Weed Control in Sugarbeet

Fargo Growers Seminar

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North Dakota State University and University of Minnesota

NDSU EXTENSION

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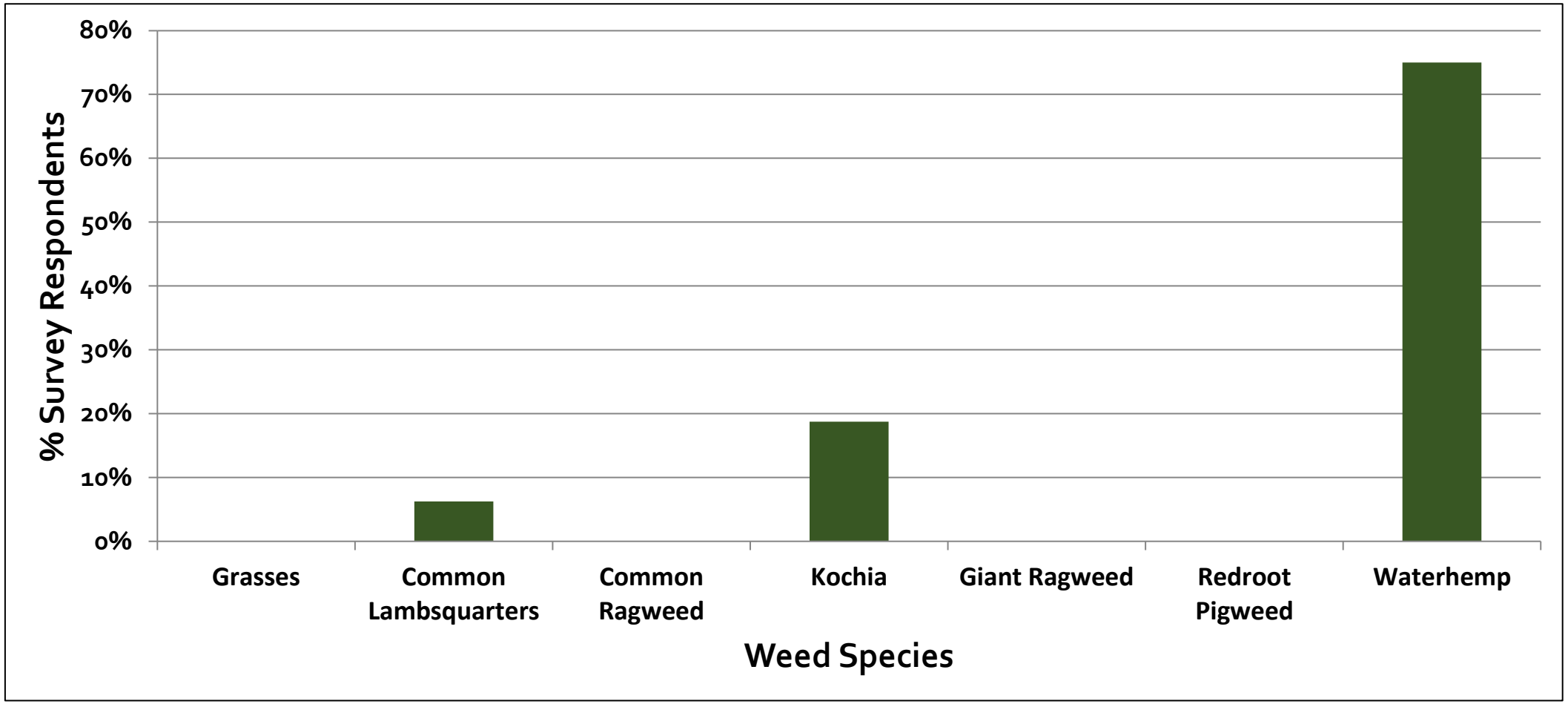
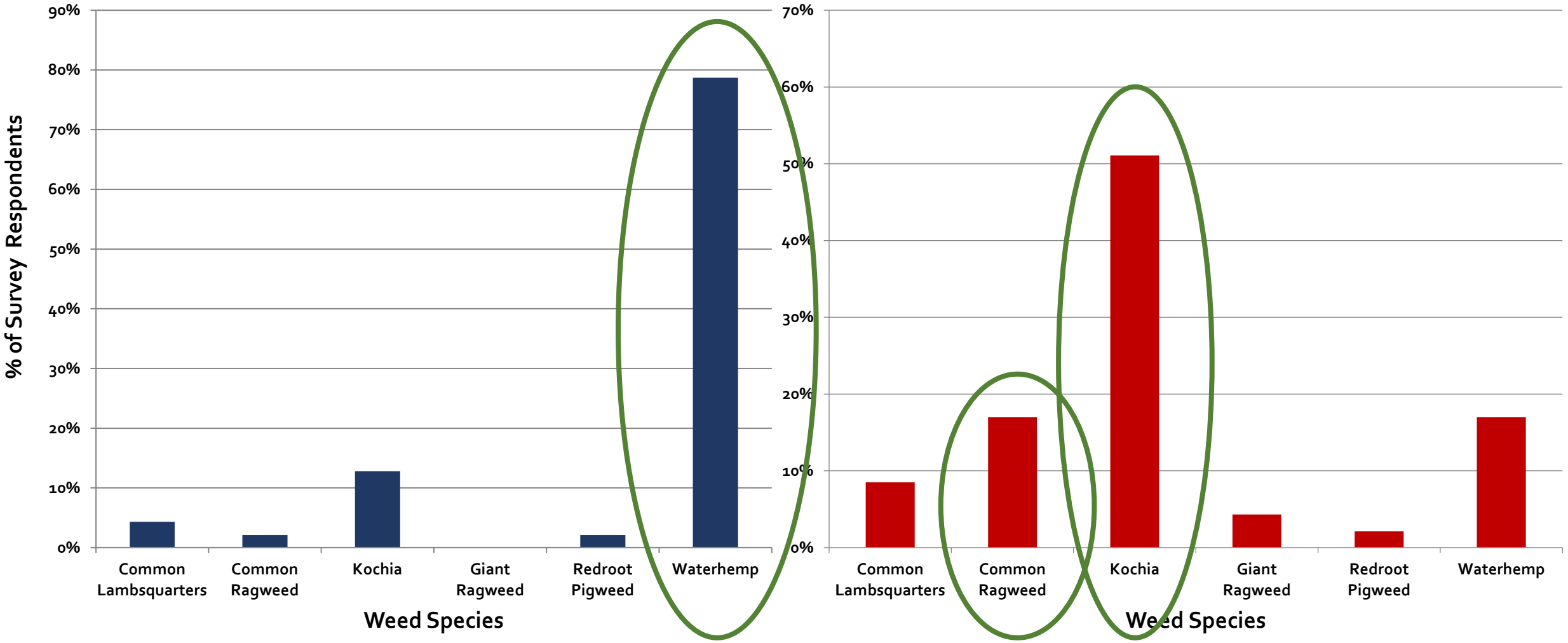
What was your worst weed control challenge? [a]



[a]2024 Fargo Growers Seminar, February 5, 2024

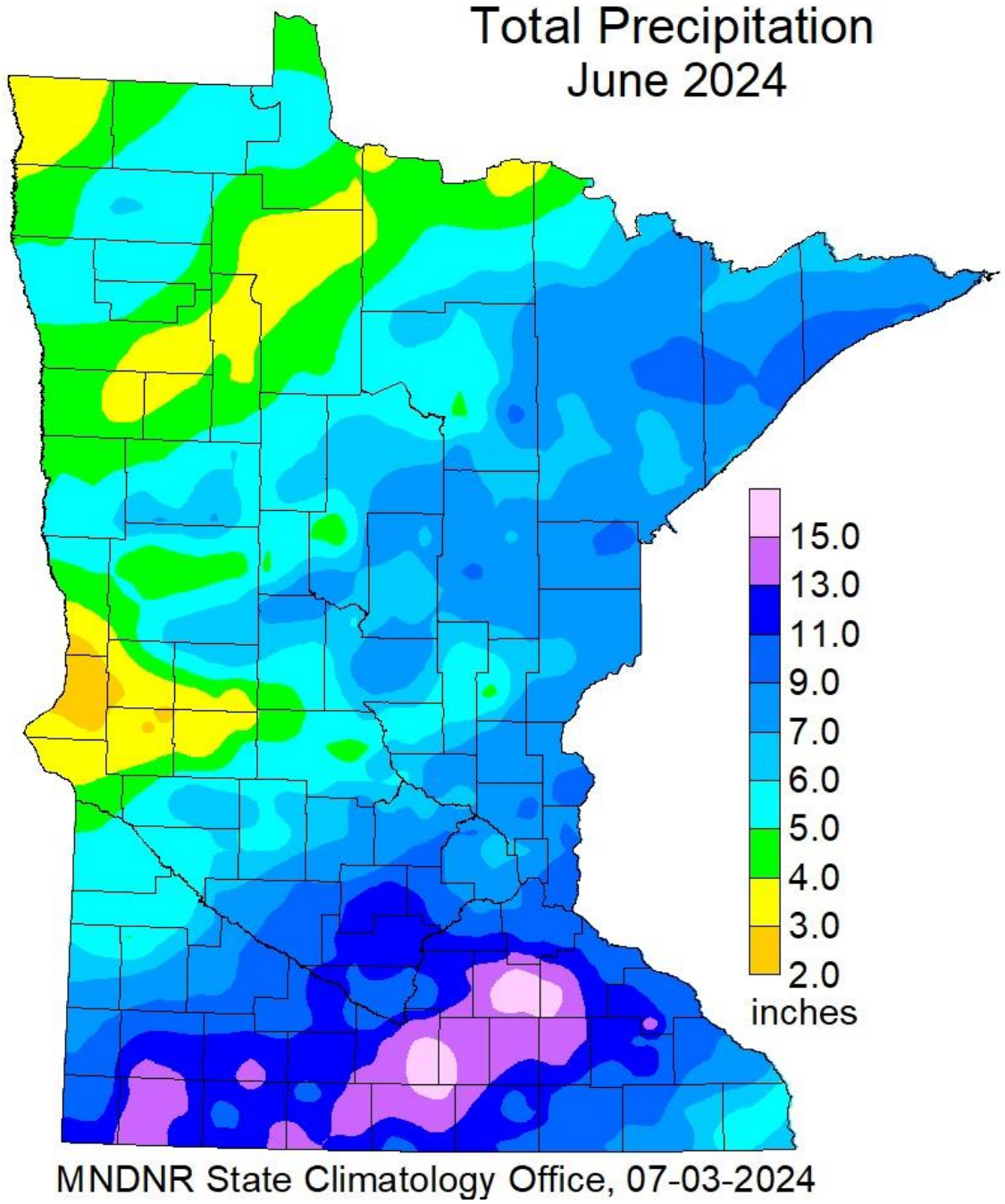
What was your worst weed control challenge? What was your second worst weed control challenge? [a]



[a]2025 Wahpeton Growers Seminar, January 29, 2025

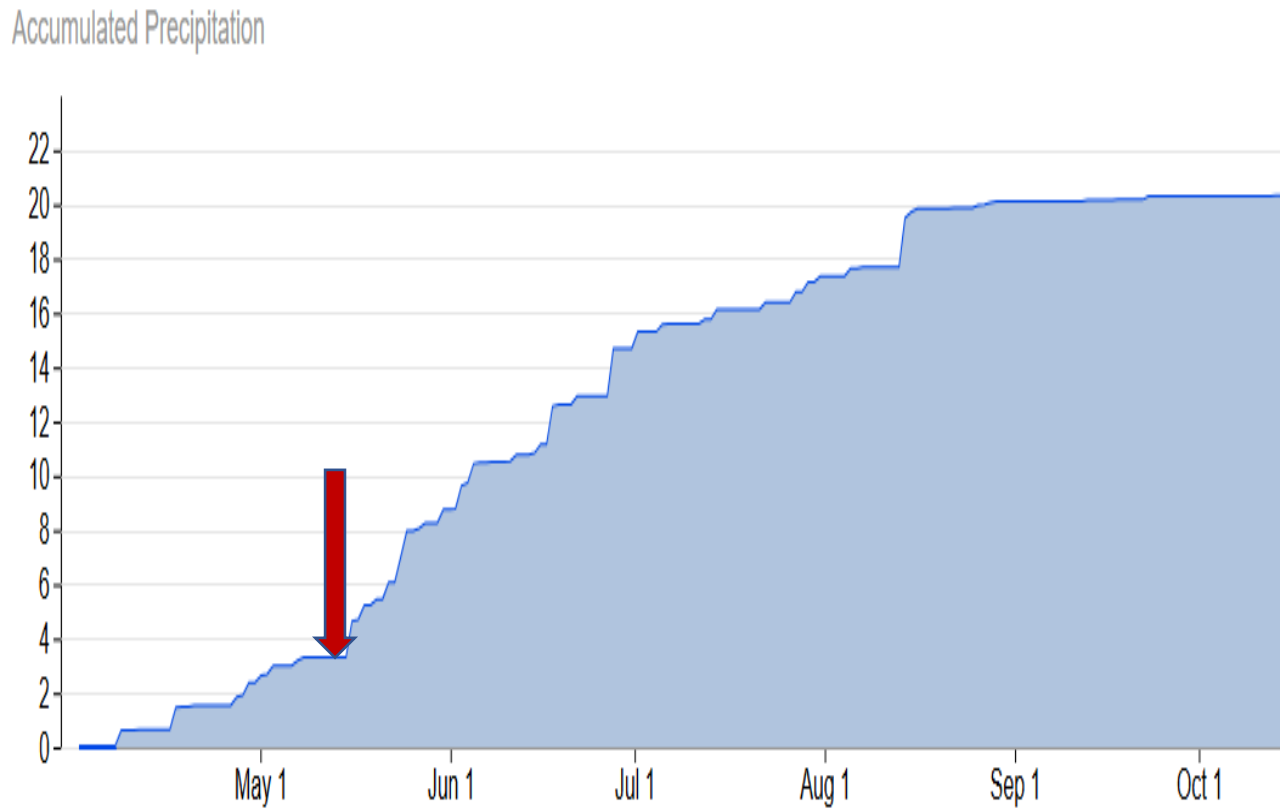
June 2024 Among the Wettest Months on Record in southern Minnesota

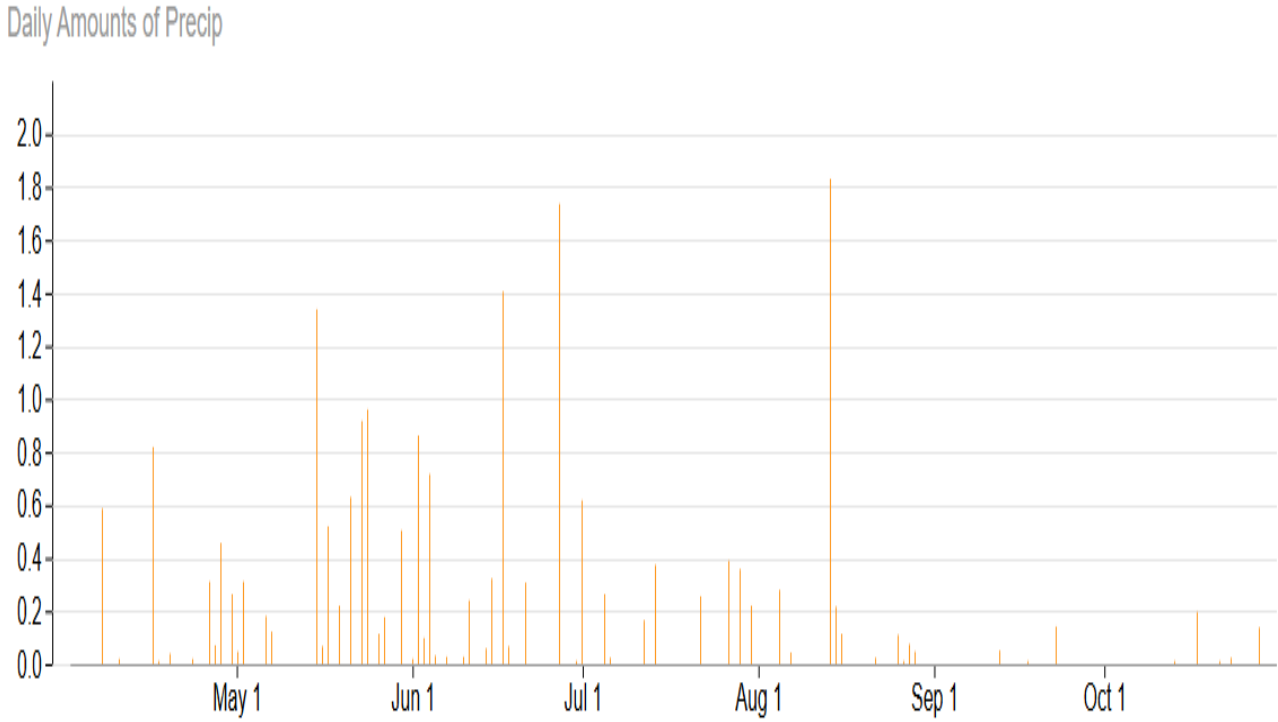
- June 2024 was the fourth-wettest June on record
- The state-average rainfall for the month, based on "gridded" data from NOAA, was 6.8 inches.
- This value was exceeded only by June 1905 (6.9 inches), June 1914 (7.3 inches) July 1897 (7.4 inches), and June 2014 (8.0 inches)



Moorhead, April 1 to October 15, 2024

Data from Climate Fieldview from the ACSC Moorhead Technical Center

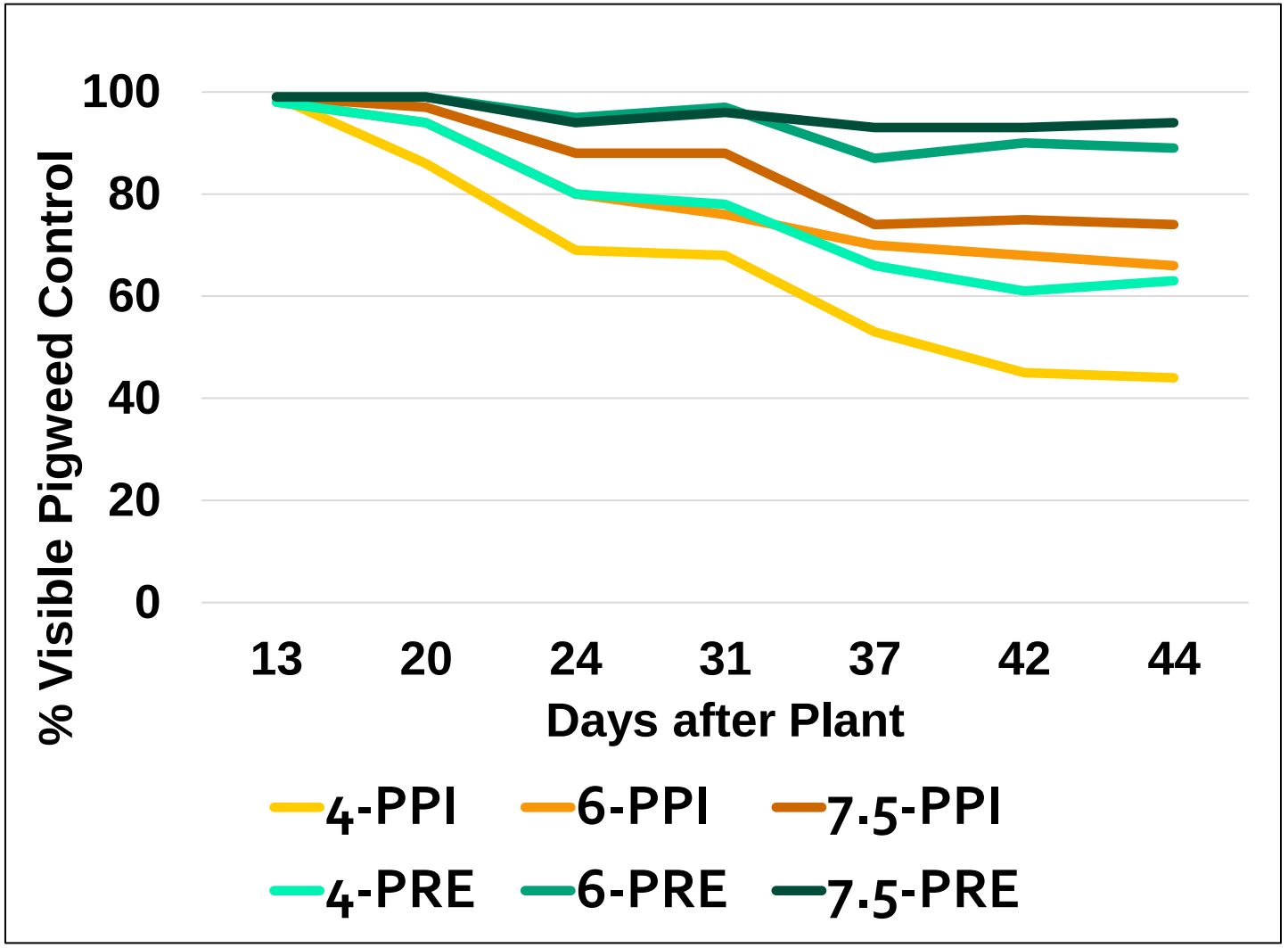




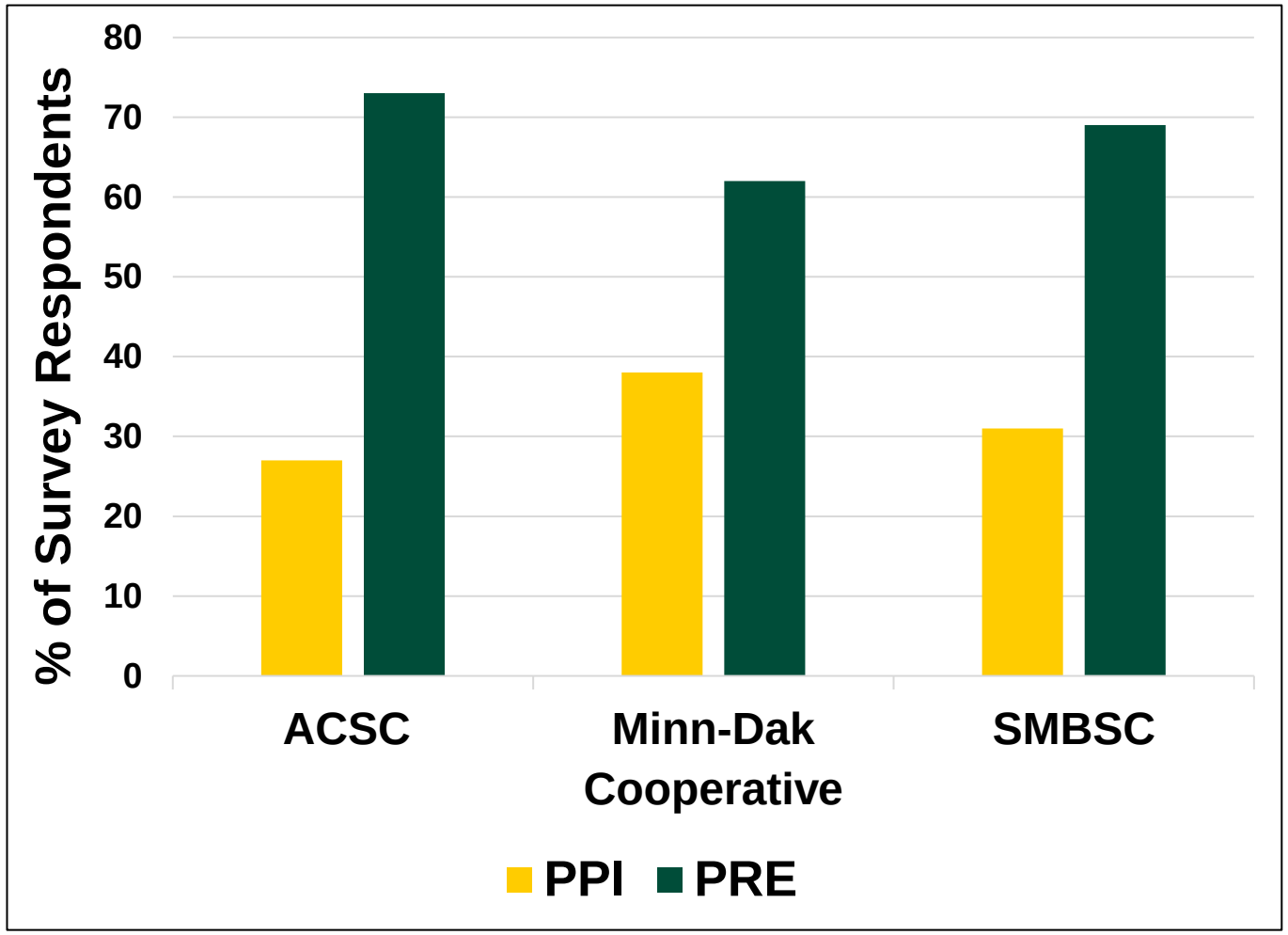
PPI and PRE Comparison Study Results

- PRE applications performed better than PPI in 2024 due to timely rainfall
- Higher rates provided better control
- 6 and 7.5 pt/A rates PRE provided over 85% control

Redroot pigweed control in response to ethofumesate, Horace ND, 2024



Ethofumesate incorporation technique across cooperatives in 2023.[a]



- Incorporation strategies across location/COOP
- Early season kochia or waterhemp control is critical to season long control
- Aided by:
  - Timely incorporation into soil
  - Tillage or rainfall

[a]Turning Point survey at 2024 grower seminars; ACSC database

Waterhemp Control Program in Sugarbeet

Planting Date	Recommendation
Sugarbeet plant in April or May	Dual Magnum at 0.5 to 1.0 pt/A, ethofumesate at 3 to 7.5 pt/A or Dual Magnum at 0.5 to 0.75 pt/A plus ethofumesate at 2 to 3 pt/A
	Split lay-by application (early postemergence / postemergence). Chloroacetamide herbicides applied at 2-lf sugarbeet fb 6- to 8-lf sugarbeet
June	Continue to scout fields for waterhemp. Control escapes with Ultra Blazer (Section 18ee), Liberty with the Redball™ 915 hooded sprayer (24c), or inter-row cultivation
July	Electric Discharge Systems (WeedZapper™)
August / September	Hand remove waterhemp

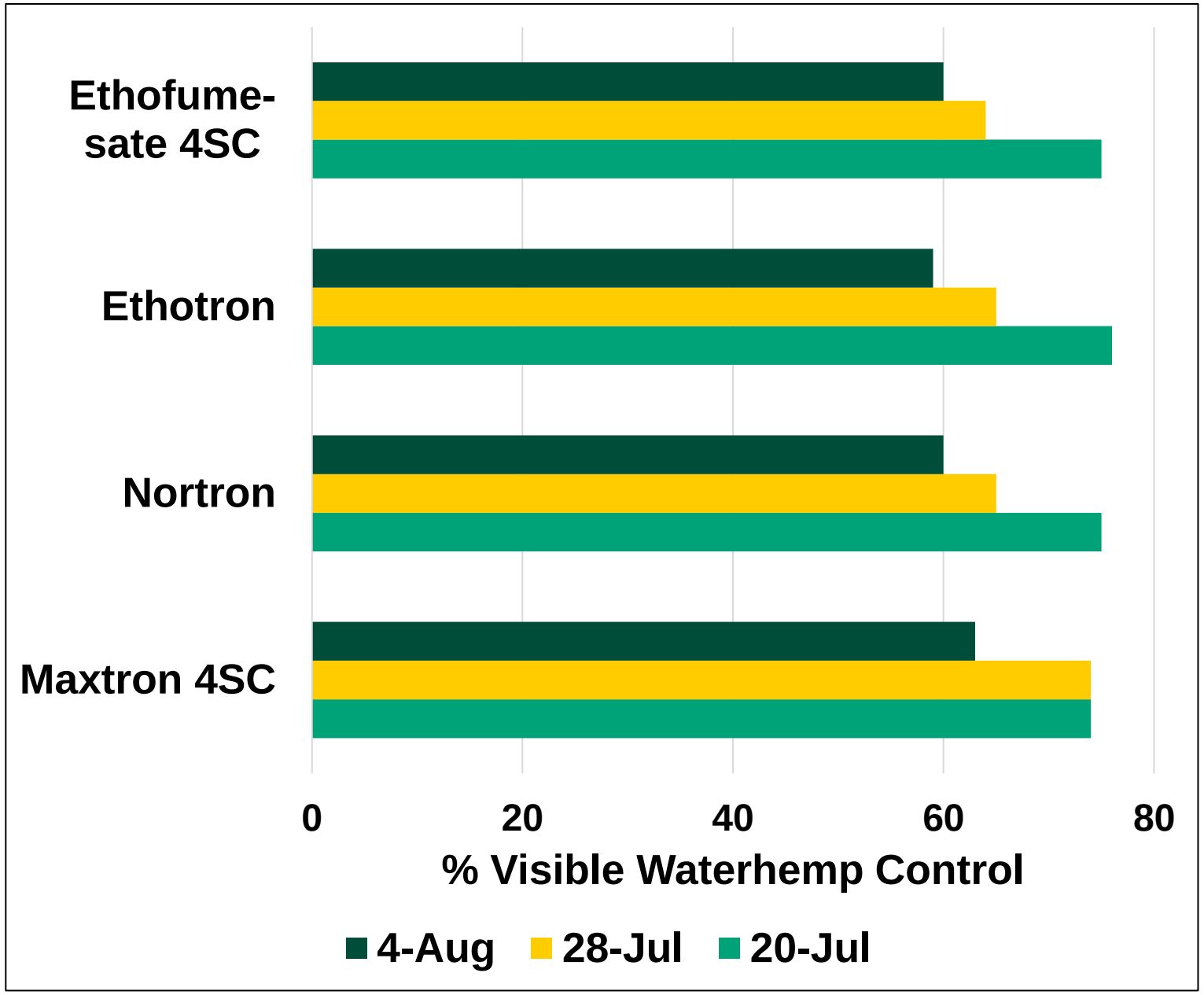
Ethofumesate in 2025
Group 15

Ethofumesate brands for sugarbeet production

- Nortron, Bayer CropScience
- Ethotron, UPL NA Inc.
- Ethofumesate 4SC, Farm Business Network
- Maxtron 4SC (3.78 lb/G), ALBAUGH, LLC
- Nektron SC, Atticus, LLC

Brand Comparison Study Results: Moorhead, MN

- No differences between brands; across evaluations
- Waterhemp control averaged 75%, 67% and 61%, 68, 76, 83 DAP



Each treatment includes 25 fl oz/A RUPM3 and 6 fl oz/A Nortron at 2-4 and 6-8 lf stage.

Chloroacetamides in 2024
Group 15

Dimethenamid

- Outlook, BASF

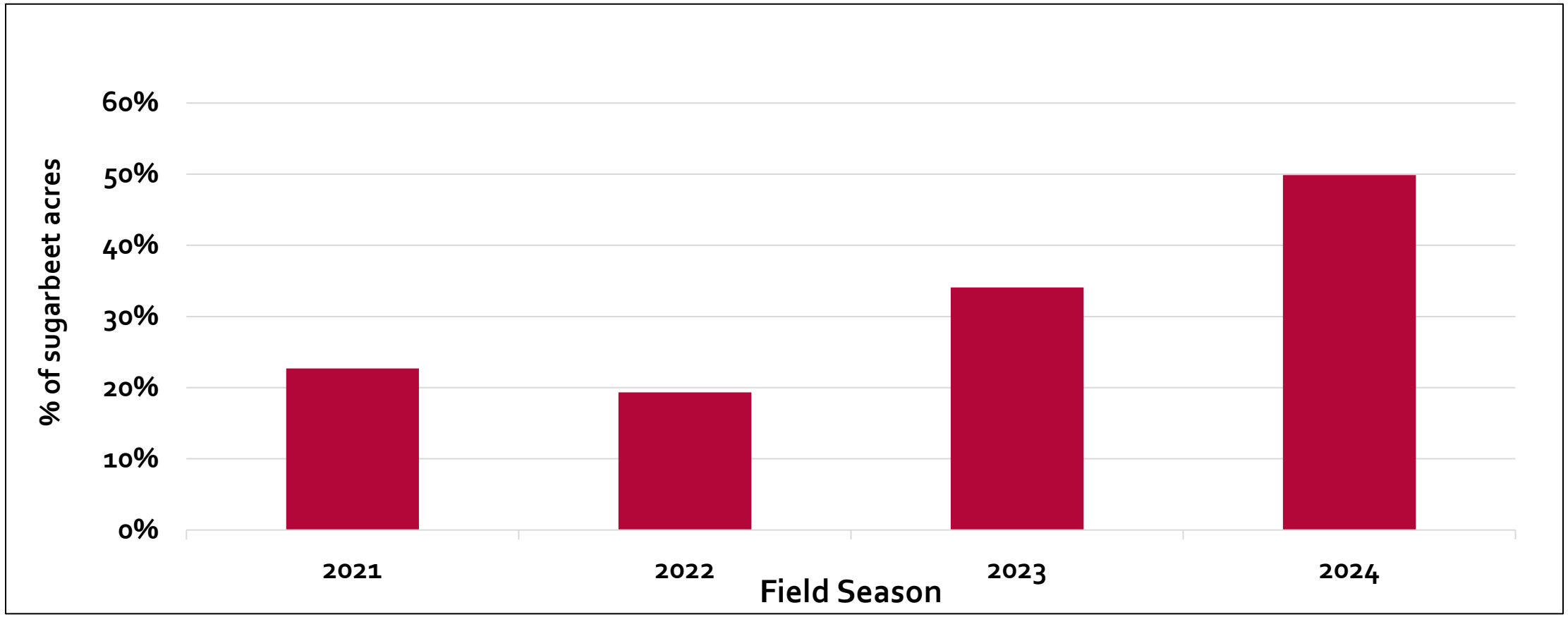
Acetochlor (encapsulated)

- Warrant, Bayer CropScience
- Enversa, Corteva agriscience
- Arrest CS, Sharda USA LLC

***S*-metolachlor**

- Dual Magnum, Syngenta Crop Protection, LLC
- EverpreX, Corteva agriscience
- Medal, Syngenta Crop Protection, LLC
- Brawl, TENKOZ, Inc.
- Moccasin, UPL NA Inc.
- Charger Basic, WinField United

ACSC acres using split-layby program, across years, ACSC data.



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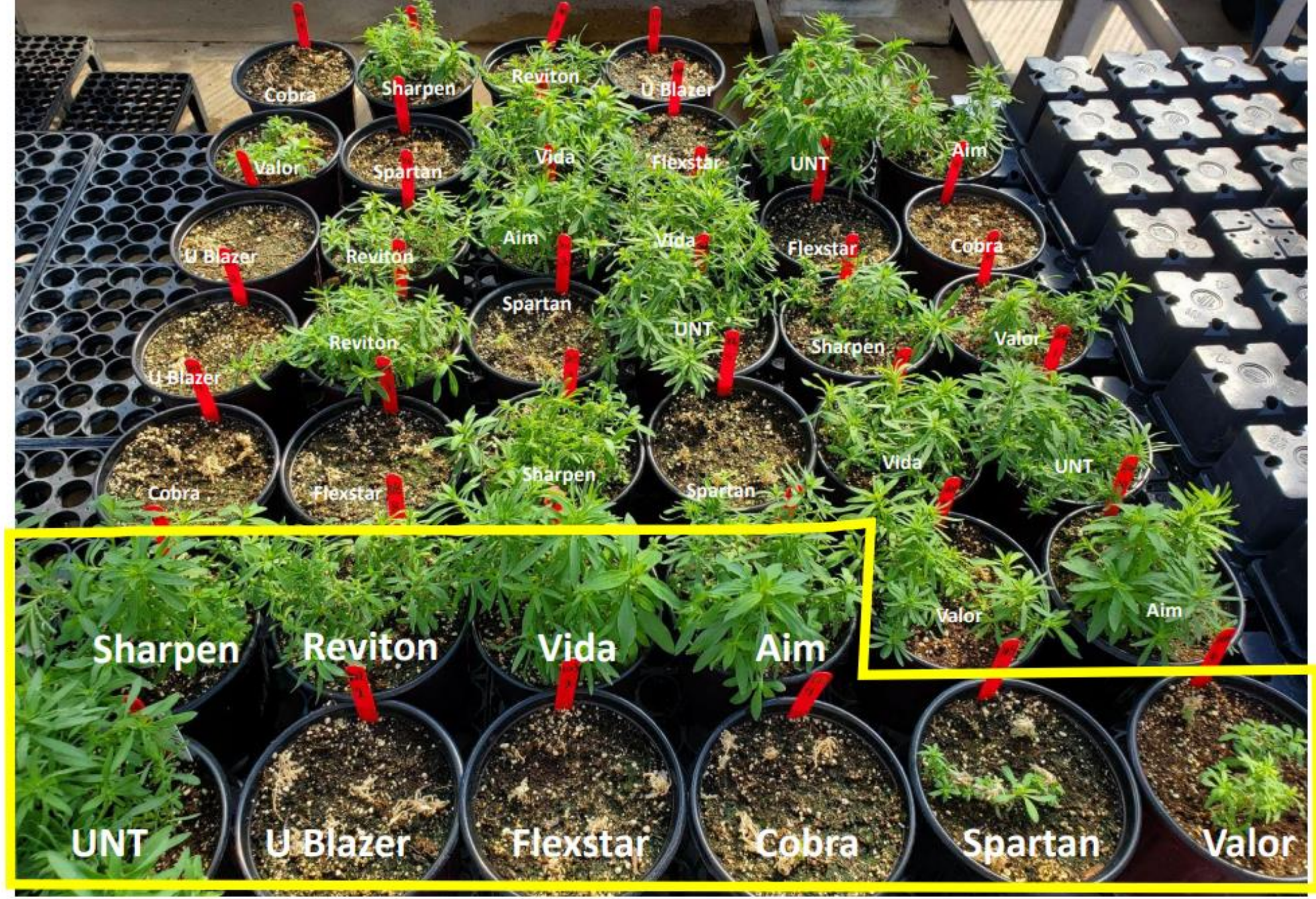
Minot



Slide courtesy of Brian Jenks, NDSU

PPI and PRE Comparison Study Results

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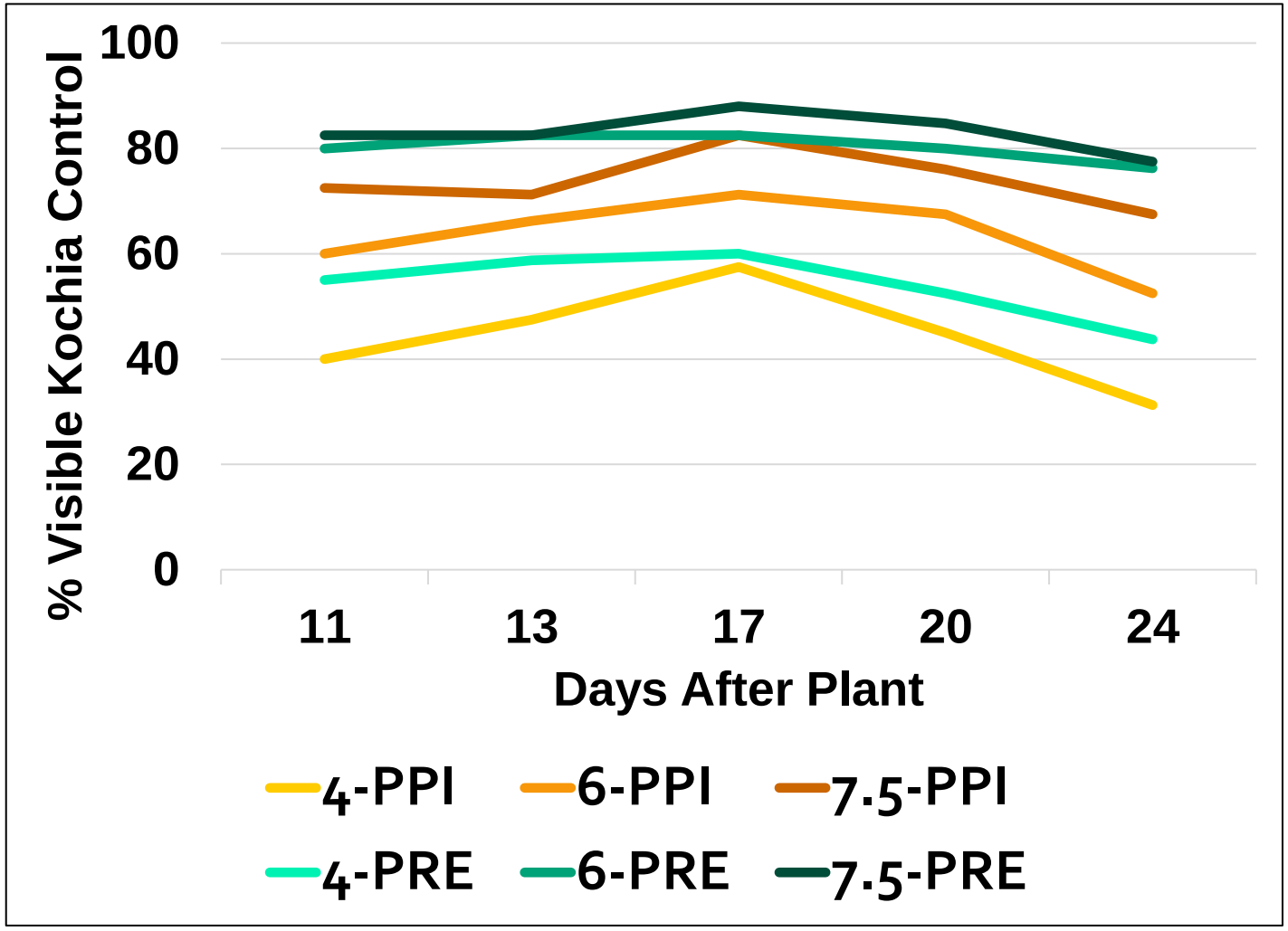
Kochia control in response to ethofumesate, Horace ND, 2024



Kochia control in sugarbeet

Three options

- Paraquat before sugarbeet emerges
  - Use rate depending on vegetation; 1.3 to 2 pt/A (max rate is 2.7 pt/A).
  - Gramoxone alone or in tank mixtures are permitted by ground and by air; a minimum of 10 gal/A by ground and 5 gal/A for aerial application.
  - Use spray nozzles that will produce medium to coarse droplets are recommended.
  - Use an adjuvant, Non-Ionic Surfactant (preferred) at 0.25% v/v (2 pt/100 gal). Crop Oil Concentrate or Methylated Seed Oil at 1.0% v/v (1 gal/100 gal).

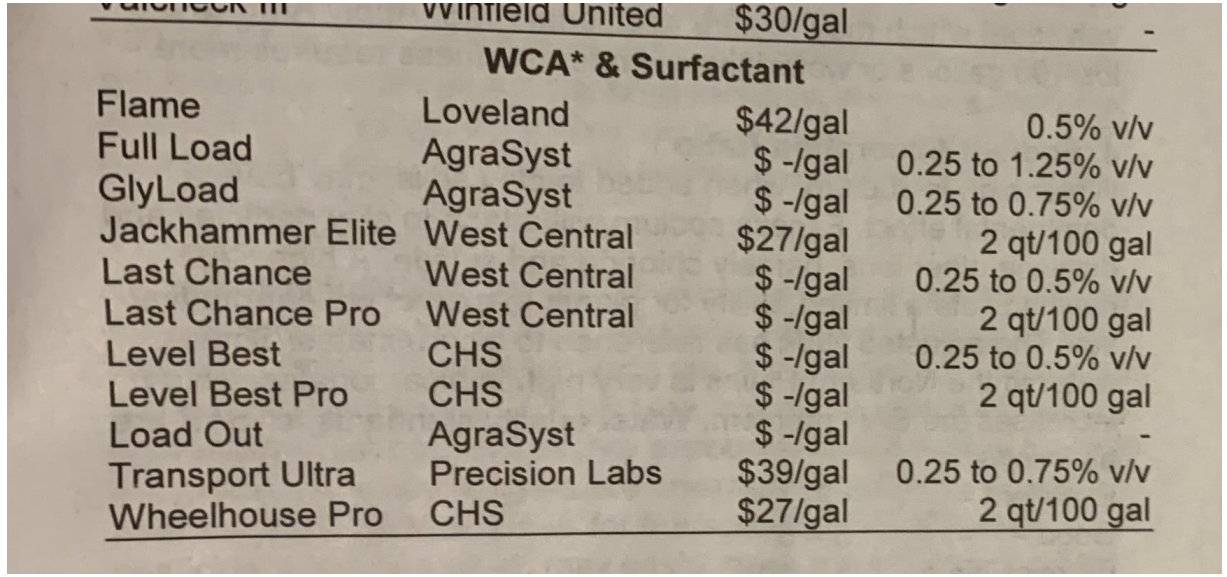
Kochia control in sugarbeet

Three options

- Glyphosate sensitive kochia (fence-line kochia)
- Roundup PowerMax3 (full rates) mixed with a high quality adjuvant and ammonium sulfate
- Kochia up to 3-inch tall
- Shop for the best adjuvant you can source
  - ethoxylate tallow amine adjuvant

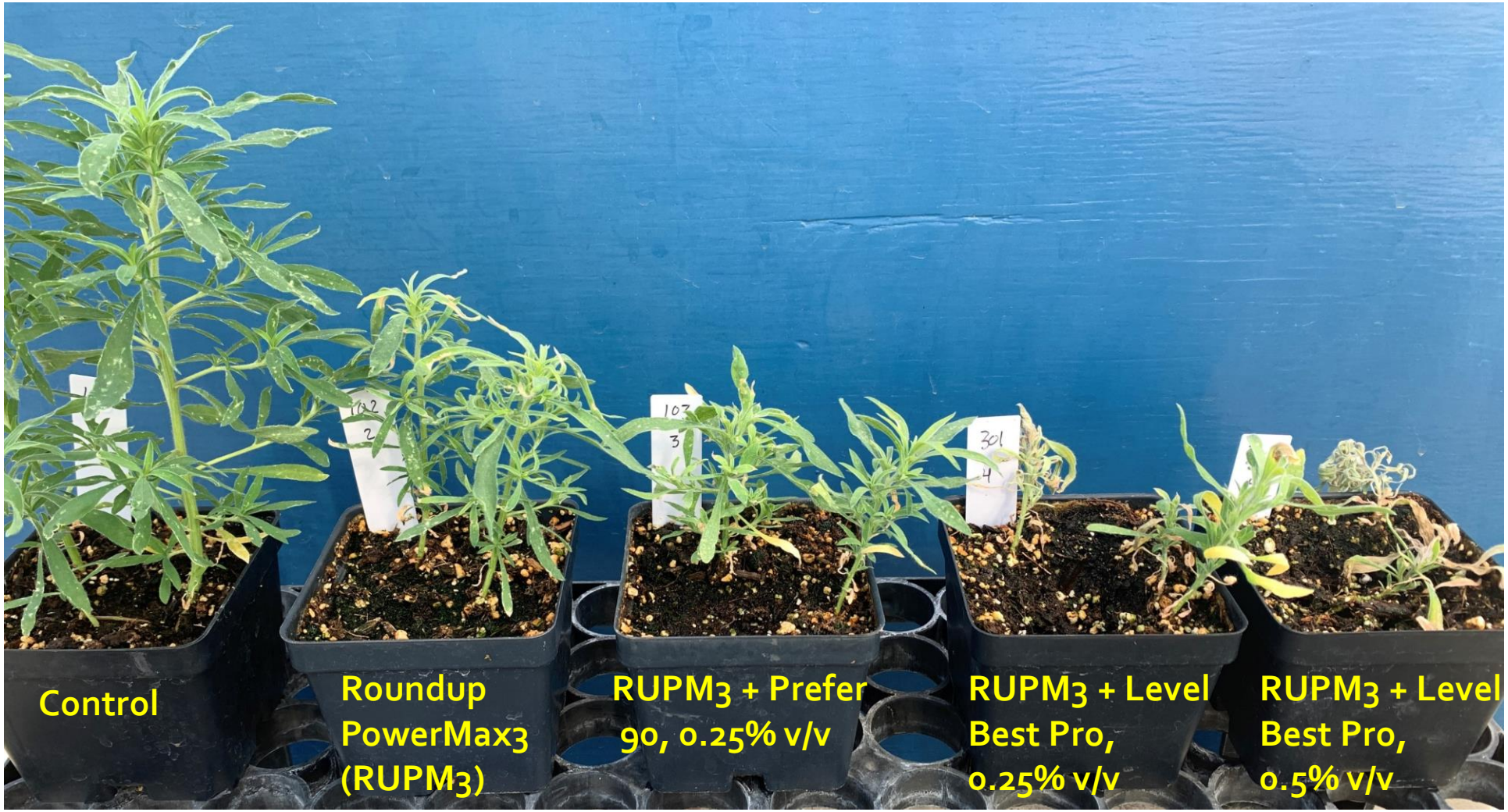
Tallow amine adjuvant

- Ethoxylated tallow amine (ETA) adjuvant was in the original glyphosate formulation.
- It was viewed by most old time weed scientists as the best formulation ever produced.
- Listed as a Nonionic Surfactant, Water Conditioner, and Deposition Aid. PLEASE CONTINUE TO ADD AMS, liquid or dry.
- Several products, Consult the 2025 NDSU Weed Control Guide.

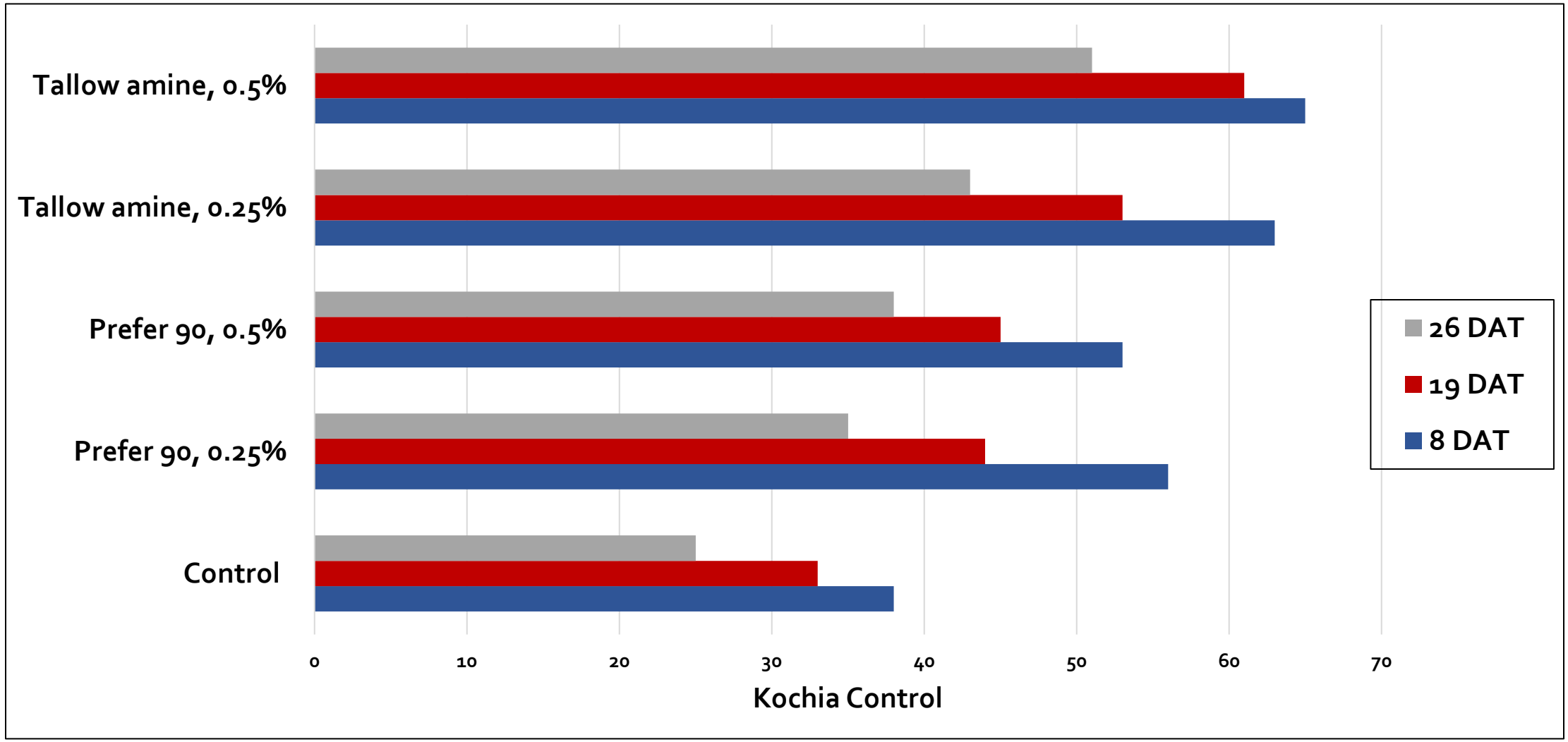


Valucheck III	Winfield United	$30/gal	-
WCA* & Surfactant			
Flame	Loveland	$42/gal	0.5% v/v
Full Load	AgraSyst	$ -/gal	0.25 to 1.25% v/v
GlyLoad	AgraSyst	$ -/gal	0.25 to 0.75% v/v
Jackhammer Elite	West Central	$27/gal	2 qt/100 gal
Last Chance	West Central	$ -/gal	0.25 to 0.5% v/v
Last Chance Pro	West Central	$ -/gal	2 qt/100 gal
Level Best	CHS	$ -/gal	0.25 to 0.5% v/v
Level Best Pro	CHS	$ -/gal	2 qt/100 gal
Load Out	AgraSyst	$ -/gal	-
Transport Ultra	Precision Labs	$39/gal	0.25 to 0.75% v/v
Wheelhouse Pro	CHS	$27/gal	2 qt/100 gal

Kochia control from Roundup PowerMax3 alone or with surfactants, 11 DAT, greenhouse, 2024.



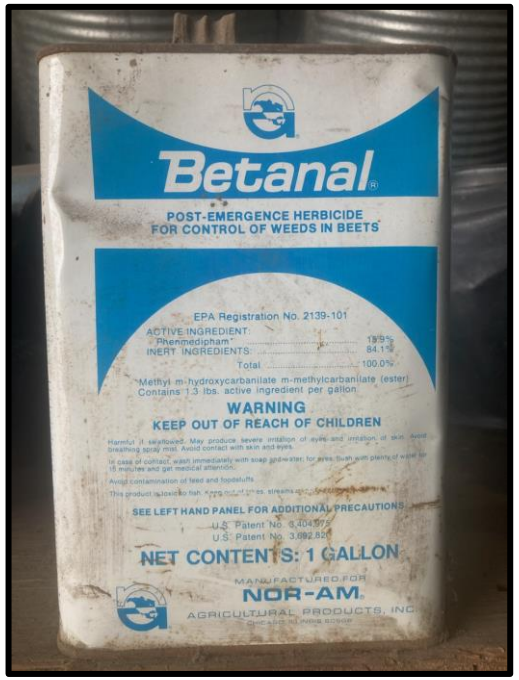
Adjuvants with Roundup PowerMax3 at 30 fl oz/A for kochia control, Felton MN, 2024



Kochia control in sugarbeet

Three options

- Redevelopment of phenmedipham combines historical field and recent greenhouse and field experiments
- Spin-Aid, Betanal, ‘Blue Can’
  - Spin-Aid + ethofumesate; Spin-Aid + ethofumesate + RUPM3
  - Small kochia



Belchim USA
GROWING TOGETHER

- dime-size
- 4-leaves

- quarter-size
- 6- to 9-leaves

- too big
- Scout early next year

Kochia control from Spin-Aid, 11 DAAC, greenhouse, December/January 2023-24

Kochia Control 14 DAAD, Felton MN, 2024

Trt. Num.	Herbicide Treatment [a, c]	Rate	Kochia Control[b]
		(fl oz/A)	----%----
1	Spin-Aid	12	50 d
2	SA/ SA	12 / 16	66 c
3	SA/ SA/ SA	12 / 16 / 24	80 ab
4	PRE / SA/ SA	PRE / 12 / 16	80 ab
5	PRE / SA/ SA/ SA	PRE / 12 / 16 / 24	89 a

[a]Spin-Aid mixed with 4 fl oz/A ethofumesate. High surfactant methylated oil concentrate at 1 pt/A and AMS at 2.5% V/V.

[b]lsmeans with different letters significant at P=0.05

[c]Spin-Aid plus etho, glyphosate, HSMOC at 4 and 25 fl oz/A and 1 pt/A, respectively

Working hypothesis

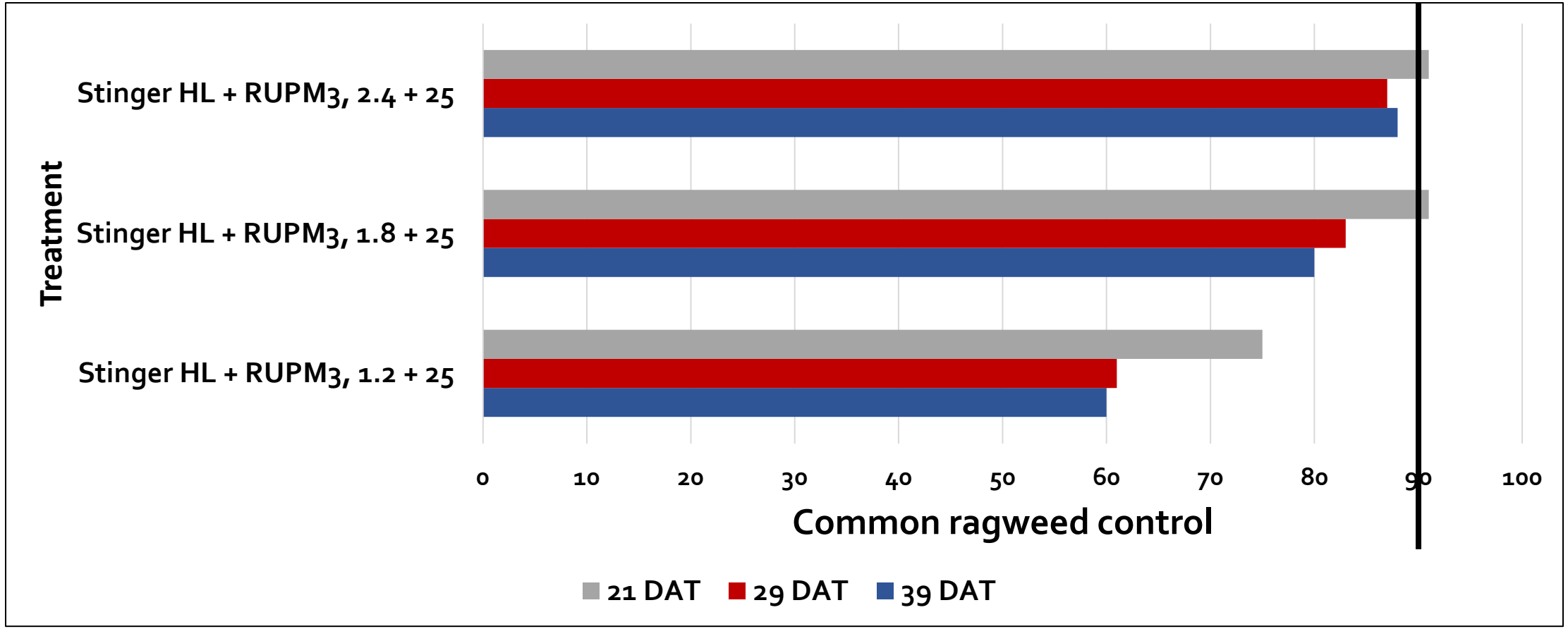
	Spin-Aid Rate[a]		
Sugarbeet Stage	Cold (<75F) at application	Warm (>75F) at application	Mixed with Stinger HL, etho and/or RUPM3[b]
(Lvs)	----------(fl oz per acre)----------		
Cotyledon	16	12	12
Early 2-lf (horns)	20	16	16
2-4 lf	28	24	24
4 lf	32	28	28

[a]Spin-Aid will be applied on 5-7 day intervals when sugarbeet are actively growing and on 10 day intervals when sugarbeet are not growing.
[b]Spin-Aid mixed with ethofumesate at 4 fl oz per acre with MSO or HSMOC at 1 pt/A

Best Management Practices for Stinger HL application and ragweed control

- Stinger HL at 2.4 fl oz/A must be our rate of choice with a single application.
- Stinger HL applied to ragweed less than 2-inch vs. greater than 2-inch.
- Time Stinger HL application to ragweed size rather than sugarbeet stage.
- May need to separate glyphosate and Stinger HL application if you want to delay termination nurse crop to 4-lf sugarbeet.

Common ragweed control in response to treatment, < 2-inch, Halstad, 2022.[a]



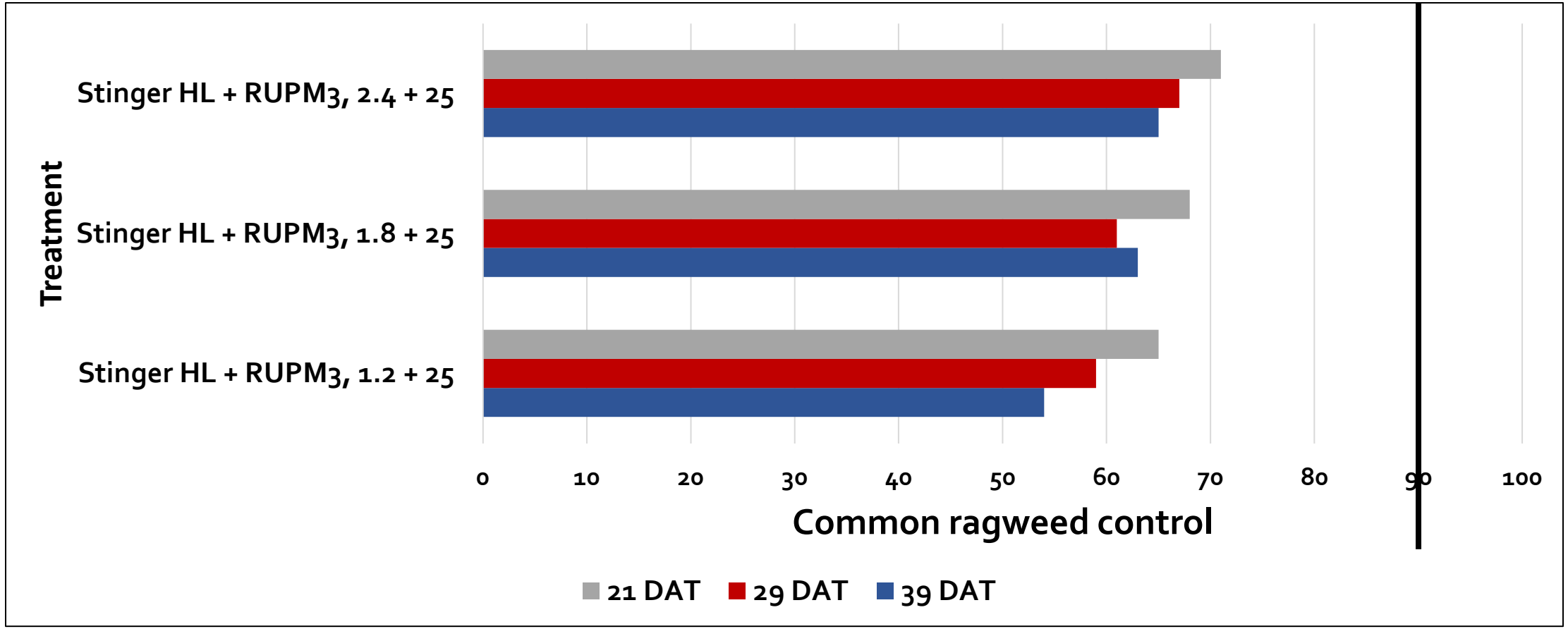
[a]Treatment mixed with non-ionic surfactant and liquid AMS

Common ragweed control, Halstad, MN, 2022

			Common ragweed control [b]		
Treatment[a]	Rate	Common Ragweed	July 8 29 DAAA	July 16 37 DAAA	July 26 47 DAAA
	fl oz/A	inch	%	%	%
Stinger HL + PowerMax3	2.4 + 25	<2	91 b	87 ab	88 a
Stinger HL + PM3 / Stinger HL + PM3	1.5 + 25 / 1.5 + 25	<2 / 10 day	91 b	91 a	89 a
Stinger HL + PM3 / Stinger HL + PM3	1.8 + 25 / 1.8 + 25	<2 / 10 day	95 a	92 a	94 a
LSD (0.10)			4	8	8

[a] Treatment mixed with non-ionic surfactant and liquid AMS
[b] application a applied to ragweed less than 2-inch and 13 days later

Common ragweed control in response to treatment,2- to 4-inch, Halstad, 2022.[a]



[a]Treatment mixed with non-ionic surfactant and liquid AMS

Common ragweed control, Halstad MN, 2022

			Common ragweed control		
Treatment	Rate	Common Ragweed	July 8 21 DAAB	July 16 29 DAAB	July 26 39 DAAB
	fl oz/A	inch	%	%	%
Stinger HL + PowerMax3	2.4 + 25	2-4	71	67 ab	65 b
Stinger HL + PM3 / Stinger HL + PM3	1.5 + 25 / 1.5 + 25	2-4 / 10 day	69	69 a	77 a
Stinger HL + PM3 / Stinger HL + PM3	1.8 + 25 / 1.8 + 25	2-4 / 10 day	70	69 a	79 a
LSD (0.10)			NS	9	6

[a] Treatment mixed with non-ionic surfactant and liquid AMS
[b] application b applied to ragweed greater than 2-inch AND 10 days later

Why were there so many common ragweed escapes in 2024?

- Timing of the first Stinger HL application was influenced by weather.
- Growers didn’t compensate with higher Stinger HL rates for the second application on larger, actively growing ragweed.
- Ragweed continued to emerge well into June.
- Sugarbeet injury concerns

What is Stinger HL injury?

- Stinger HL causes epinasty and upward cupping of sugarbeet leaves.
- No reported yield loss from Stinger HL
- Very minimal plant response from cotyledon through 4 lf stage
- Injury can increase from 4- to 8-lf stage. I attribute this to application conditions and plant growth response.

This is not Stinger HL Injury

- Necrosis of older tissue
- New tissue is emerging as free of necrosis injury
- This is Spin-Aid applied at 72 fl oz per acre
- Sugarbeet 2- to 4-lf stage

Run 2


POST Herbicides Alone
Control
Base+Outlook
Base+Outlook+
Mustang Max
Base+Outlook+
Mustang Max+
Stinger HL


POST Herbicides with High Surfactant Methylated Oil Concentrate
Control
Base+Outlook
Base+Outlook+
Mustang Max
Base+Outlook+
Mustang Max+
Stinger HL

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- Sugarbeet Research and Education Board for funding
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- Our grower cooperators
  - David Arends, Tyler Dahl, Scott Johnson, Keith and Justin Miller, Paul Miller, and Neil Rockstad
- ACSH Moorhead Technical Center, Tyler Grove

Thank you for your continued support

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