-D amine + MSO & 2,4-D amine + MSO & 2,4-D amine + MSO	2 qt + 1% & 2 qt + 1% & 2 qt + 1% & 2 qt + 1%	75
Escalade 2 + MSO & Escalade 2 + MSO & Escalade 2 + MSO & Escalade 2 + MSO	2 qt + 1% & 2 qt + 1% & 2 qt + 1% & 2 qt + 1%	84
<b>LSD (0.05)</b>		13

**Applied:** Post1: 7/22/22 Yetf 3-4 in.      Yetf=Yellow toadflax  
 Post2: 8/9/22 Yetf 2.5-3 in.  
 Post3: 8/23/22 Yetf 50% brown  
 Post4: 9/20/22 Yetf 2-6 in.

**Comments:** Purpose of the study is to evaluate lawn treatments for the control of yellow toadflax. Three common lawn treatments we looked at for control. Next year stand reduction of toadflax will be evaluated to see if fall burndown rating turns into stand reduction.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2019-2020 Chicory Control Lawrence County

Treatment	Rate/A	Wich 7/26/19	Wich 7/15/20	VCRR-Stand Red. Alfalfa 7/15/20
<b>Check</b>	—	0	0	0
Escort XP + NIS	0.5 oz + 0.25%	99	98	73
Escort XP + NIS	1 oz + 0.25%	99	98	93
2,4-D amine	2 qt	99	98	93
Milestone + NIS	5 oz + 0.25%	99	98	75
Clarity	1.5 pt	99	98	73
Clarity + 2,4-D amine	1 pt + 1 qt	99	98	75
Opensight + NIS	2 oz + 0.5%	99	98	97
GrazonNext HL + NIS	2 pt + 0.5%	99	98	92
Tordon + 2,4-D amine	1 pt + 1 qt	99	98	94
Cimarron Plus + NIS	0.5 oz + 0.5%	99	98	65
Cimarron Max Part A + Cimarron Max Part B	0.5 oz + 1 qt	99	98	80
Garlon 4 Ultra	1.5 pt	99	98	55
Capstone + NIS	5 pt + 0.5%	99	98	95
Tordon	1 pt	99	98	93
Method + NIS	4 oz + 0.5%	99	98	98
Plateau + NIS	4 oz + 0.5%	48	40	10
<b>LSD (0.05)</b>		2	7	18

**Applied:** 6/28/19 Wich 8-40 in.

Wich=Wild Chicory

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** All but one treatment provided excellent first year control. The next year control was still very good; however, most were very hard on the established alfalfa stand.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2016-2017 Common Mullein Control Jackson County

Treatment	Rate/A	%Comu 6/15/16	%Comu 9/21/16	%Comu Rosette 9/21/16	%Comu Rosette 5/25/17
<b>Check</b>	—	0 c	0 c	0 c	0 b
2,4-D ester + NIS	2 qt + 0.5%	65 ab	65 b	0 c	0 b
Graslan + NIS	2.66 pt + 0.5%	83 ab	80 a	45 b	83 a
Tordon + NIS	1 pt + 0.5%	55 b	60 b	58 ab	88 a
GrazonNext HL + NIS	1.75 pt + 0.5%	63 ab	63 b	0 c	0 b
Milestone + NIS	7 oz + 0.5%	55 b	55 b	0 c	0 b
Perspective + NIS	4.75 oz + 0.5%	85 a	83 a	83 a	68 a
Escort XP + NIS	1 oz + 0.5%	80 ab	83 a	88 a	91 a
Chaparral + NIS	2.5 oz + 0.5%	80 ab	80 a	0 c	63 a
Cimarron Plus + NIS	0.5 oz + 0.5%	78 ab	78 a	15 c	0 b
Cimarron Max Part A + Cim. Max Part B + NIS	0.25 oz + 1 pt + 0.5%	75 ab	75 a	20 c	0 b
Telar XP + NIS	1.5 oz + 0.5%	85 a	85 a	70 ab	25 b
Plateau + NIS	12 oz + 0.5%	80 ab	83 a	80 a	93 a

**Applied:** 5/12/16

Comu=Common mullein

P = 0.05

**Comments:** Heavy weed pressure, early rating indicates suppression from spraying. Late season rating shows control for the 2016 season. The rosette rating represents control of the new flushes of rosettes in the fall indicating some treatments may provide control for two years. The spring 2017 rating showed above 80 percent control of the rosettes in four of the treatments the following year.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

**2020-2021 Spotted Knapweed Control  
Grant County**

Treatment	Rate/A	Spkw 8/26/20	Spkw 6/7/21	Spkw 9/29/21
<b>Check</b>	—	0	0	0
2,4-D ester	2 qt	88	94	94
GrazonNext HL + NIS	2.1 pt + 0.5%	75	97	83
Milestone + NIS	7 oz + 0.5%	59	81	77
Stinger	1 pt	70	89	78
Curtail	2 qt	44	79	58
Tordon	1 qt	53	85	94
2,4-D ester + Tordon	1 qt + 1 pt	86	98	91
Duracor + MSO	12 oz + 1%	53	80	72
Escort XP + NIS	1 oz + 0.25%	23	0	0
Method + MSO	8 oz + 1%	84	99	84
<b>LSD (0.05)</b>		17	11	23

**Applied:** 7/20/20 Spkw 10-45 in. Spkw=Spotted knapweed

**Comments:** Very dry conditions and the spotted knapweed was big when sprayed. Control was good by several treatments. 2,4-D, even though it does not have a long residual, provided two year control of spotted knapweed.



## 2014-2015 Sulfur Cinquefoil Control Meade County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	%Sucf 9/15/15	%VCRR Grass 9/15/15
<b>Check</b>	—	0 f	0 a
Tordon + 2,4-D ester	1 pt + 1 qt	98 a	0 a
Tordon	2 qt	98 a	0 a
Escort XP + NIS	2 oz + 0.25%	79 b	0 a
Telar XP + NIS	1.5 oz + 0.25%	69 c	0 a
Plateau + MSO + 28%N	8 oz + 1 qt + 1 qt	59 d	0 a
Clarity	2 qt	89 a	0 a
Paramount + MSO	1 lb + 1 qt	33 e	0 a
2,4-D ester	2 qt	58 d	0 a
Perspective + NIS	6 oz + 0.25%	98 a	0 a
Milestone	5 oz	98 a	0 a
Milestone + Escort XP	5 oz + 1 oz	98 a	0 a

**Applied:** 7/13/15

Sucf=Sulfur cinquefoil

P = 0.05



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2020 Common Burdock Control Grant County

Treatment	Rate/A	Cobd 8/26/20	Cobd 9/16/20
Freelexx	1 pt	23	27
Trimec	1 qt	73	57
Milestone + NIS	3 oz + 0.25%	87	85
Transline + NIS	0.25 pt + 0.25%	60	67
Curtail	1 qt	60	53
GrazonNext HL	1.5 pt	88	86
Escort XP + NIS	1 oz + 0.25%	82	92
Chaparral + NIS	2 oz + 0.25%	90	83
Duracor + NIS	12 oz + 0.25%	67	73
Garlon 4 Ultra	1 pt	53	37
<b>LSD (0.05)</b>		36	18

**Applied:** 7/10/20 Cobd 3-10 in rosette, 20-64 in. bolted Cobd=Common burdock

**Comments:** Very heavy burdock. Control rating is based on new regrowth after spraying. Four treatments provided above 80 percent control.





**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2019 Wild Parsnip Control Kingsbury County

Treatment	Rate/A	Wipn 8/12/19	Wipn 9/30/19
<b>Check</b>	—	0 h	0 f
Escort XP + NIS	1 oz + 0.25%	85 ab	82 a
Escort XP + NIS	1.5 oz + 0.25%	88 a	82 a
Telar XP + NIS	0.5 oz + 0.25%	37 efg	40 cd
Telar XP + NIS	1 oz + 0.25%	47 def	43 cd
2,4-D ester	2 qt	68 abc	60 b
Clarity + 2,4-D amine	1 qt + 1 qt	63 bcd	53 bc
Clarity	2 qt	27 g	20 e
Opensight + NIS	2 oz + 0.5%	85 ab	87 a
GrazonNext HL + NIS	2 pt + 0.5%	75 ab	87 a
Tordon + 2,4-D amine	1.5 pt + 1 qt	73 abc	80 a
Tordon	1 qt	53 cde	63 b
Cimarron Plus + NIS	1.2 oz + 0.5%	72 abc	62 b
Cimarron Max Part A + Cimarron Max Part B	1 oz + 2 qt	78 ab	77 a
Garlon 4 Ultra	2 qt	87 ab	90 a
Capstone + NIS	5 pt + 0.5%	33 fg	33 d
Method L + NIS	8 oz + 0.5%	85 ab	85 a

**Applied:** 7/23/19 Wipn 50% flower, 12-60 in. Wipn=Wild parsnip

P = 0.05

**Comments:** Stand was somewhat variable seven treatments provided better than eighty percent control of the wild parsnip in the fall rating. The treatments will be evaluated next year for residual control of the wild parsnip.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

## 2020-2021 Deptford Pink Control Lawrence County

Treatment	Rate/A	Dfpk 7/28/21	VCRR Grass 7/28/21
<b>Check</b>	—	0	0
Escort XP + NIS	0.5 oz + 0.25%	85	0
Escort XP + NIS	1 oz + 0.25%	95	0
2,4-D amine	2 qt	75	0
Milestone + NIS	5 oz + 0.5%	95	0
Clarity + 2,4-D amine	1 pt + 1 qt	86	0
Clarity	1.5 pt	83	0
GrazonNext HL	2 pt + 0.5%	84	0
Tordon + 2,4-D amine	1 pt + 1 qt	95	0
Tordon	1 qt	95	0
Method	8 oz	95	25
Plateau + NIS	4 oz + 0.5%	50	0
Duracor	12 oz	81	0
Duracor	20 oz	95	0
Garlon 4 Ultra	1.5 pt	76	0
<b>LSD (0.05)</b>		5	2

**Applied:** 7/15/20 Dfpk 15-30 in.

Dfpk=Deptford pink

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** Purpose of the study was to determine effective control of Deptford Pink. Six treatments provided above 90 percent control of Deptford Pink. Five more treatments provided above 80 percent control. Only one treatment showed significant grass injury.



**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

**2022-2023 Buckbrush Control  
Grant County**

Treatment	Rate/A	Bubr 8/16/22	VCRR Brome 8/16/22	Bubr 6/13/23	VCRR Brome 6/13/23
<b>Check</b>	—	0	0	0	0
2,4-D amine	2 qt	45	0	68	0
Freelexx	2 qt	35	0	53	0
2,4-D ester	2 qt	65	0	66	0
Escort XP + NIS	1 oz + 0.25%	93	0	95	0
Telar XP + NIS	1 oz + 0.25%	86	0	77	0
Chaparral + NIS	3 oz + 0.25%	88	0	78	7
Chaparral + NIS + 2,4-D ester	3 oz + 0.25% + 1 qt	95	0	85	0
Duracor	20 oz	23	0	37	0
Duracor + 2,4-D ester	12 oz + 1 qt	40	0	51	0
Milestone + NIS	7 oz + 0.25%	25	0	33	0
Tordon + 2,4-D ester	1 pt + 1 qt	40	0	63	0
Tordon	2 qt	18	15	28	0
Overdrive + NIS	8 oz + 0.25%	18	0	28	0
Clarity	2 qt	35	0	22	0
Facet + MSO	2 qt + 1 qt	18	0	27	0
Method + MSO	8 oz + 1 qt	40	0	50	28
<b>LSD (0.05)</b>		14	11	15	7

**Applied:** 6/22/22 Bubr 8-24 in.

Bubr=Buckbrush

VCRR=Visual Crop Response Rating (0=no injury; 100=complete kill)

**Comments:** The objective of this study was to determine buckbrush control with various herbicides alone and in mixtures. Escort and treatments containing Escort (Chaparral) provided the greatest control for all evaluations. Method provided noticeable injury on the brome grass.



## 2021-2023 Buckbrush Control Grant County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	Bubr 6/22/21	Bubr 9/29/21	Bubr 6/28/22	Bubr 8/16/22	Bubr 6/13/23
<b>Check</b>	—	0	0	0	0	0
2,4-D amine	2 qt	57	87	75	77	55
Freelexx	2 qt	80	82	63	66	38
2,4-D ester	2 qt	30	78	77	71	38
Escort XP + NIS	1 oz + 0.25%	93	90	95	93	88
Telar XP + NIS	1 oz + 0.25%	80	62	80	80	65
Chaparral + NIS	3 oz + 0.25%	88	50	40	69	61
Duracor	20 oz	92	45	58	50	37
Chaparral + NIS + 2,4-D ester	3 oz + 0.25% + 1 qt	23	95	90	95	88
Duracor + 2,4-D ester	12 oz + 1 qt	38	80	73	77	43
Milestone + NIS	7 oz + 0.25%	23	42	43	48	42
Tordon + 2,4-D ester	1 pt + 1 qt	40	80	67	74	56
Tordon	2 qt	30	42	40	52	43
Overdrive + NIS	8 oz + 0.25%	20	33	30	43	32
Clarity	2 qt	25	35	30	38	27
Facet + MSO	2 qt + 1 qt	10	23	20	30	20
Method + MSO	8 oz + 1 qt	25	35	78	80	48
<b>LSD (0.05)</b>		6	18	7	19	23

**Applied:** 5/28/21 Bubr 8-28 in. Bubr=Buckbrush

**Comments:** The objective of this study was to determine buckbrush control with various herbicides alone and in mixtures. Escort and treatments containing Escort (Chaparral) provided the greatest control for all evaluations.



## 2016-2017 Goldenrod Control Grant County

**SOUTH DAKOTA STATE  
UNIVERSITY EXTENSION**

Treatment	Rate/A	%Goro 6/29/16	%Goro 7/14/16	%Cath 7/14/16	%Goro 8/11/16	%Goro 9/22/16	%Goro 6/2/17	%Cath 6/2/17
Experimental + Milestone + DMA 4 IVM + MSO	0.22 oz + 3.2 oz + 16.8 oz + 1%	80 bc	97 ab	99 a	86 ab	94 ab	92 abc	86 ab
Experimental + Milestone + DMA 4 IVM + MSO	0.32 oz + 3.2 oz + 16.8 oz + 1%	84 ab	98 a	99 a	86 ab	87 cd	86 c	80 b
Experimental + Milestone + DMA 4 IVM + MSO	0.43 oz + 3.2 oz + 16.8 oz + 1%	80 bc	99 a	99 a	86 ab	96 a	91 abc	88 a
Experimental + Milestone + DMA 4 IVM + MSO	0.43 oz + 3.2 oz + 11.4 oz + 1%	80 bc	97 ab	99 a	82 ab	94 ab	93 ab	90 a
Experimental + Milestone + DMA 4 IVM + MSO	0.22 oz + 4 oz + 16.8 oz + 1%	84 ab	94 ab	99 a	86 ab	84 c-f	86 c	93 a
Experimental + Milestone + DMA 4 IVM + MSO	0.32 oz + 4 oz + 16.8 oz + 1%	84 ab	95 ab	99 a	90 a	89 bc	92 abc	92 a
Experimental + Milestone + DMA 4 IVM + MSO	0.32 oz + 4 oz + 11.4 oz + 1%	86 ab	94 ab	99 a	86 ab	85 cde	88 bc	90 a
Experimental + Milestone + DMA 4 IVM + MSO	0.43 oz + 4 oz + 16.8 oz + 1%	81 bc	97 ab	99 a	86 ab	75 gh	95 a	91 a
Experimental + Milestone + DMA 4 IVM + MSO	0.43 oz + 4 oz + 7.5 oz + 1%	75 cd	93 b	99 a	79 b	84 c-f	92 abc	93 a
Experimental + Milestone + MSO	0.32 oz + 4 oz + 1%	80 bc	85 c	99 a	66 c	74 h	75 d	80 b
Experimental + Milestone + MSO	0.43 oz + 4 oz + 1%	72 d	81 d	99 a	54 d	78 fgh	76 d	79 b
GrazonNext HL + NIS	1.2 pt + 0.25%	85 ab	86 c	99 a	83 ab	81 def	66 e	63 d
GrazonNext HL + NIS	1.5 pt + 0.25%	88 a	94 ab	99 a	88 ab	80 efg	78 d	69 c
<b>Check</b>	—	0 e	0 e	0 b	0 e	0 i	0 f	0 e

**Applied:** 6/13/16

Goro=Goldenrod  
Cath=Canada thistle

P = 0.05

**Comments:** Heavy goldenrod and moderate Canada thistle pressure. The purpose of the study was to evaluate experimental compounds vs standards to control goldenrod and Canada thistle. Several treatments provided above ninety percent control one year after treatment.