

Weed Control in Sugarbeet

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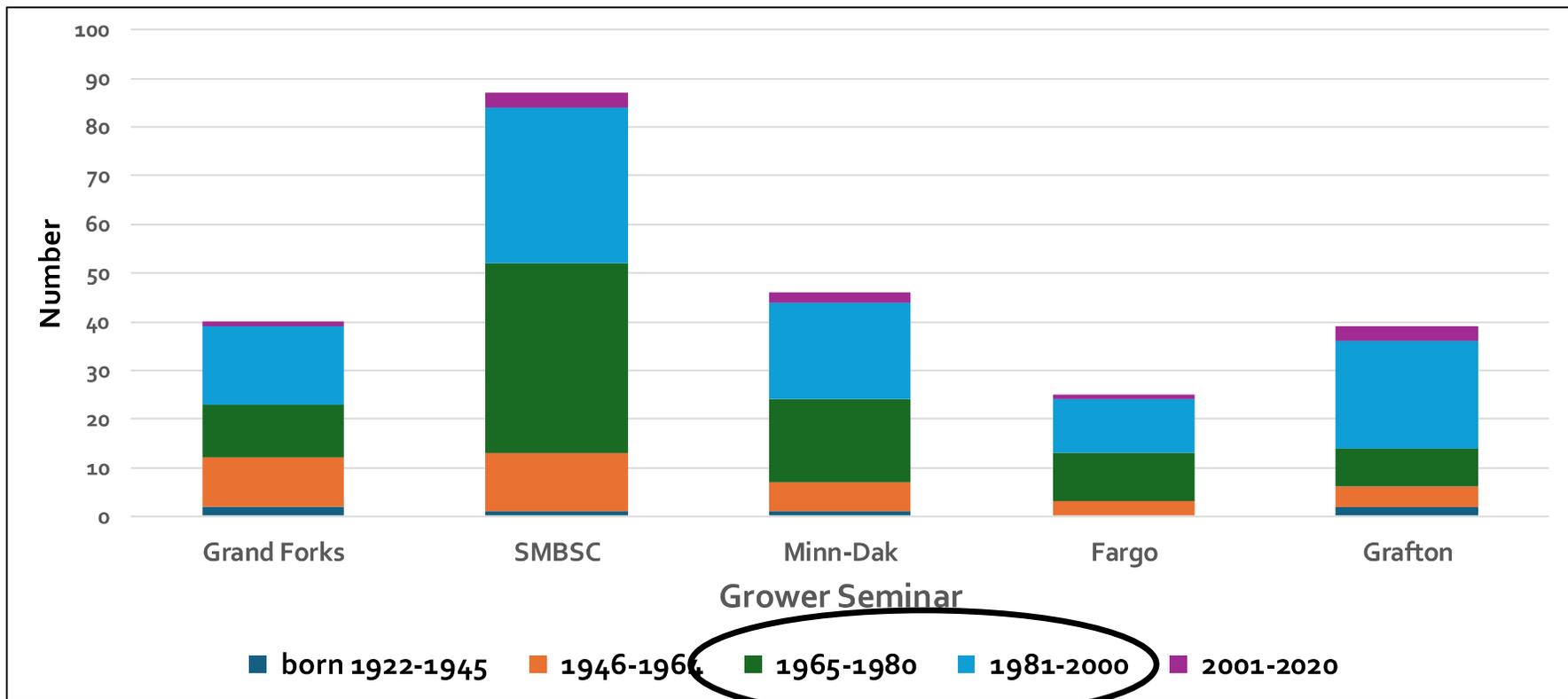


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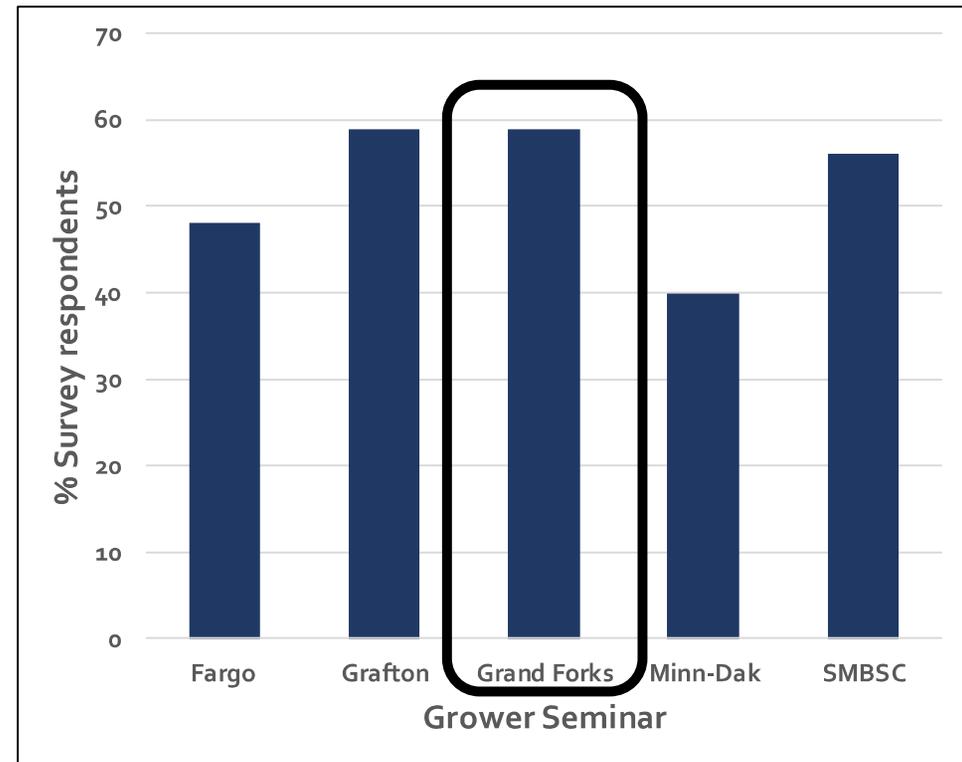
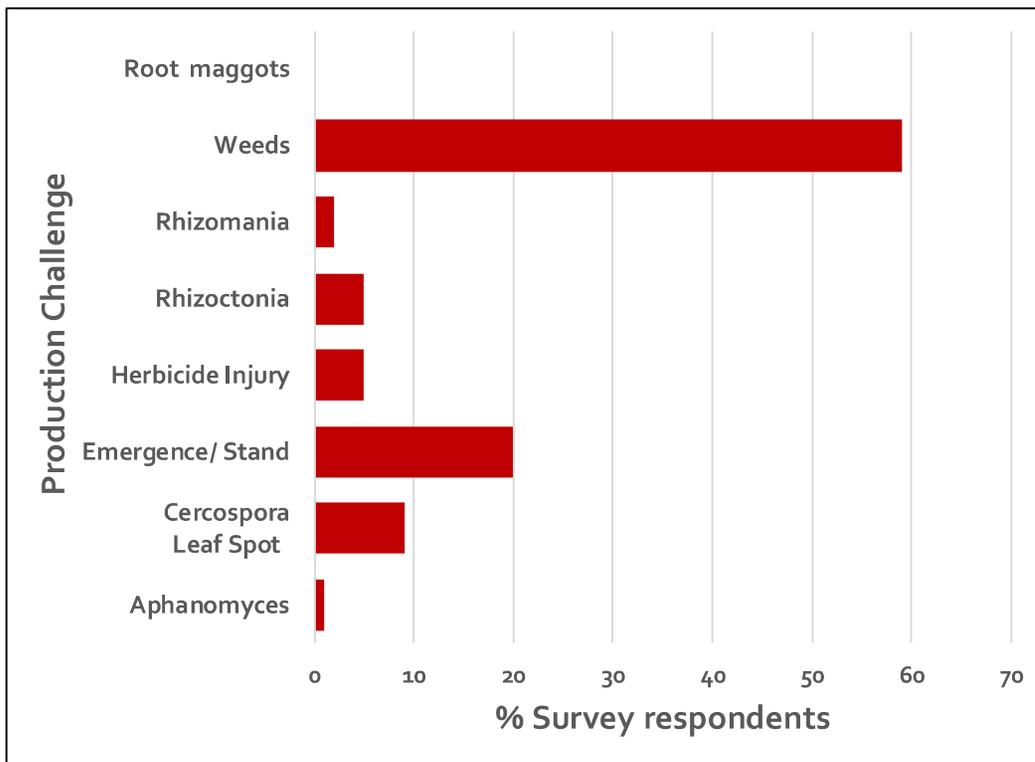
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Who are you? What age group best describes you^a?



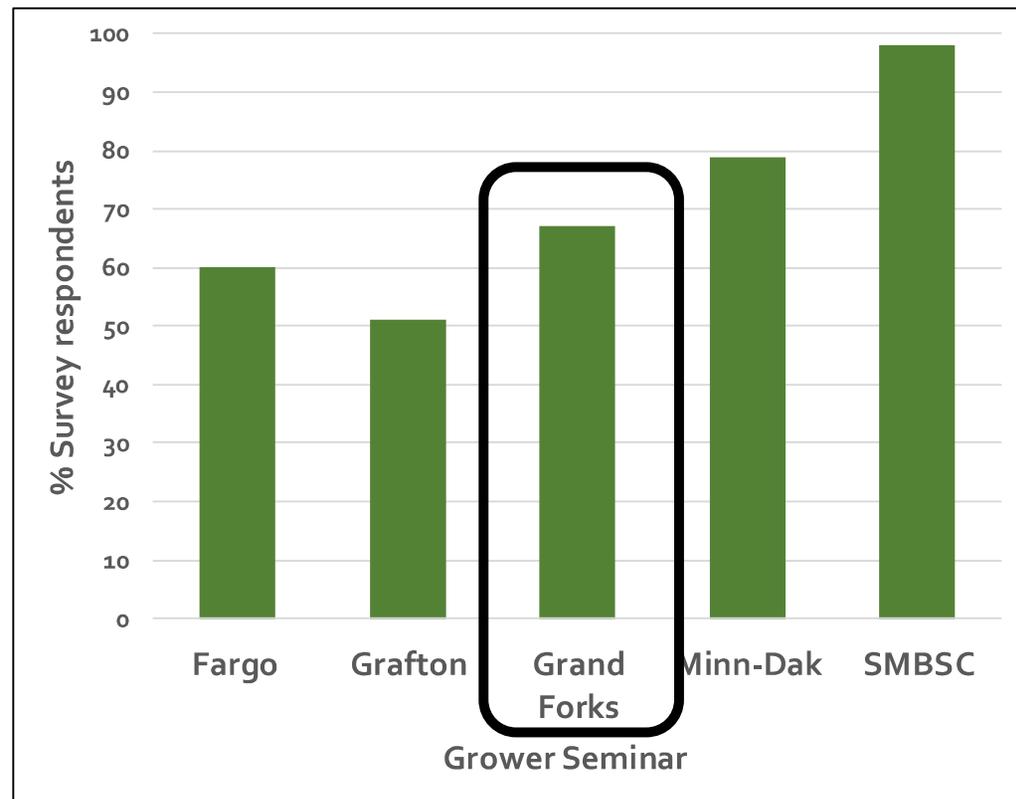
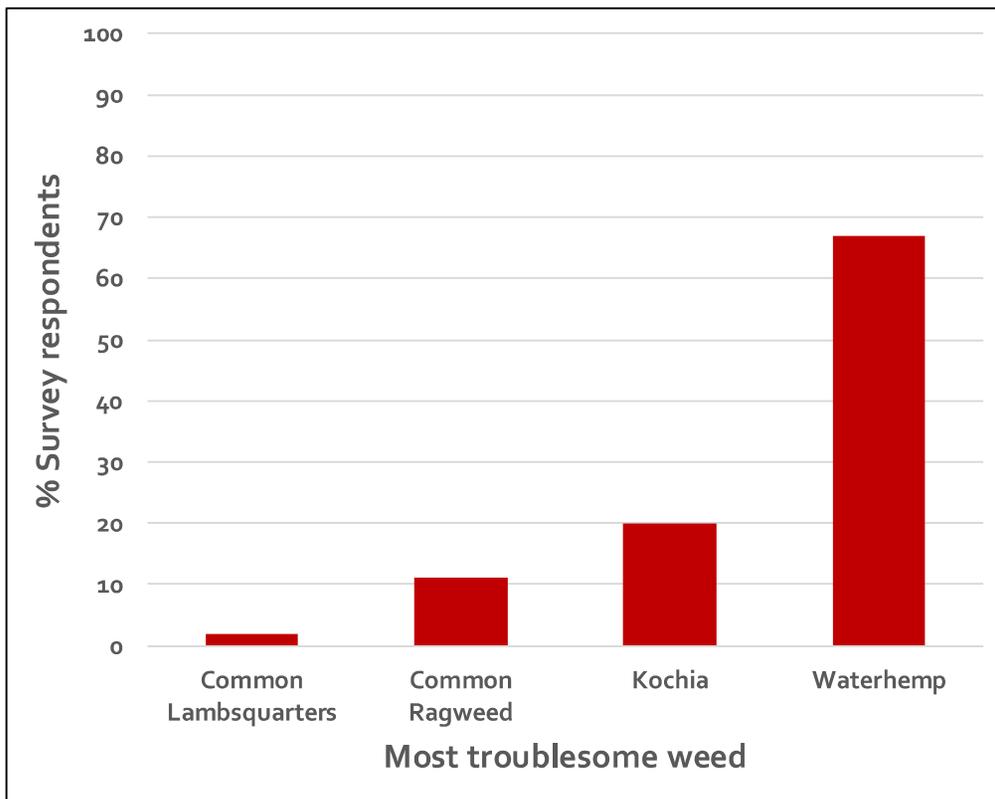
^aTurning Point Survey, 2025 Sugarbeet Growers Seminars

What was your most serious production challenge in 2024? Serious production challenge across regions^a?



^aTurning Point Survey, 2025 Sugarbeet Growers Seminars

What was your worst weed control challenge in 2024? How do you compare to other regions^a?



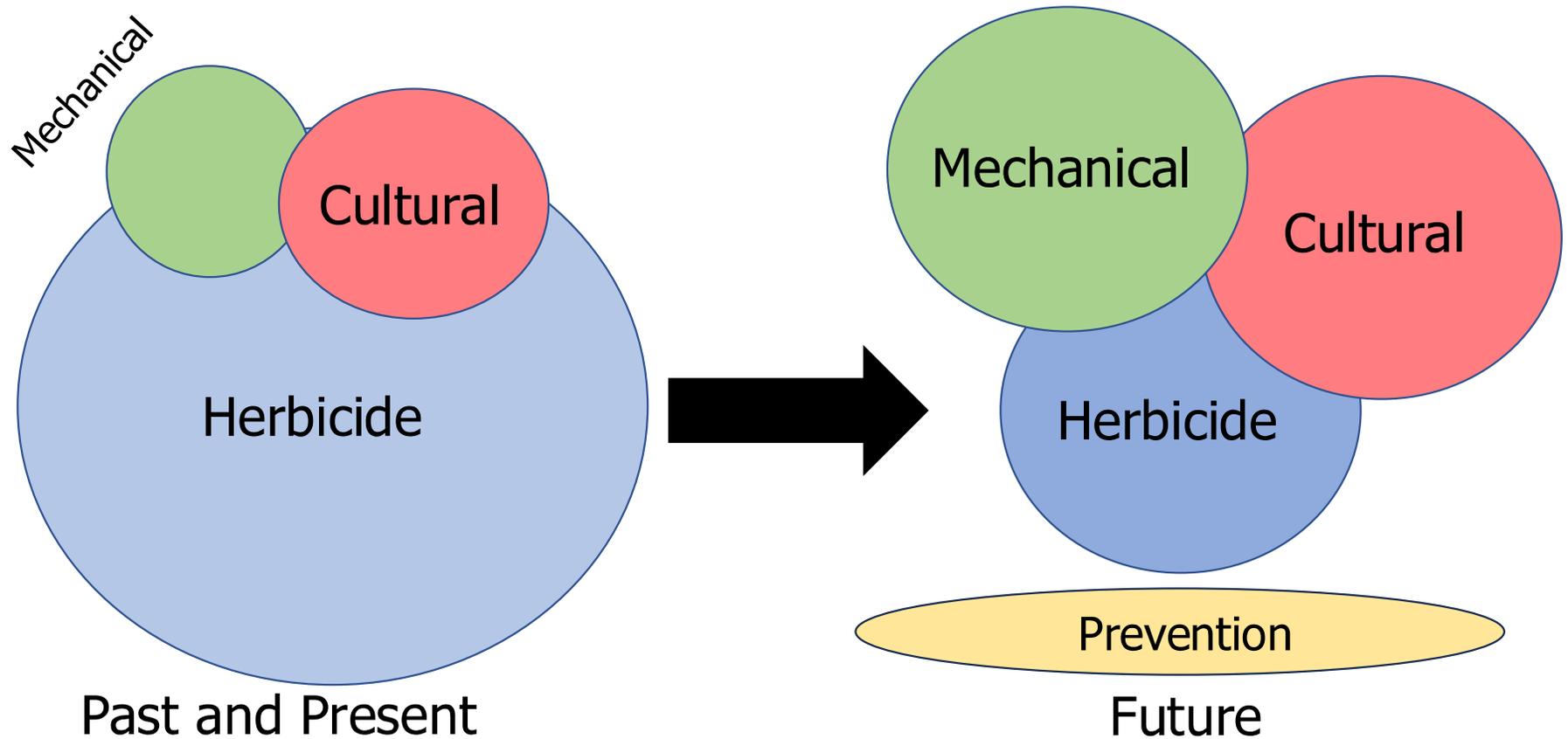
^aTurning Point Survey, 2025 Sugarbeet Growers Seminars

How are we going to control weeds in the short term?



- Focus groups at Renville, Wahpeton and Moorhead in November and December 2025
- Growers, ag-retailers, crop consultants and cooperative agriculturalists
- 2 hour brainstorming session with action items for followup

Integrated Weed Management



Slide adapted from Bob Hartzler, Iowa State University



For waterhemp control: need 3-4 effective active ingredients in a program. POST when weeds are less than 3-inch. PRE mandatory for time management constraints and overall effectiveness.

	Wheat	Sugarbeet	Corn	Soybean
PRE	(14)	(15)	(15) (27)	(3) (4) (5) (14) (15)
POST/PRE	(15)	(15)	(15)	(15)
POST	(27) (6) (4)		(4) (5) (27)	(4) (10)

- Lots of 15s
- Not much for waterhemp control in sugarbeet
- Lots of options in soybean; I'm not saying waterhemp control in soybean is easy

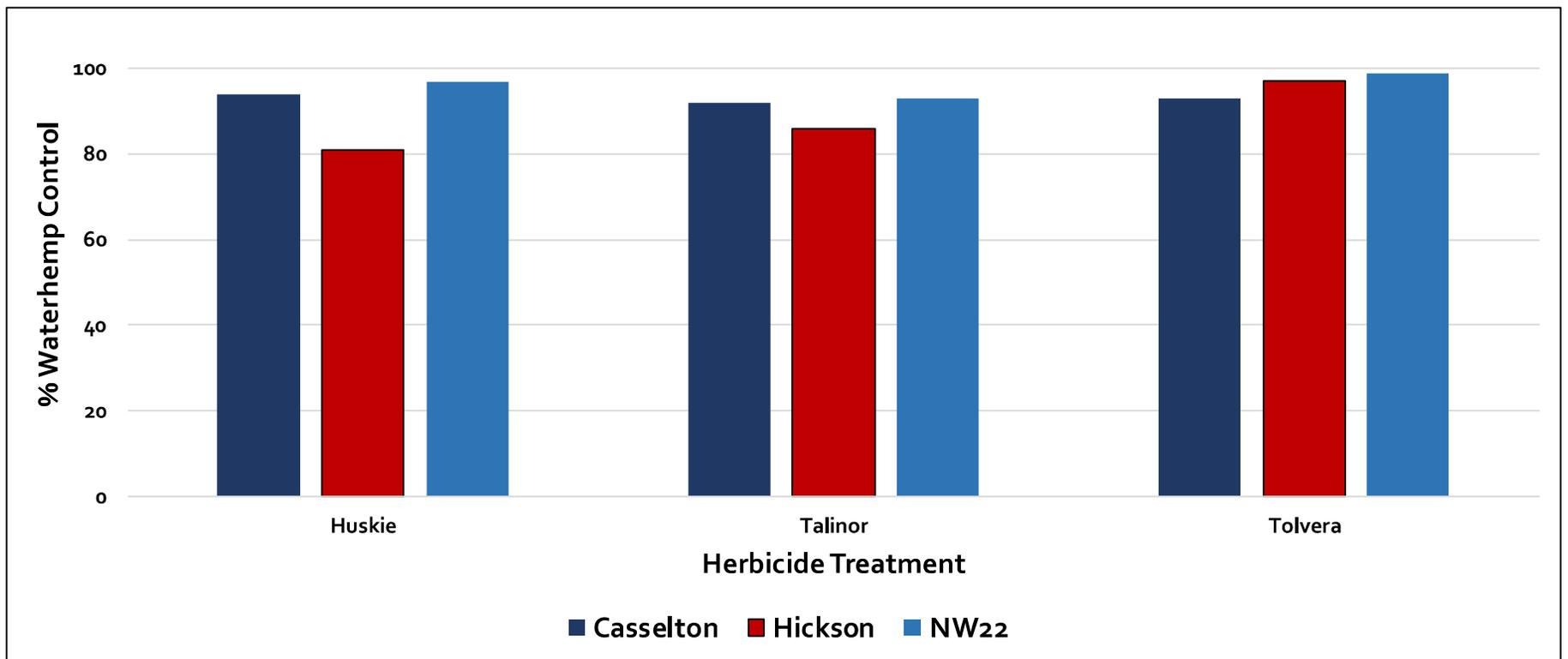
Create the best herbicide trait/herbicide program for your farm

Wheat

- Group 27 + bromoxynil (premix)
 - Huskie, 9 m CRR
 - Talinor, 15 m
 - Tolvera, 9 m
- Tank-mix with a Group 4
- True PRE – Sharpen at 2-4 oz (higher = better)
- Delayed PRE of Zidua beneficial as long as it rains

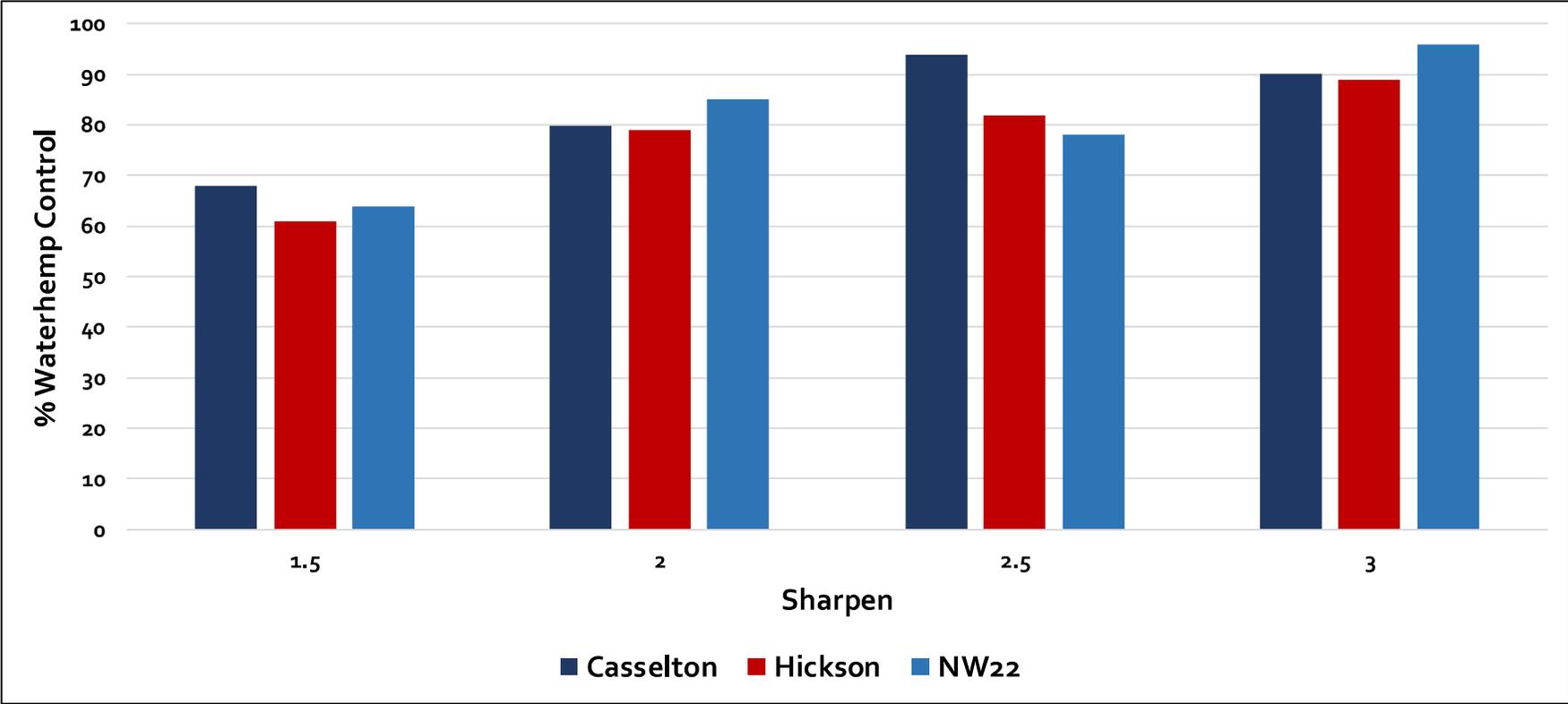


Waterhemp control from group 27 herbicides in response to treatment, 28 to 36 DAT, 2025.



Data curiosity of Kirk Howatt, ND

Waterhemp control from Sharpen, 28 to 35 days after treatment, 2025



Data curiosity of Kirk Howatt, ND

Visited with Kirk Howatt, NDSU Small Grains Weed Control Research....

- Delayed PRE of Zidua beneficial as long as it rains
 - Zidua runs out as the canopy begins to senescence even if it rains
 - Preharvest options? Postharvest options?
 - Don't forget about 75% of the wheat is rotated to sugarbeet
-
- 4 inch waterhemp found in wheat stubble in Sept/Oct
 - Joe counted approximately 88 seeds per plant
 - Roughly 7 plant per foot squared
 - Half the plants are female
 - 13.5M seeds
 - 5.4M if 40% germinate and emerge the following spring

Image credit : Joe Ikley, NDSU Weed Science





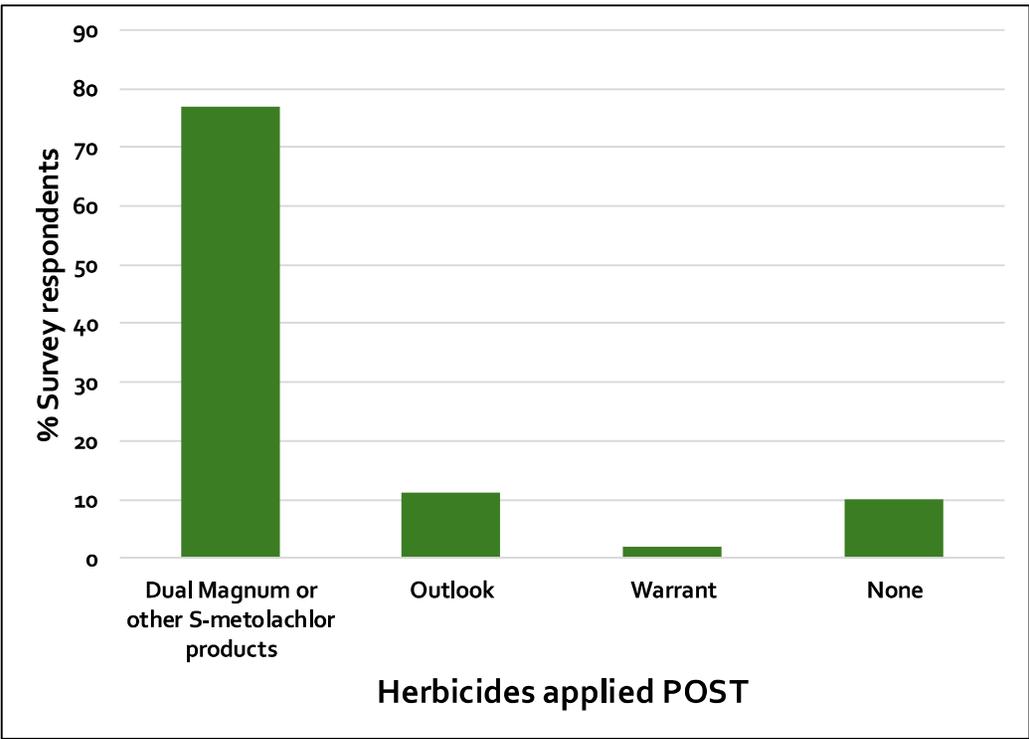
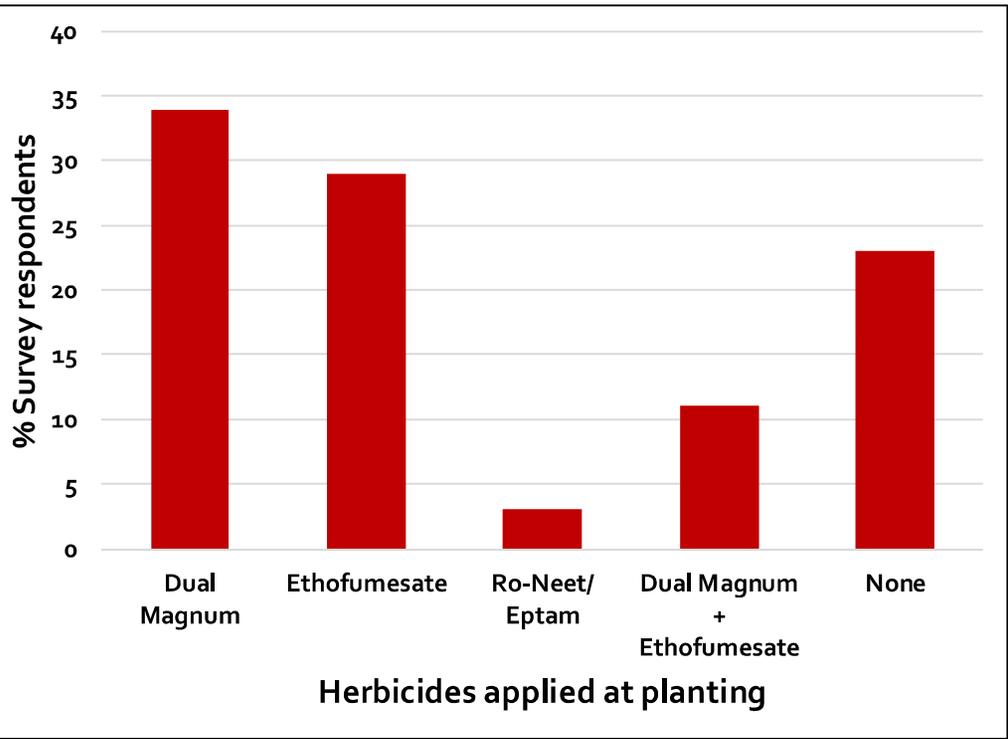
Waterhemp Control Program in Sugarbeet

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) or inter-row cultivation
July	Electric Discharge Systems (WeedZapper™)
August / September	Hand remove waterhemp

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Which soil-applied herbicide did you use at planting? Which soil-applied herbicide did you use early postemergence (lay-by)?^a



^aTurning Point Survey, 2025 Sugarbeet Growers Seminars

Ethofumesate 101

- Group 15, Benzofurans sub-family
- Inhibits the biosynthesis of VLCFAs
 - act by inhibiting the growth of meristems
 - retard cell division
 - limits development of leaf cuticles
- Absorbed by the emerging shoots (grass) coleoptile and broadleaf (hypocotyl) and roots with translocation to the foliage.
- Sensitive plants either fail to emerge or remain in an arrested state of growth after emergence
- Degradation is dependent on the properties of soil

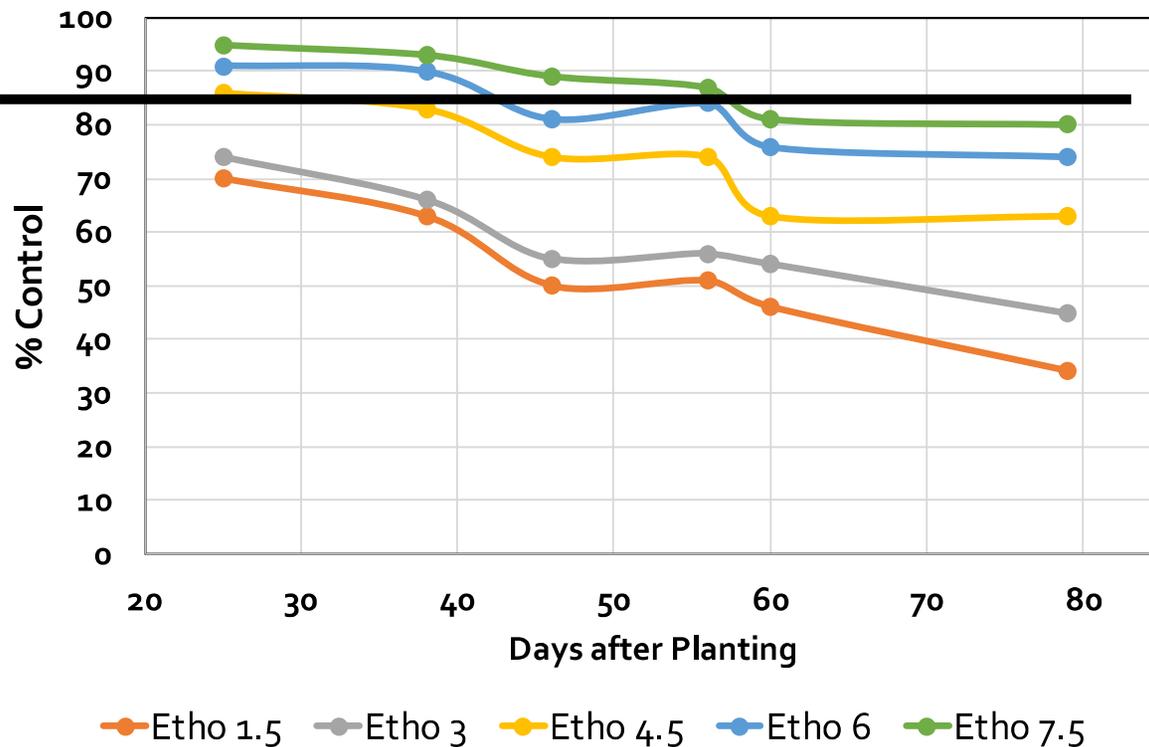


Ethofumesate 101, continued



- Question. Why is ethofumesate performance inconsistent on waterhemp?
 - As compared to Outlook, ethofumesate has a high KOC value meaning it has a high affinity for binding to soil colloids
 - Ethofumesate is less water soluble than Outlook
- Question. Does significant rainfall overcome these considerations?
 - We have increased the use rate
 - We have incorporated ethofumesate
 - Pushing water volume to 20 gpa probably will improve consistency, especially in residue
- Question. Does ethofumesate bind to wheat or corn stalk residue?
 - The literature states residue can intercept spray
 - I can't find any information stating etho binds to corn stalks

Waterhemp control in response to ethofumesate PRE, Lake Lillian, MN, 2020



	Days after planting					
	25	38	46	56	60	79
Etho 1.5	70	63	50	51	46	34
Etho 3	74	66	55	56	54	45
Etho 4.5	86	83	74	74	63	63
Etho 6	91	90	81	84	76	74
Etho 7.5	95	93	89	87	81	80

	greater than 85%
	84% to 78%
	77% to 65%
	less than 65%

What should we use for waterhemp control in 2026?

- Ethofumesate, 4.5 to 6 pt/A
- Dual Magnum at 8 to 12 fl oz/A
- Dual Magnum at 16 fl oz/A after May 1
- Etho + Dual Magnum at 3 pt + 12 fl oz/A

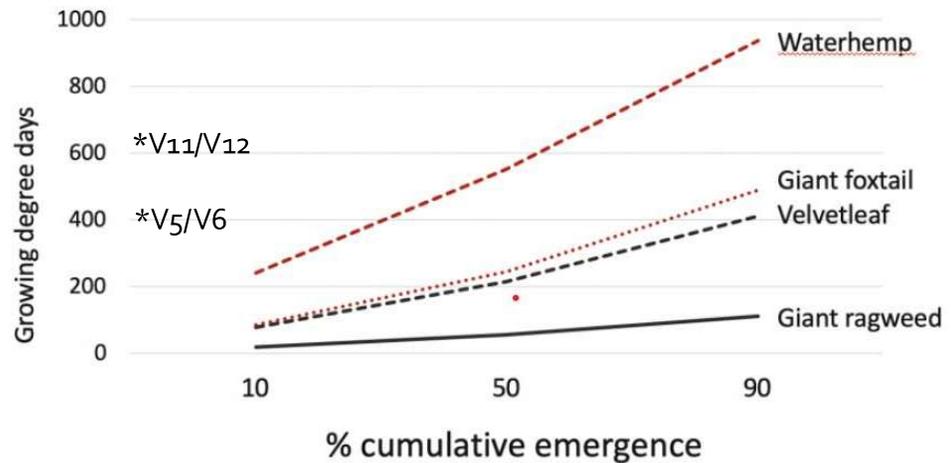


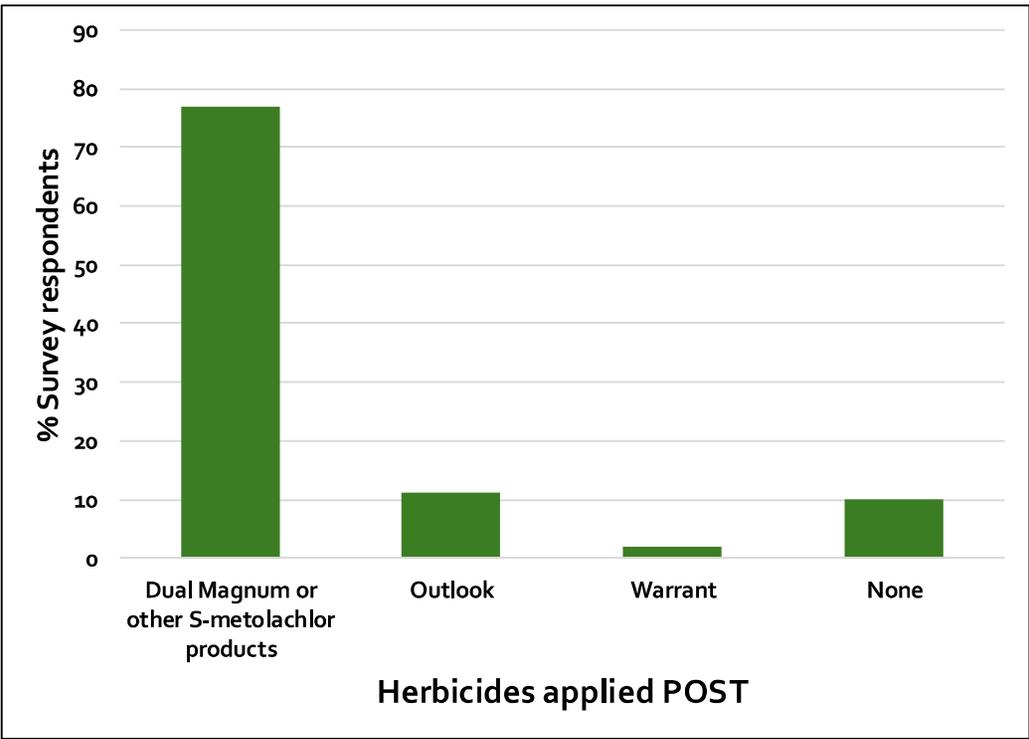
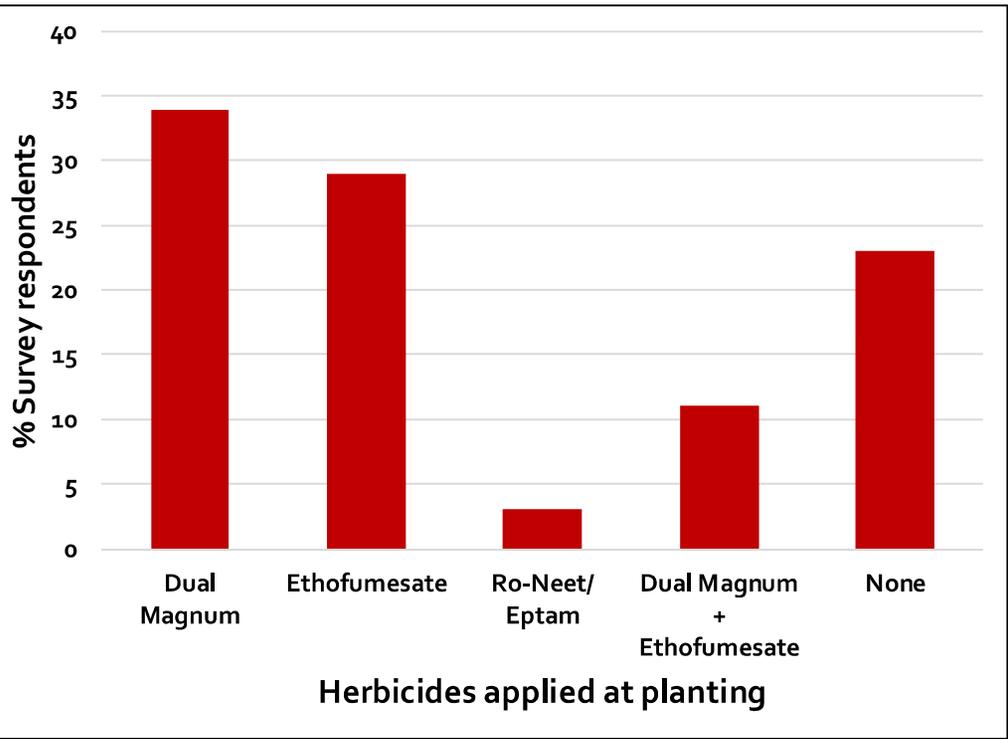
Figure 1. Relationship between growing degree days and emergence of four weeds. Werle, Sandell, Buhler, Hartzler and Lindquist. 2014. Weed Sci. 62:267-279.

The layered residual is strongly contributing to season-long waterhemp control

I think it is time to revisit our layby approach

*According to Holen and Dexter

Which soil-applied herbicide did you use at planting? Which soil-applied herbicide did you use early postemergence (lay-by)?^a



^aTurning Point Survey, 2025 Sugarbeet Growers Seminars

Peters is proposing

Herbicide	Previous Rate	Suggestion for 2026	Maximum use rate	Application timing
	fl oz/A	fl oz/A	fl oz or pt/A	Sgbt stage
Outlook / Outlook	12/12	16	24	12-If
S-meto / S-meto	16 / 16	20	2.6 ^a	6od PHI
Acetochlor/ acetochlor ^b	40 to 48 / 40 to 48	48 to 64	8	8-If

^aPOST maximum use rate. Dual Magnum applied in the fall or PRE is incremental

^bWarrant or Enversa

I also am considering Zidua (not labeled in sugarbeet) and Treflan layby in sugarbeet

What about etho POST with Roundup PowerMax3? You have 12 fl oz/A to use POST. Use it.

Waterhemp control from postemergence herbicides, across locations and years

Herbicides ¹	Herman 2014	Moorhead 2015	Herman 2015	Lake Lillian 2015	Average
-----% Visual control ² -----					
glyphosate	36	66	20	61	46
glyphosate + ethofumesate	58	81	40	66	61
glyphosate + Betamix	65	86	40	68	65
gly + etho + Betamix	69	88	73	78	78

¹Roundup alone with Prefer 90 NIS at 0.25% v/v and N-Pak AMS at 2.5% v/v. Roundup tank-mixes with Destiny HC at 1.5 pt/A and N-Pak AMS at 2.5% v/v.

²Visual percent waterhemp control at preharvest evaluation



Electrocution reduces the number of viable seed that are returned to the soil seedbank



Schreier et al. 2022
Univ. of Missouri

Best Management Practices for Stinger HL application and ragweed control

- Stinger HL at 2.4 fl oz/A must be our lowest rate with a single application.
- 2-times Stinger HL at 1.8 fl oz/A gave greater than 90% control or for multiple flushes.
- Applied Stinger HL to ragweed less than 2-inch.
- Time Stinger HL application to ragweed size rather than sugarbeet stage.
- May need to separate glyphosate and Stinger HL application or Stinger HL and Spin-Aid application if you want to delay termination nurse crop to 4-leaf sugarbeet.



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 humidity, air temperature and sugarbeet stage.



Stinger HL yield experiment conducted across multiple locations

Objectives

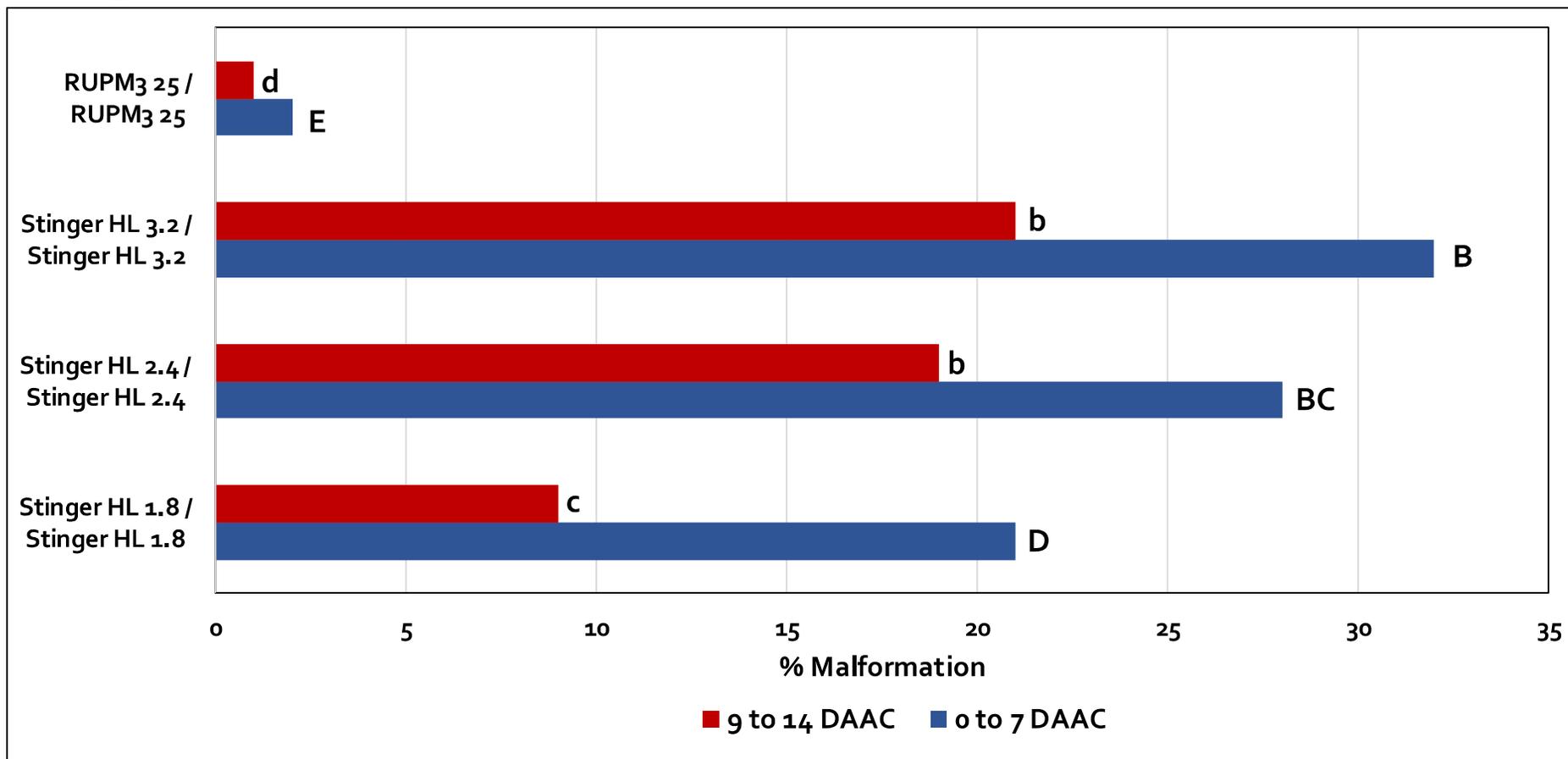
1. Evaluate 2-times Stinger HL at 1.8, 2.4 and 3.2 fl oz/A mixed with Roundup PowerMax3
2. Evaluate 2-times Stinger HL at 2.4 fl oz/A mixed with Select Max and Roundup PowerMax3
3. Evaluate 2-times Stinger HL at 2.4 fl oz/A mixed with S-metolachlor, Roundup PowerMax3, and etho
4. Evaluate sugarbeet tolerance from herbicide mixtures with soilborne fungicides and insecticides

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Sugarbeet malformation^{ab}, across locations, 2025



^a Stinger HL mixed with Roundup PowerMax₃.

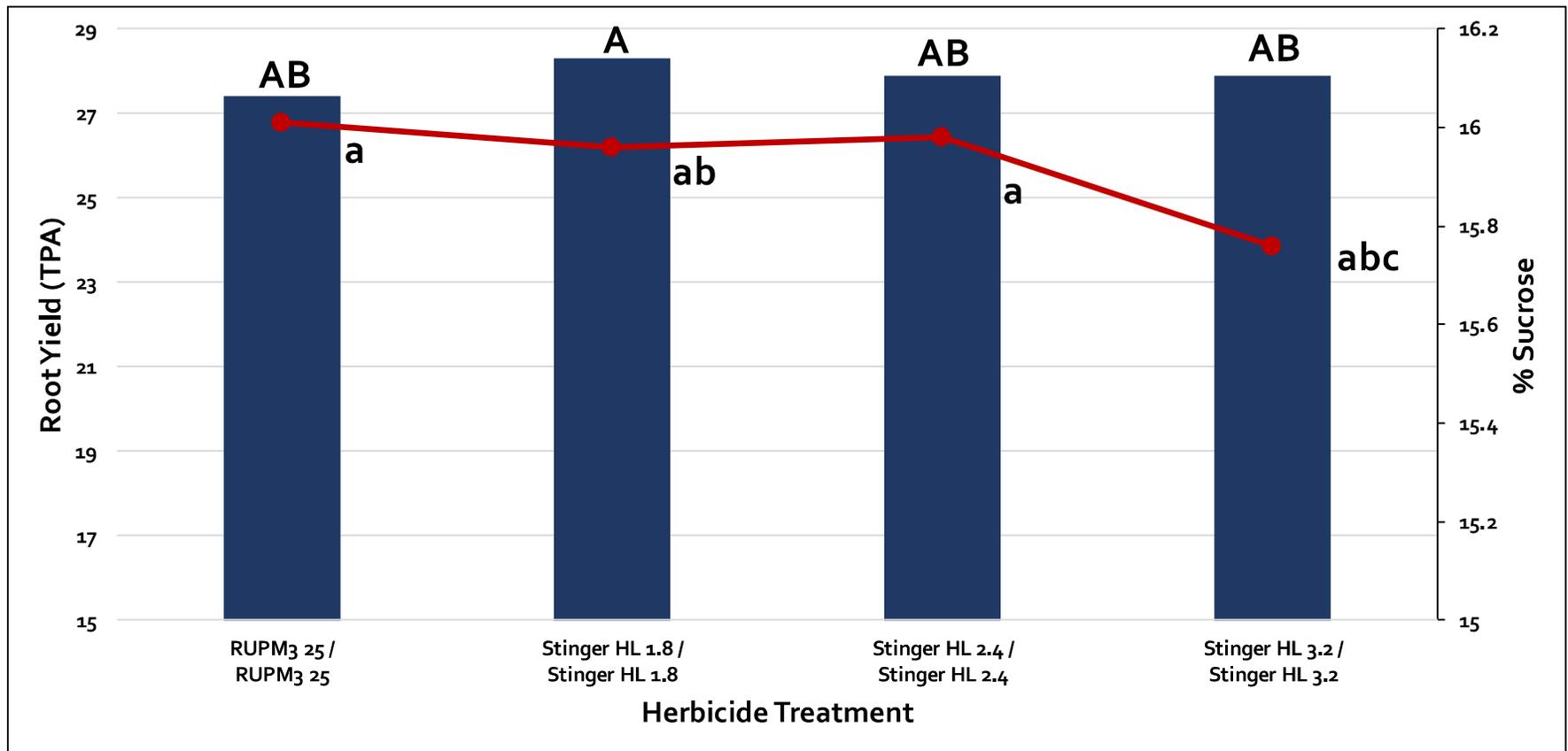
^b Visible percent sugarbeet malformation following 2-time Stinger HL application

June 11, 2025
Prinsburg, MN



Photo Credits:
David Mettler

Stinger HL^a did not reduce sugarbeet root yield or percent sucrose, across locs, 2025.^a



^aStinger HL mixed with Roundup PowerMax3 and etho

CENTROL
CROP CONSULTING

March 26. The surface 1-inch was thawed and below that it was frozen.
Photo credit, Lee Briese

Best practices for kochia control

1. Control kochia in the crop sequence, especially spring wheat before sugarbeet
 2. Ethofumesate at 6 to 7.5 pints per acre PRE
 3. Paraquat after kochia emergence but before sugarbeet emergence
- Gramoxone SL 3.0 at 1.3 pt/A with non-ionic surfactant at 1 qt/100G in 15 to 20 gpa water carrier
 - What about when its cold? <55F?
 - Jason Hanson, Rock and Roll Agronomy, says increase the rate to 2 pt/A and mix MSO (1G/100G) with NIS and AMS and use 20 gpa water carrier



Huskie FX Herbicide



Huskie[®]FX

HERBICIDE

PYRASULFOTOLE	GROUP	27	HERBICIDE
BROMOXYNIL	GROUP	6	HERBICIDE
FLUROXYPYR	GROUP	4	HERBICIDE

For control of broadleaf weeds in barley, rye, triticale, wheat, grain and forage sorghum, grasses grown for seed, forage or hay, and on Conservation Reserve Program (CRP) acres.

ACTIVE INGREDIENT(S):

Pyrasulfotole	2.70%
Bromoxynil Octanoate.....	11.02%
Bromoxynil Heptanoate.....	10.66%
Fluroxypyr.....	9.02%
OTHER INGREDIENTS:	66.60%
TOTAL:	100.00%

Contains petroleum distillate.
Contains 0.26 pound Pyrasulfotole, 1.44 pounds Bromoxynil and 0.6 pound Fluroxypyr acid equivalent per gallon.

EPA Reg. No. 264-1208

**KEEP OUT OF REACH OF CHILDREN
WARNING AVISO**

*Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)*

For **MEDICAL** and **TRANSPORTATION** Emergencies **ONLY**

Call 24 Hours A Day 1-800-334-7577

For **PRODUCT USE** Information Call 1-866-99BAYER (1-866-992-2937)

Please refer to booklet for additional precautionary statements and directions for use.

- POST
- Apply maximum rate of 18 fl oz/A
- Controls numerous important MN and ND weeds including waterhemp and kochia (< 2")
- Starane Ultra label says to apply 0.4 pt/A (0.14 lb/A) if herbicide-resistant kochia is present

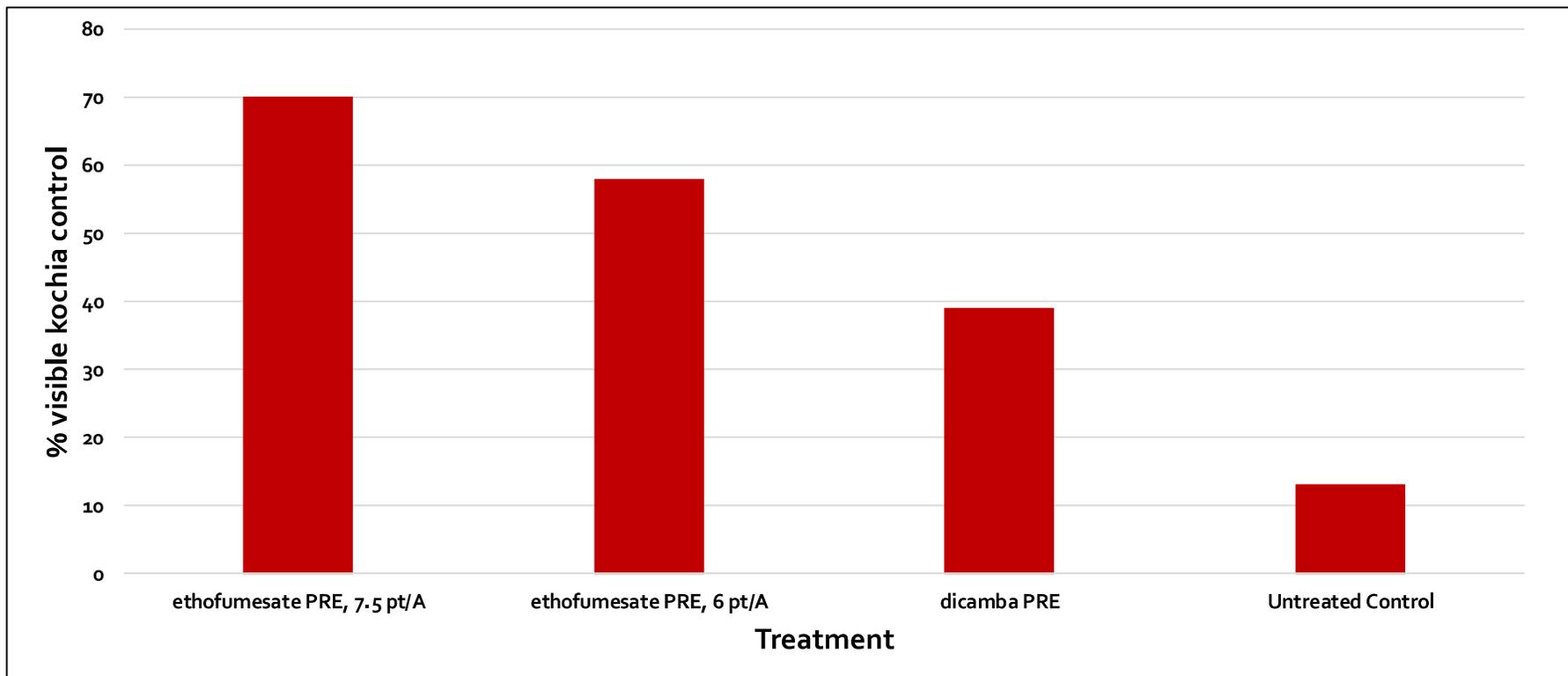
**What rate of Starane Ultra should be added to reach 0.14 lb ai/A of fluroxypyr?
2.6 fl oz/A of Starane Ultra**

Best practices for kochia control

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Kochia control in response to PRE treatment, 20 DAP, Felton, MN 2025



Best practices for kochia control

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Best practices for kochia control

4. Glyphosate on sensitive kochia (fence-line kochia). Roundup PowerMax3 (full rates) mixed with a high quality adjuvant and ammonium sulfate. Kochia up to 3-inch tall.
- How much kochia is glyphosate sensitive?
 - Joe Ikley (NDSU) randomly sampled 100 kochia escapes and has found that the first 60 tested are glyphosate resistant.....and may also be PPO inhibitor resistant (Group 14) kochia

MESSAGE: Test your kochia for herbicide tolerance



Best practices for kochia control

5. Spin-Aid mixed with ethofumesate or Spin-Aid mixed with ethofumesate, Roundup PowerMax3 and Stinger HL on GR kochia (railroad tracks kochia)
 - Start early on small kochia and spray on 7-day intervals
 - Spin-Aid rates increase as sugarbeet stage increases
 - Two or three applications



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



Kochia control with Spin-Aid

Herbicide Treatment	Rate fl oz/A	Kochia Control		
		June 3 12 DAAD	June 19 28 DAAD	June 26 35 DAAD
		-----(% visible control)-----		
Spin-Aid (SA)	12	50 d	25 d	15 d
SA / SA	12 / 24	68 c	50 c	30 c
SA / SA / SA	12 / 24 / 32	78 b	65 b	39 bc
Etho / SA / SA	6 p / 12 / 16	80 ab	65 b	41 b
Etho / SA / SA / SA	6 p / 12 / 16 / 24	89 a	79 a	59 a
LSD (0.10)		10	7	9

^aSpin-Aid mixed with ethofumesate at 4 fl oz per acre with MSO or HSMOC at 1 pt/A

^bSpin-Aid applied on 7 day intervals

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^bSpin-Aid applied on 7 day intervals



Spin-Aid+etho+MSO
32 / 32 fl oz



Spin-Aid+etho+MSO
16 / 32 / 48 fl oz

Image 14 DAAC



Spin-Aid+etho+MSO
24 / 32 / 48 fl oz



Control



Image 3 DAAC



Summary

- Making good judgement will be critical in 2026
- Use winter technical meetings to learn
- Develop a strategy; a plan A and a backup plan
- Use university recommendations
- Don't make short term decisions that may have longer term consequences



Thank you for your continued support

Tom Peters

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