

WEED MANAGEMENT TRIALS IN SPECIALTY CROPS

HIGH –VALUE CROPS PROJECT, NORTH DAKOTA STATE UNIVERSITY

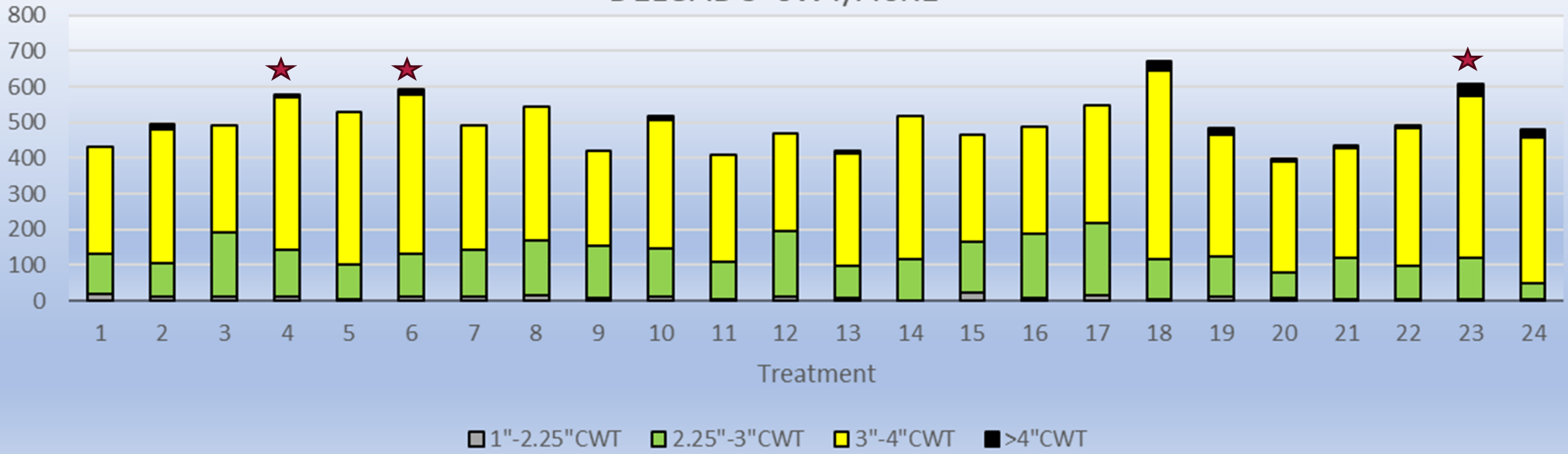
HARLENE HATTERMAN-VALENTI & **COLLIN AUWARTER***

* Recommended by Paul Mayland; assisted with field and greenhouse research on almost 20 different specialty crops; helped and trained with almost all of the 54 graduate students I've supervised; has been the field person that gets the job done on time and accurately".

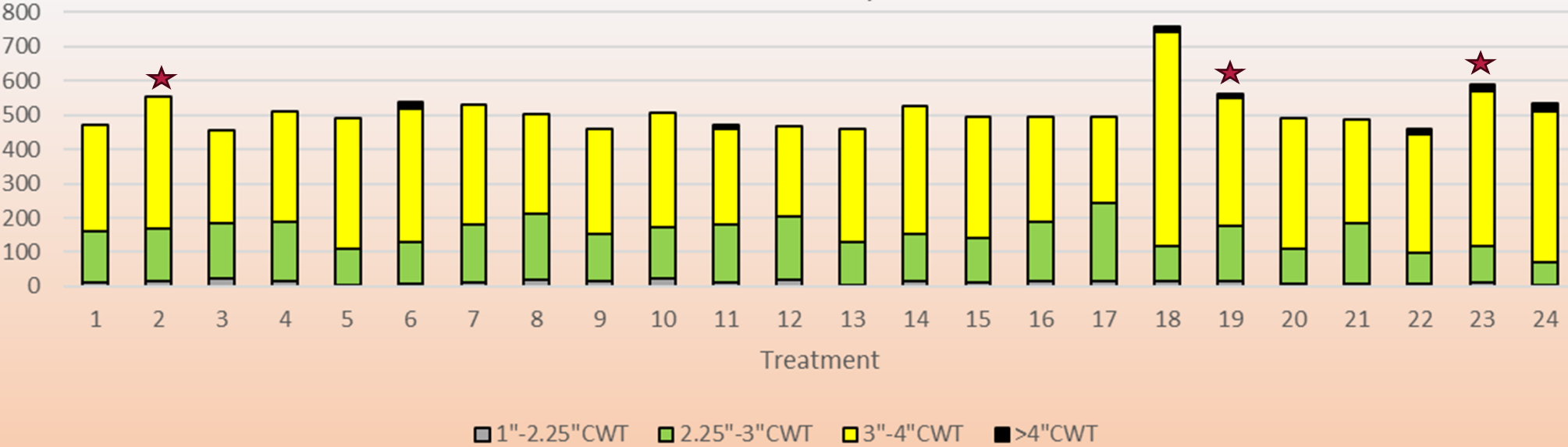
ONION WEED CONTROL

- Continue field trials to evaluate early-season weed control and crop safety.
- Evaluate IR-4 herbicides for potential use in ND.
- Collaborate with other Universities to evaluate Optogen application to onion in mineral soils.
- Objective: Develop weed management program that consistently does **not** injure onion while providing season-long weed control.
- Objective: Compare 20 GPA vs. 60 GPA for early Buctril and GoalTender applications.

DELGADO CWT/ACRE



LEGEND CWT/A



TOP YIELDING TREATMENTS

- Delgado
 - **18.** Hand-weeded (672 cwt/A)
 - **23.** Prowl H20 @1.5 pt/a + Roundup @22 floz/A DPRE followed by Optogen @ 3.5 floz/A 2-leaf, Goal Tender @ 4 floz/A 4-leaf stage, and Chateau @1 oz/A 6-leaf (611 cwt/A)
 - **6.** Prowl H20 @1.5 pt/a + Buctril @16 floz/A DPRE followed by Basagran@ 4 floz/A 4-leaf stage and Chateau @1 oz/A 6-leaf (605 cwt/A)
 - **4.** Prowl H20 @0.75 pt/A PRE, Norton @22 floz/A DPRE followed by Goal Tender @ 4 floz/A 2-leaf stage and Chateau @1 oz/A 6-leaf (576 cwt/A)

TOP YIELDING TREATMENTS

- Legend
 - **18.** Hand-weeded (741 cwt/A)
 - **23.** Prowl H2O @1.5 pt/A + Roundup @22 floz/A DPRE followed by Optogen @ 3.5 floz/A 2-leaf, GoalTender @ 4 floz/A 4-leaf stage, and Chateau @1 oz/A 6-leaf (588 cwt/A)
 - **19.** Prowl H2O @1.5 pt/S + Buctril @16 floz/A DPRE followed by Zidua @1.7 oz /A 4-leaf stage and Chateau @1 oz/A 6-leaf (605 cwt/A)
 - **2.** Nortron @22 floz/A + Prowl H2O @0.75 pt/A PRE followed by GoalTender @4 floz/A 2-leaf stage and Chateau @1 oz/A 6-leaf (576 cwt/A)

BUCTRIL (1 PT/A) 20 GPA vs. 60 GPA

	20 GPA		60 GPA	
	Delgado	Legend	Delgado	Legend
	<u>(cwt/A)</u>		<u>(cwt/A)</u>	
• Buctril 2-leaf	421	456	526	488
• Buctril 2-leaf +	485	494	519	530

GT 2-leaf separately

- Increasing the GPA appears to increase onion yield (reduce onion injury). Need to examine if similar yield increase will result with Buctril + GoalTender application.
- Slightly less Optogen injury unless tank-mixed with Buctril. Need sunny/warm day to avoid GoalTender injury.

REDUCING CHATEAU INJURY TO POTATO

- Flumioxazin has caused potato injury.
 - Several important potato growing states can't use flumioxazin in potatoes.
 - Label has strict application timings.
- “Be sure a minimum of 2 inches of soil covers the vegetative portion of potato plants.”
- Growers primarily rely on metribuzin for broadleaf weed control.
 - Does not control nightshade species.
 - Increasing numbers of triazine resistant weeds.

- Three years results using 'Russet Burbank'
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- The overall greatest marketable yields occurred when:
 - Chateau 1X no hill + Boundary 1/2X reg hilling
 - Chateau 1/2 X early hilling + Chateau 1/2 X reg hilling
 - Boundary 1X reg hilling

MATERIALS AND METHODS

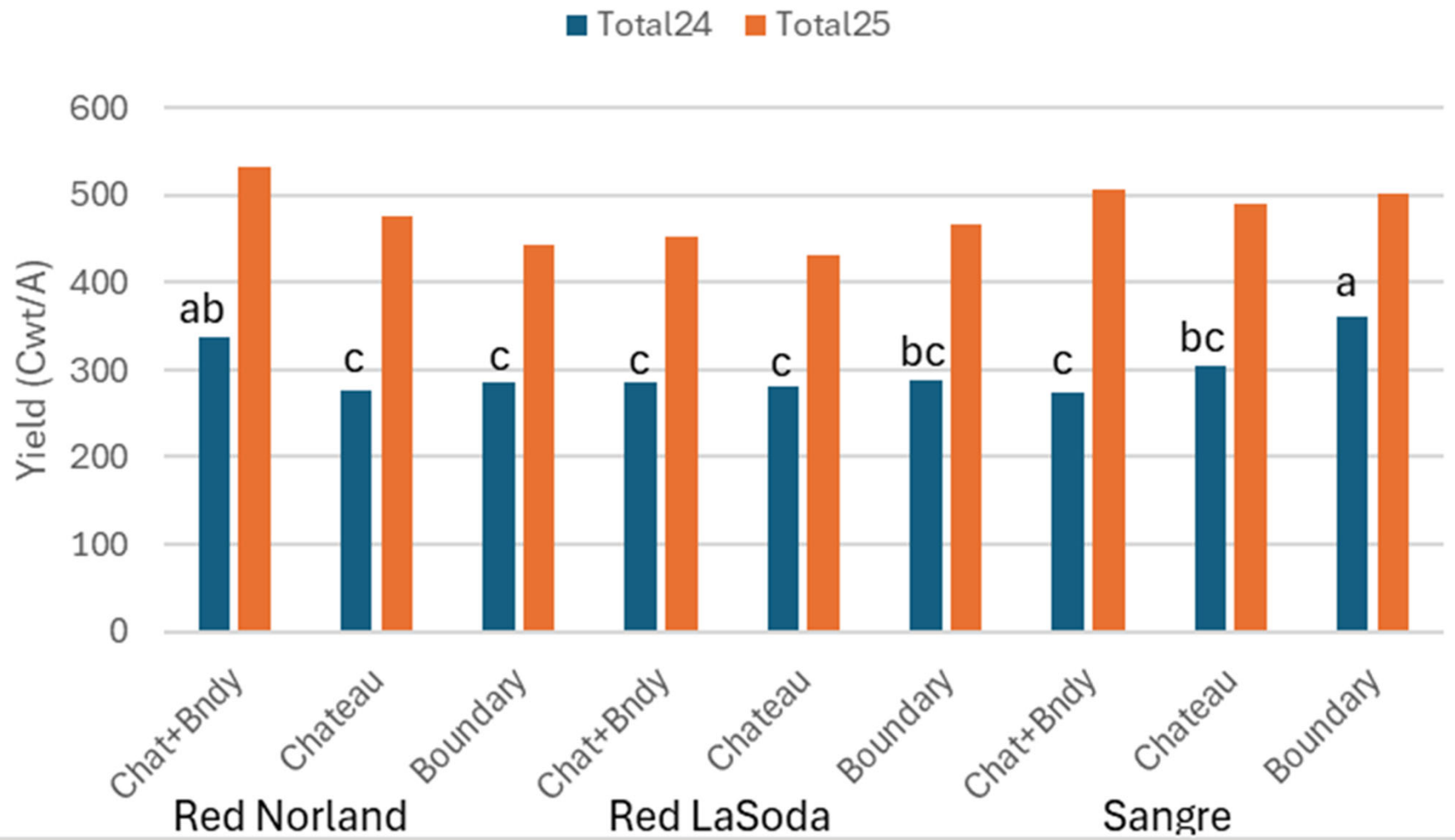
- Conducted at Oakes (irrigated) and Prosper (dryland)- drowned out a portion
- Three chip cvs ('Dakota Pearl', 'Snowden', 'Waneta')
- Three red cvs ('Red Norland', 'Red LaSoda', 'Sangre')

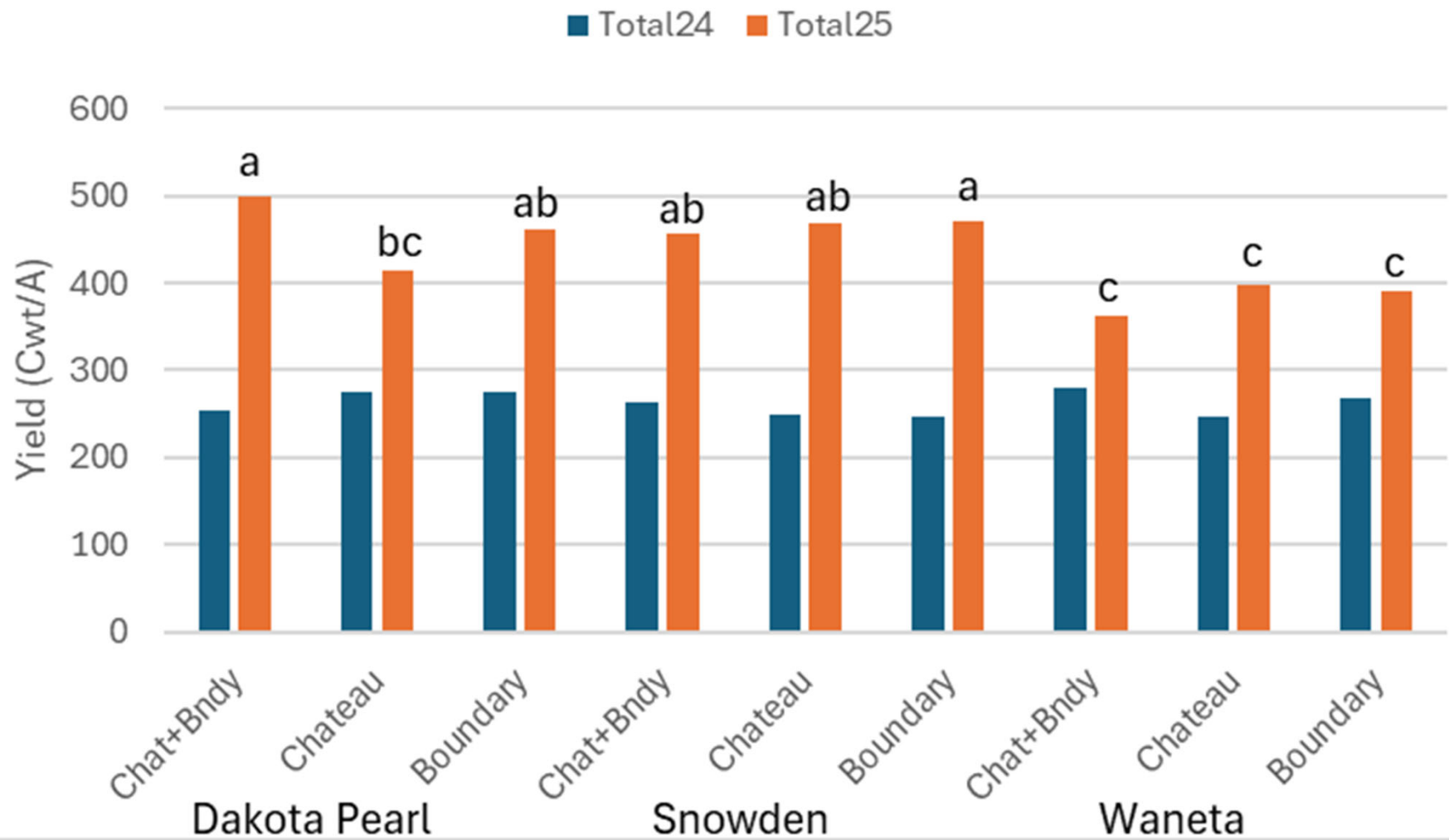
- Treatments

1	Chateau	1.5 oz/A +	No hilling	0 DAP*
	Boundary	1 pt/A	At emergence	14 DAP
2	Chateau	1.5 oz/A	At emergence	14 DAP
3	Boundary	2 pt/A	At emergence	14 DAP

* DAP = Days after Planting

- Herbicides applied with a CO₂ backpack sprayer
 - XRI 1002 nozzles.
 - 20 gal/A, 40 Psi, and 18 in nozzle spacing





Conclusions

- Little herbicide injury was observed.
- Excellent season-long broadleaf weed (common lambsquarters and redroot pigweed) control.
- Significant treatment effects for total yield in 2024 but results are cultivar specific for red cultivars.
 - Higher 'Red Norland' total yield when Chateau was applied after planting followed by Boundary (half-rate) after hilling.
 - Higher 'Sangre' total yield when Boundary (label-rate) was applied after hilling.

Conclusions

- Significant treatment effects for total yield in 2025 but results are cultivar specific for chipping cultivars.
 - Higher 'Dakota Pearl' total yield when Chateau was applied after planting followed by Boundary (half-rate) after hilling compared to Chateau after hilling.
- Future research
 - Repeat trial one more time.
 - Conduct similar research in growers' fields with nightshade populations.

A blurred, grayscale background image of a snowy landscape. The scene shows a snow-covered ground with several trees or bushes in the mid-ground. The overall tone is cool and wintry, with a soft focus that makes the details of the trees and snow less distinct.

Questions?