



The War Against Weeds
Joe Ikley
Extension Weed Specialist
1/20/2026

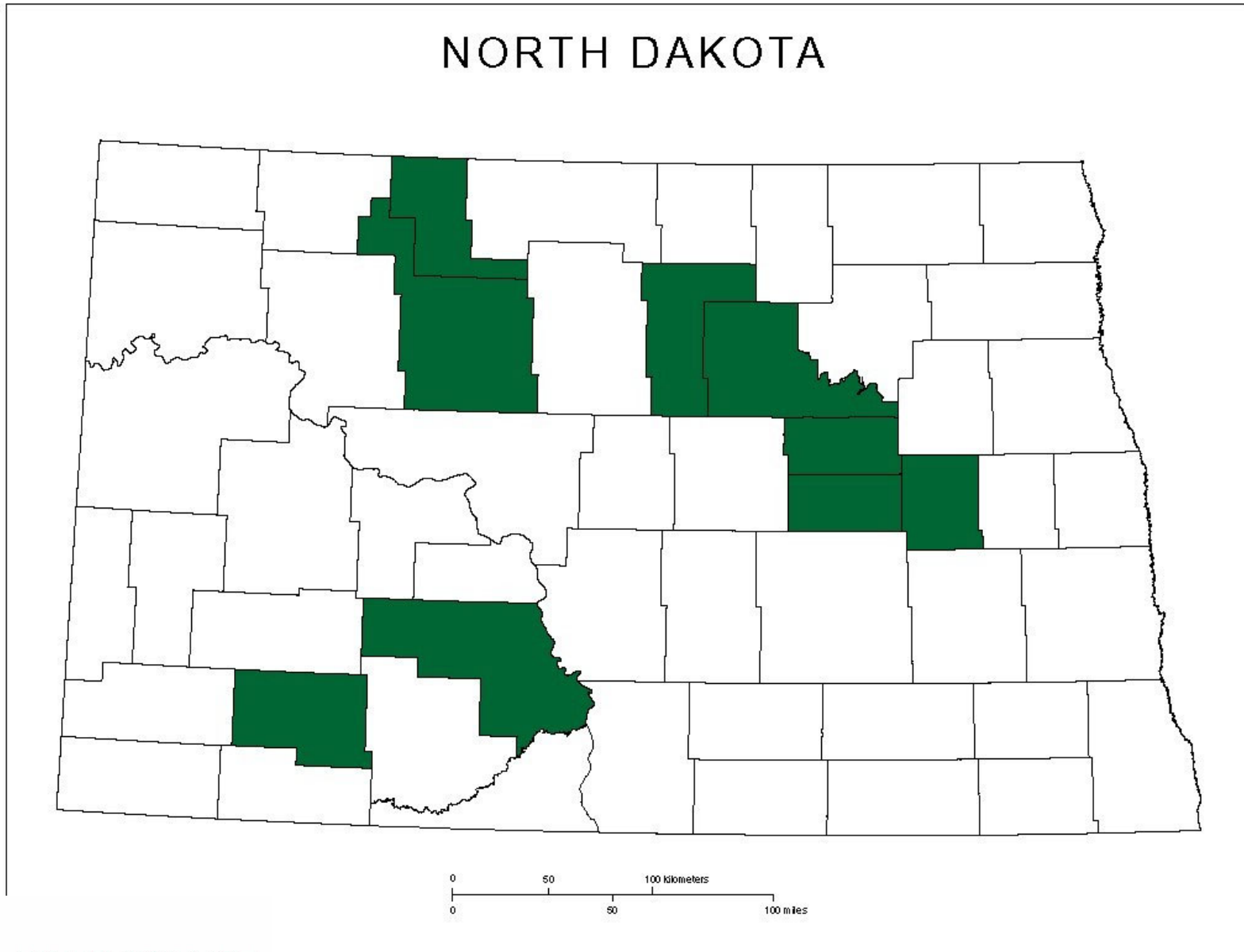
2024 Weed of the Year!

**UTAH FILES CONSUMER PROTECTION
LAWSUIT AGAINST TIKTOK**

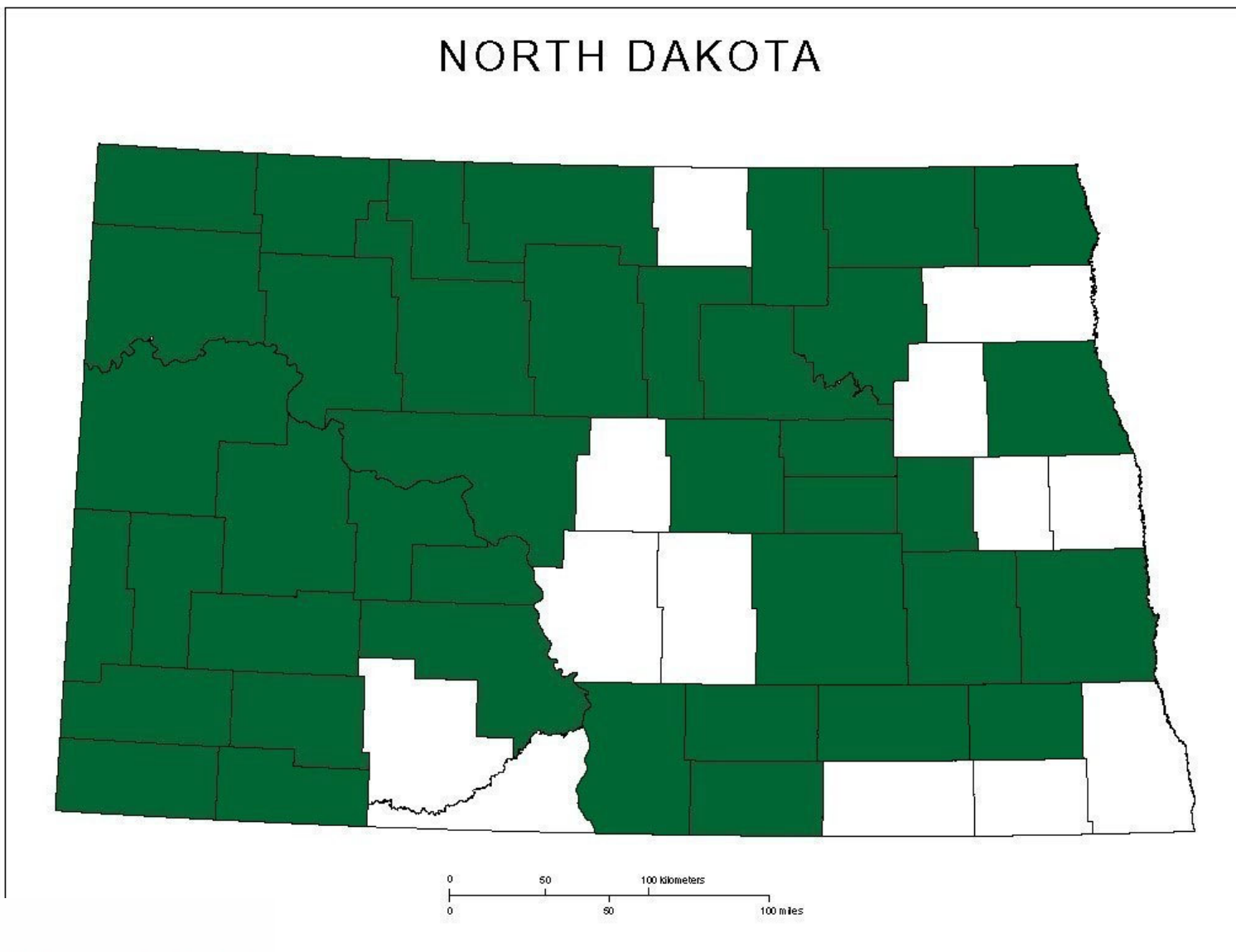
KX4
4 34°
6:25



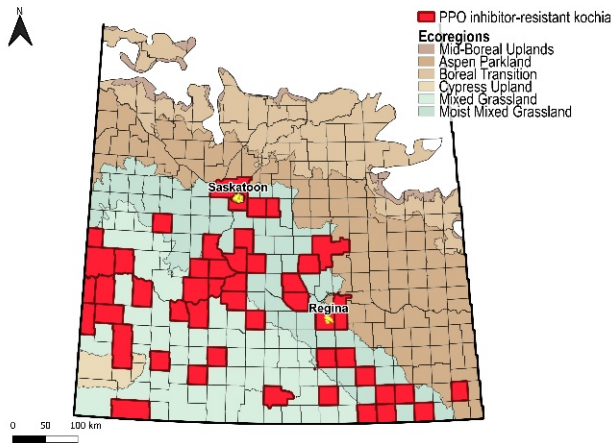
Group 14-R Kochia – 2023



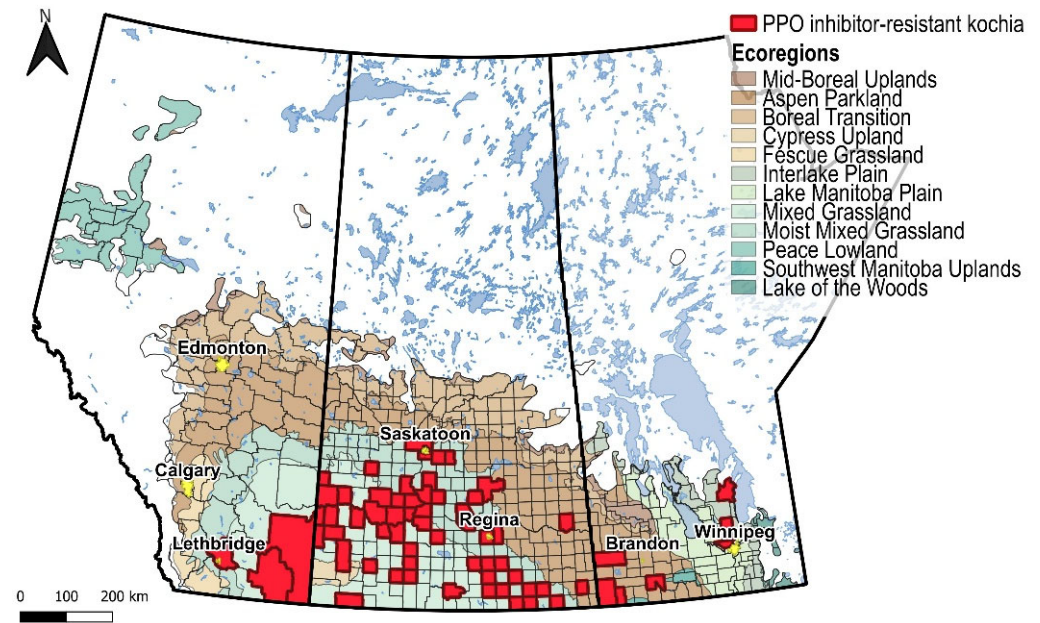
Group 14-R Kochia – 2026



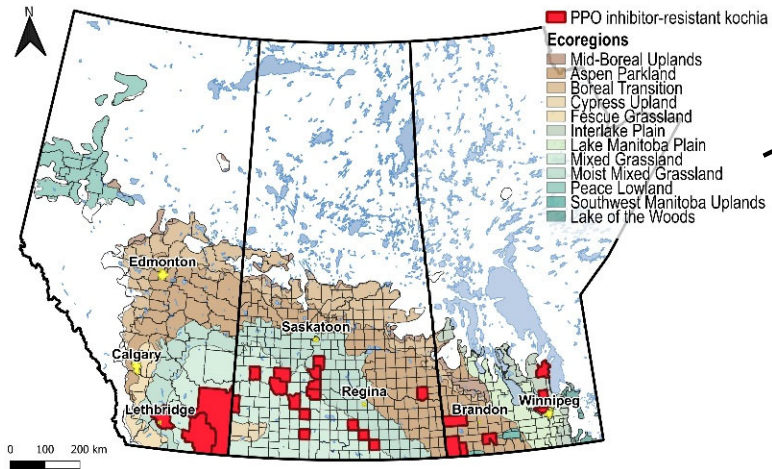
PPO inhibitor-resistant kochia (Survey samples)



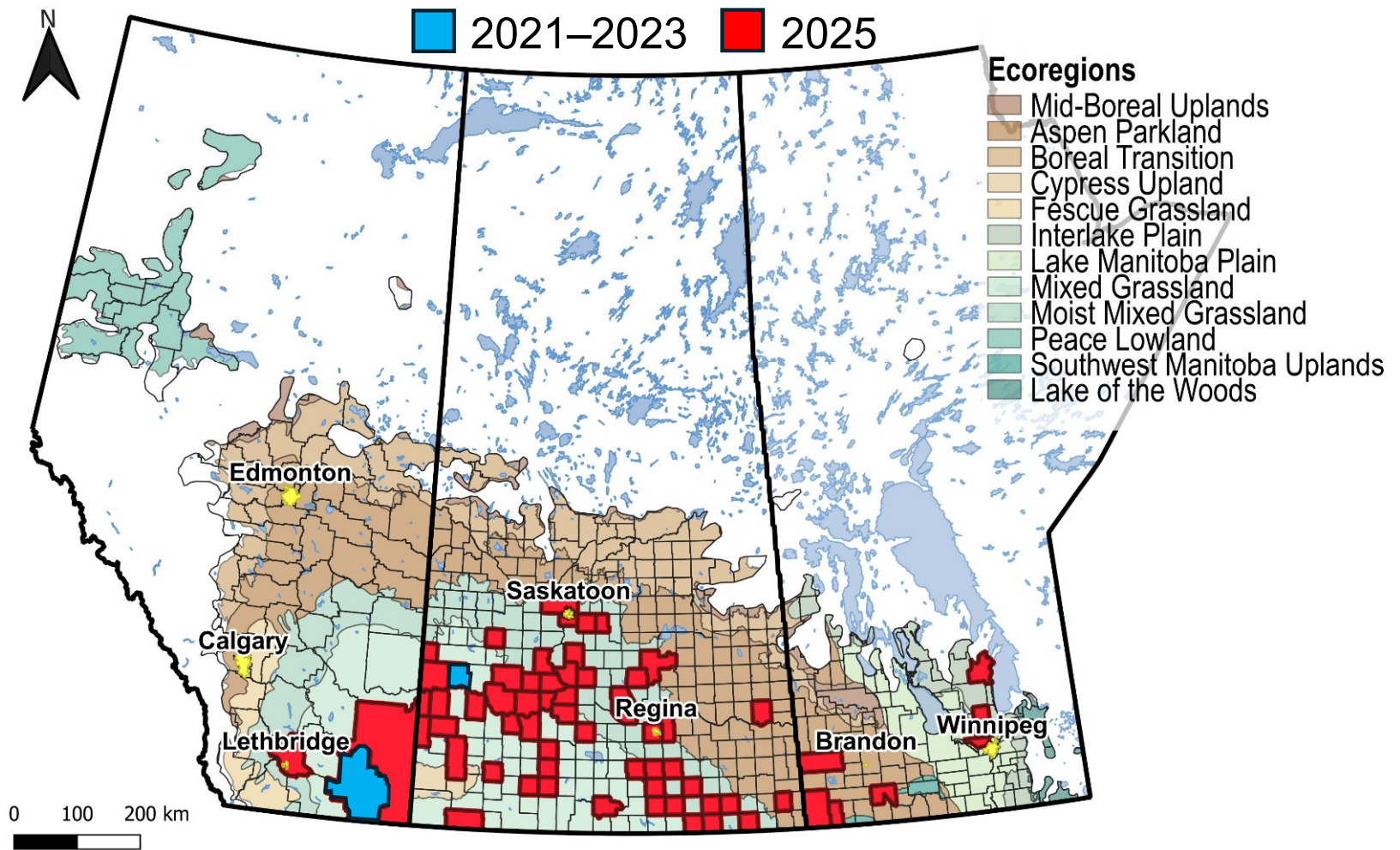
PPO inhibitor-resistant kochia



PPO inhibitor-resistant kochia (Grower-submitted samples)



PPO inhibitor-resistant kochia



Expansion, validation, and optimization of rapid genetic tests for herbicide resistance (2025 – 2029)

Understanding, mitigating and managing PPO inhibitor (Group 14)-resistant kochia (2024 – 2029)

Acknowledgments



Agriculture and Agri-Food Canada

Agriculture et Agroalimentaire Canada



PRAIRIE WEED MONITORING NETWORK



Agriculture and Agri-Food Canada

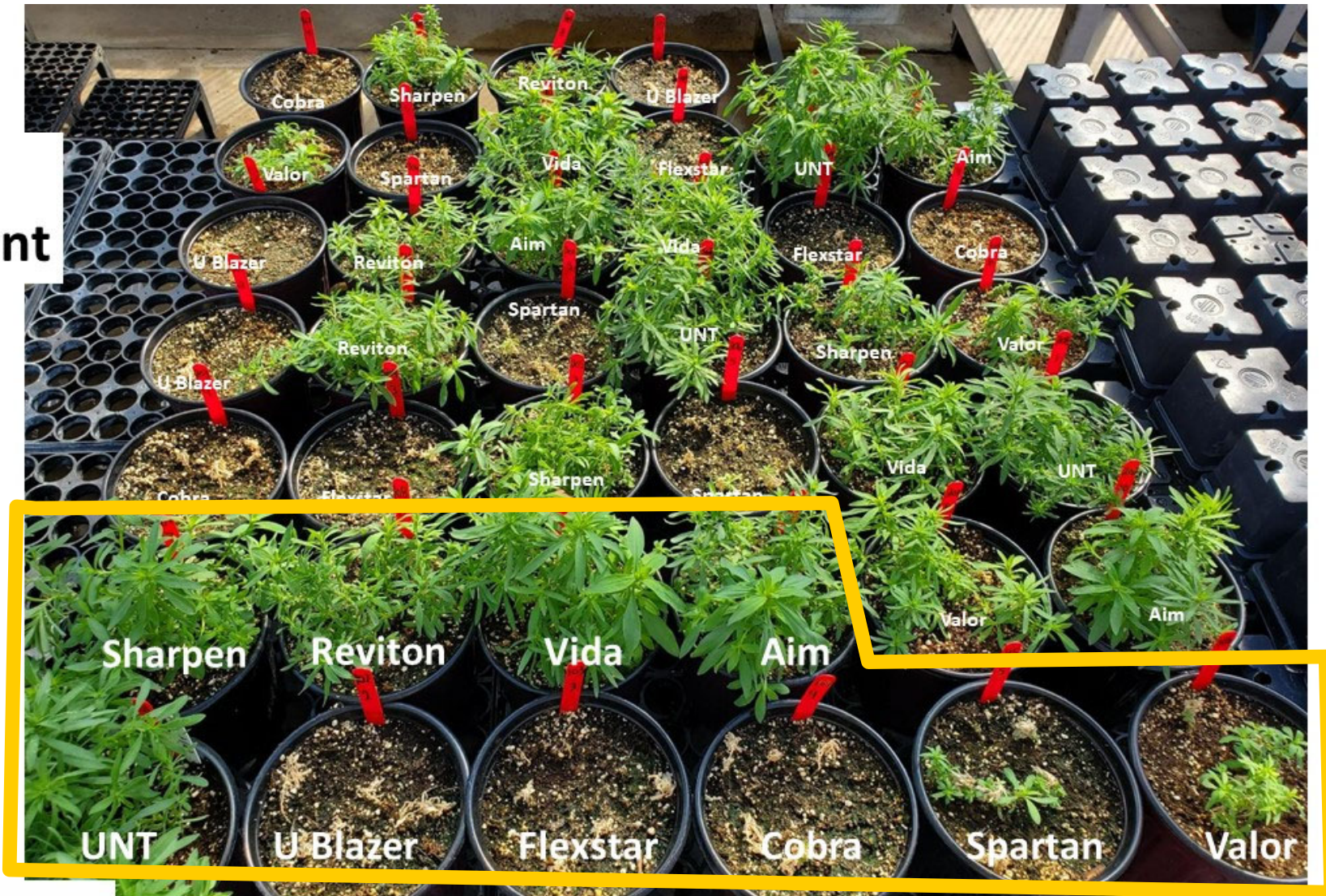


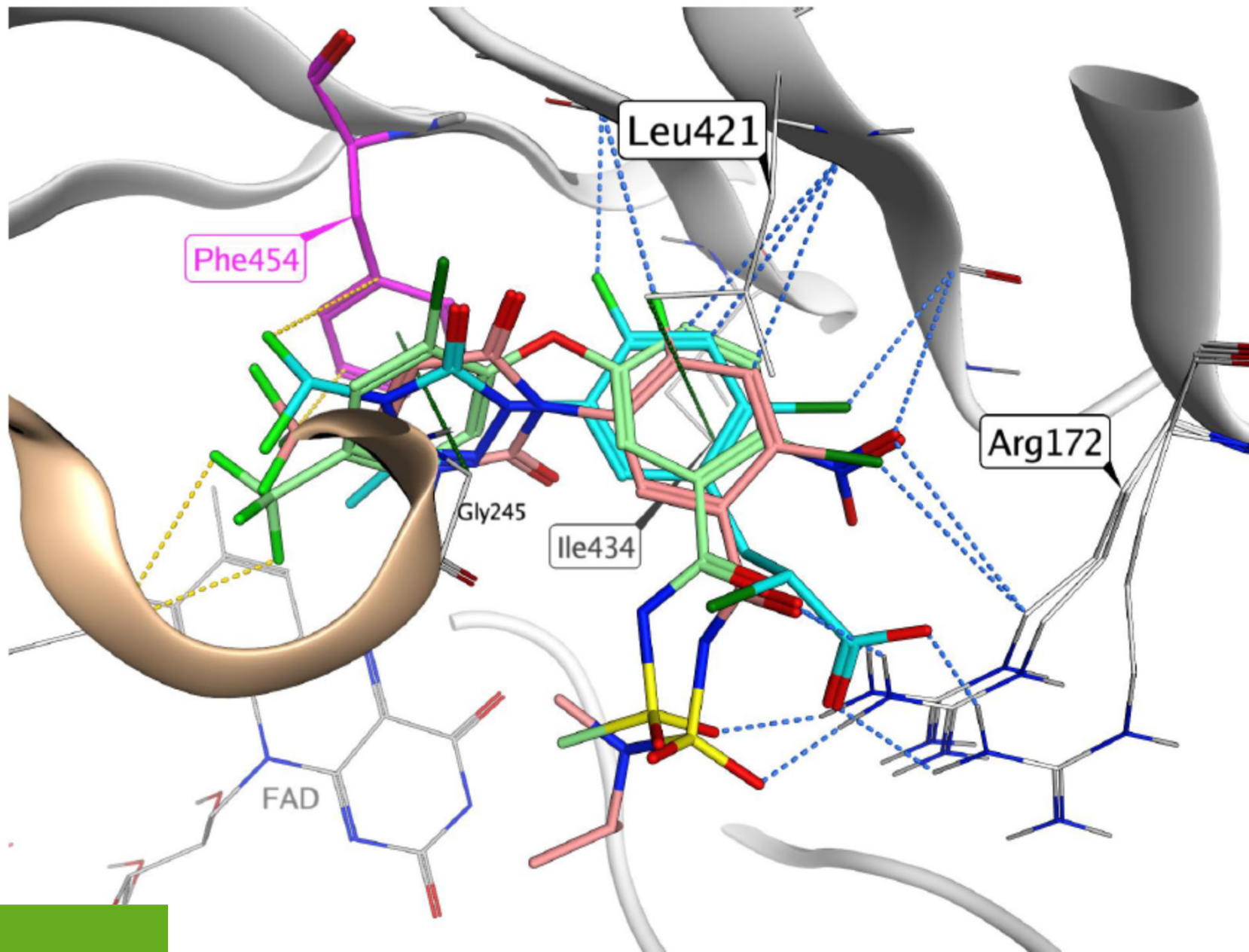
Agriculture et Agroalimentaire Canada

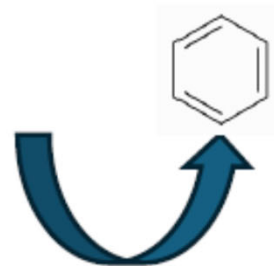
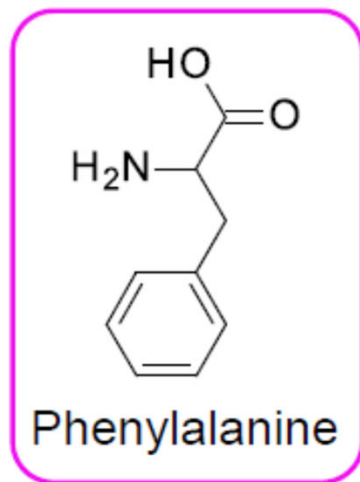
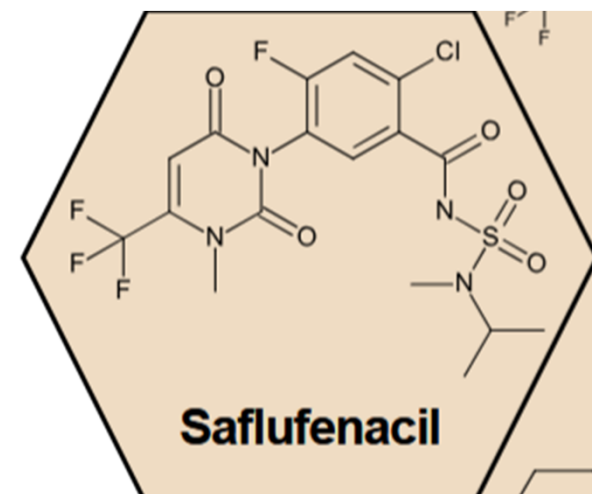
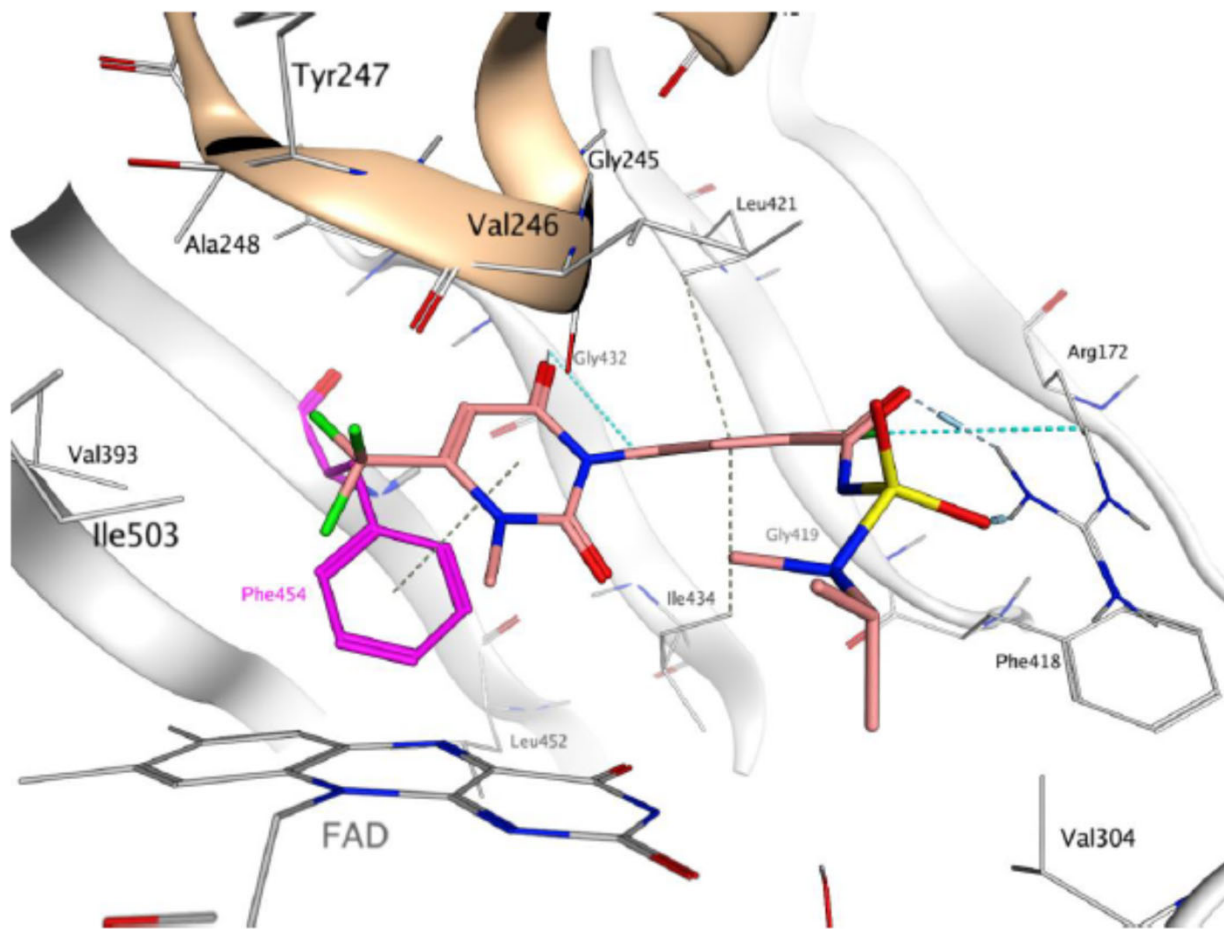
Kochia – Semi-Random Sampling

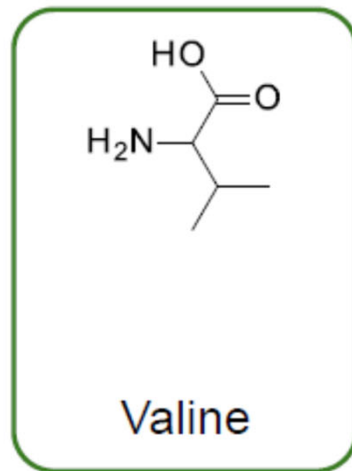
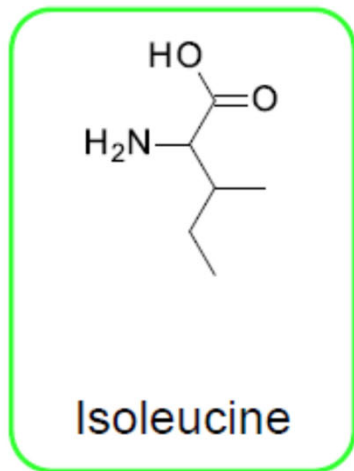
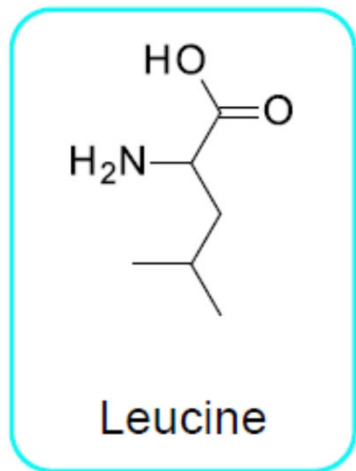
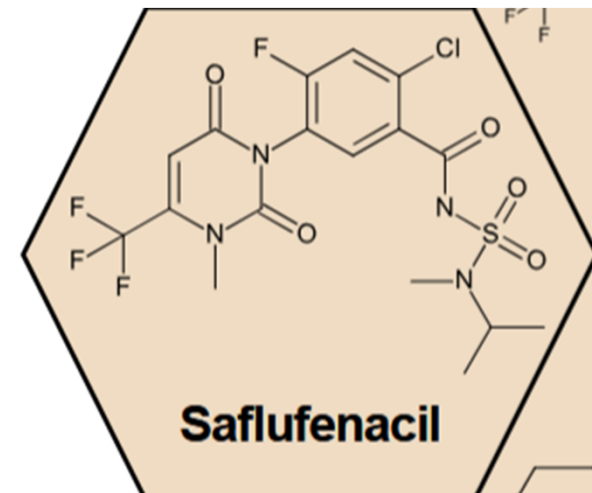
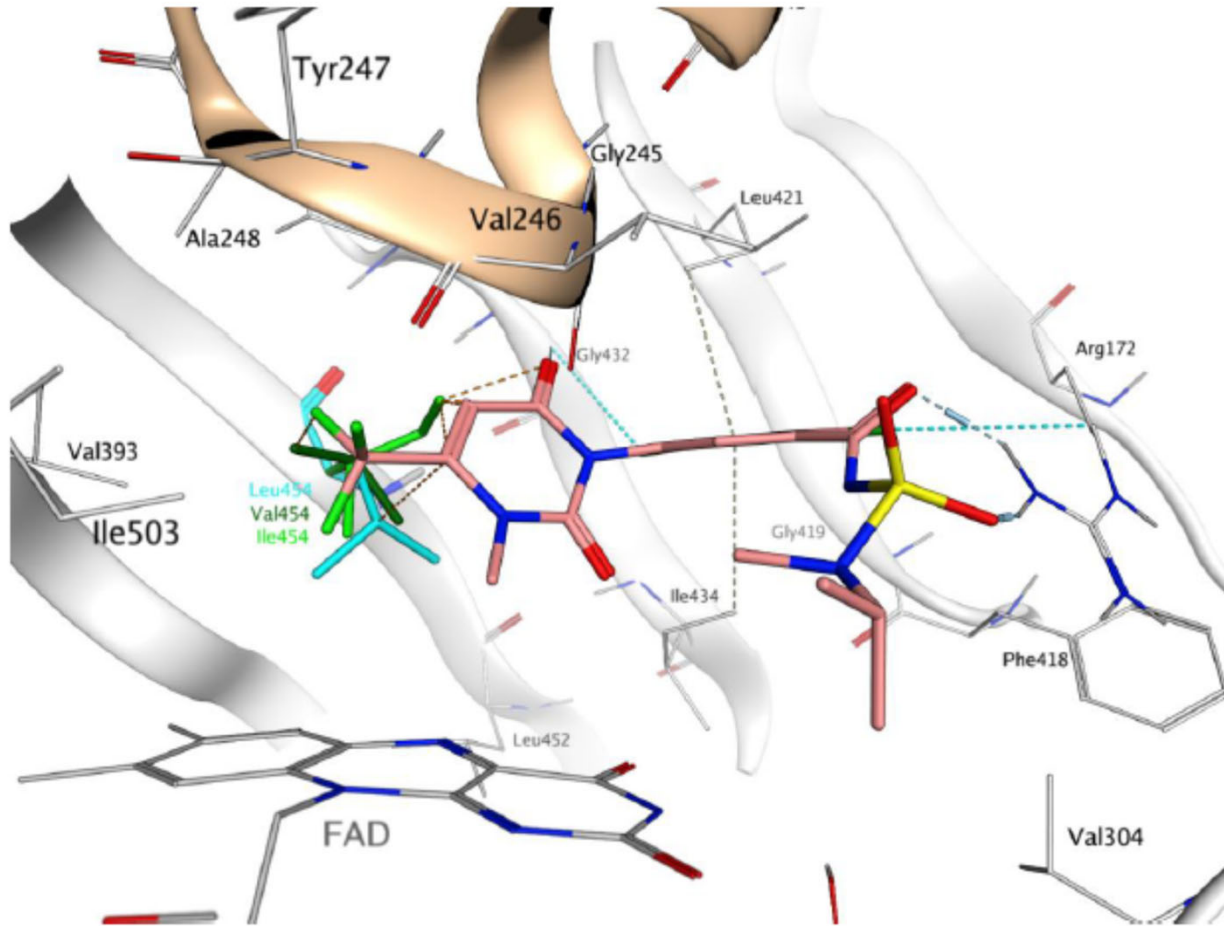
- 100 populations
- First 60
 - 35/60 – PPO-R
 - 60/60 – Glyphosate-R
 - 12/60 – dicamba-R (0.5 lb/A)
- Next 40
 - 14/33 – PPO-R
- Total
 - 49/93 – PPO-R – 53%

Minot Resistant

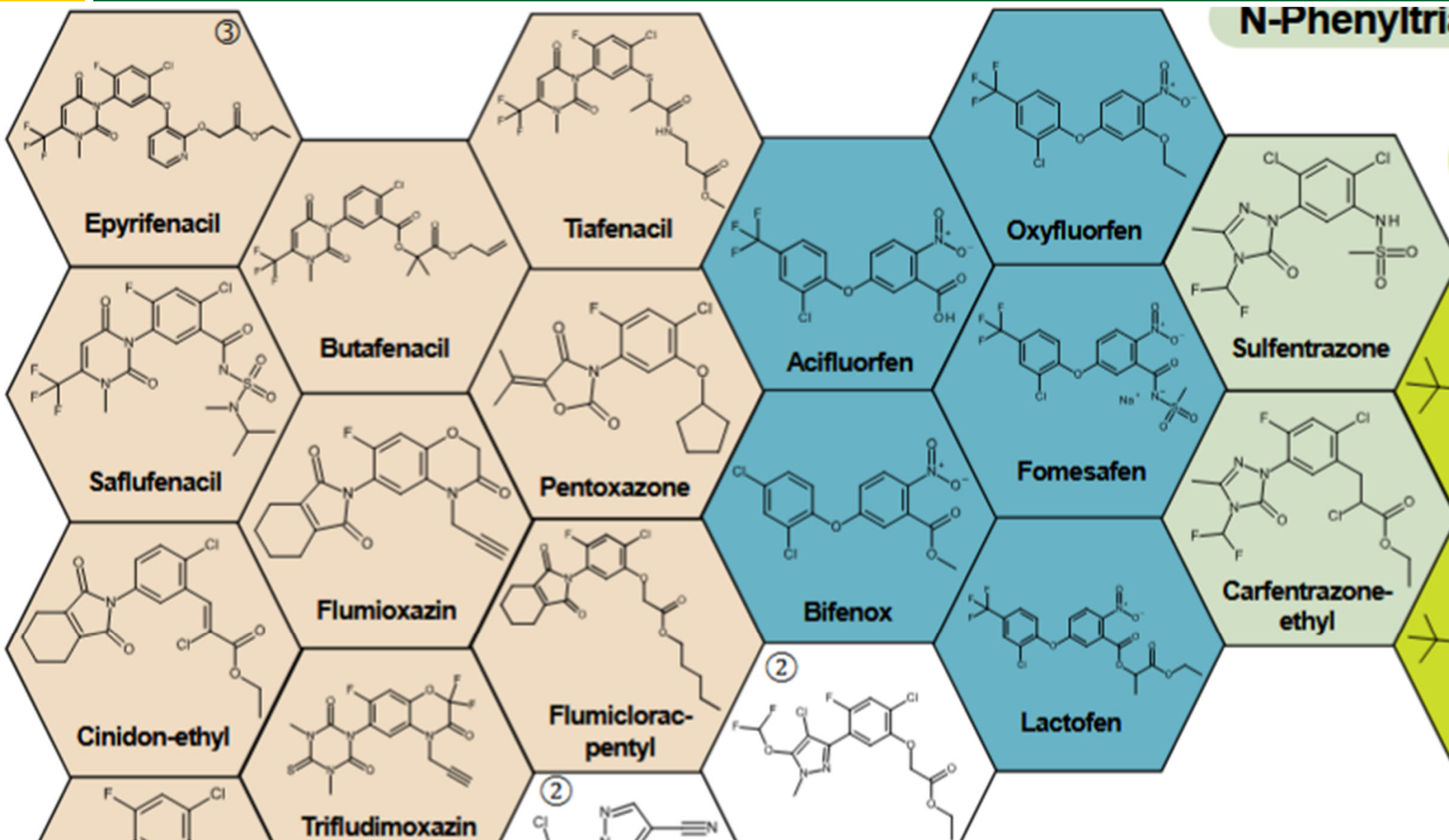








PPO-Inhibitors



Planted/Sprayed
Feb 22

Photo: 20 DAT

3 reps



1. Mott
2. Mandan
3. Berthold
4. Minot
5. Mohall-F
6. Mohall-I
7. Susceptible

The Notorious P.I.G.

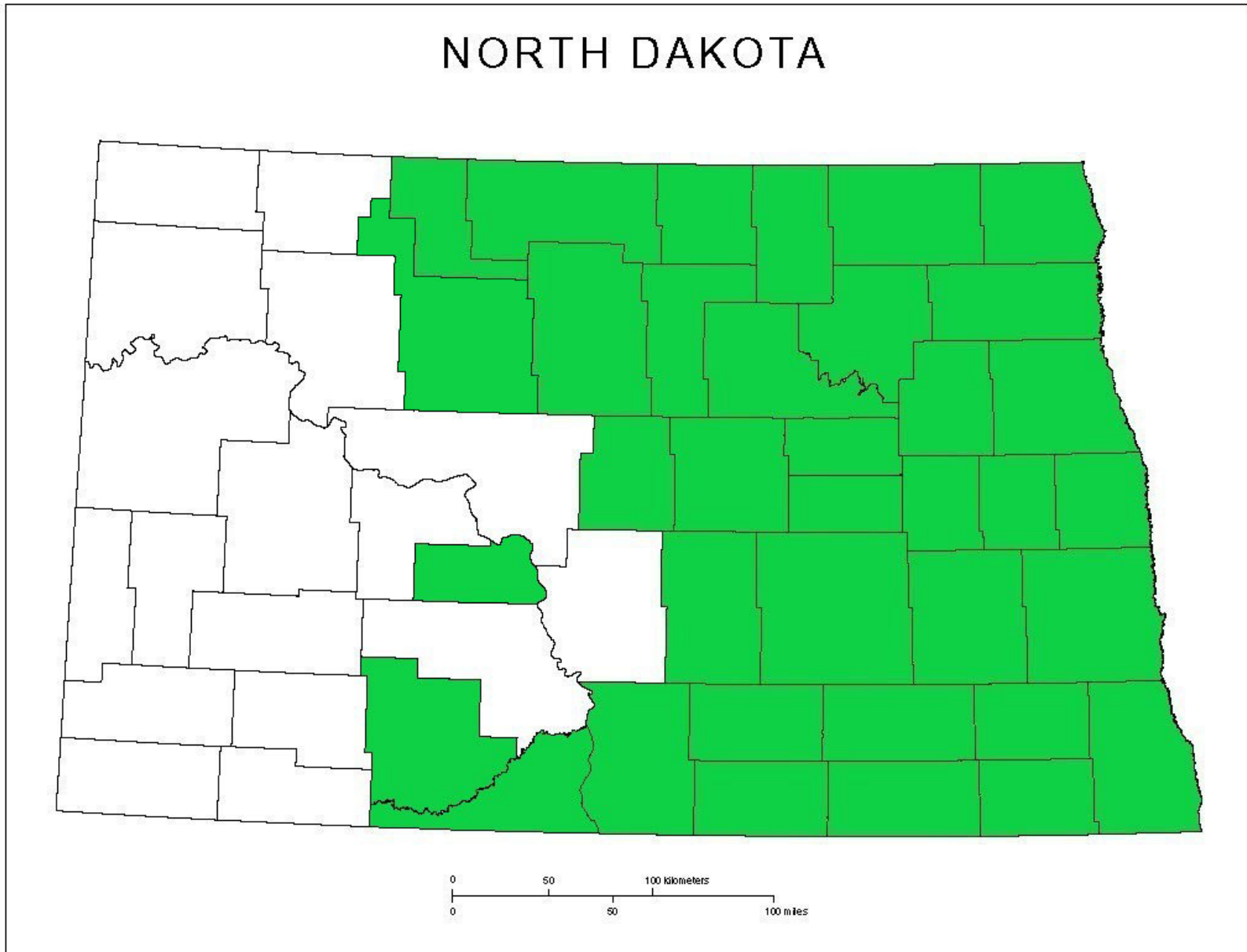
Palmer amaranth



Waterhemp



Waterhemp Distribution – 2025



Waterhemp in ND – 2000

➤ 2000 Weed Survey (Zollinger)

▪ Found in 4 counties in spring:

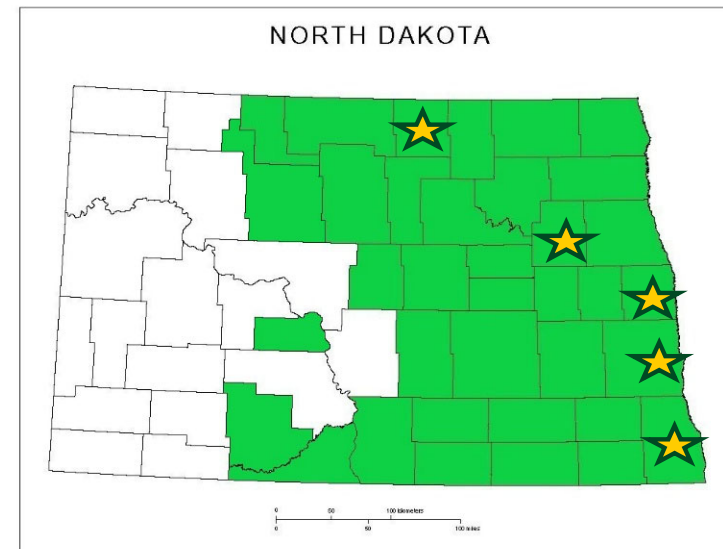
- Cass: 1.2% of fields (#24/30) – 0 found in summer
- Nelson: 3.3% of fields (#23/27) – 0 found in summer
- Richland: 3.3% of fields (#30/38) – 0 found in summer
- Traill: 1.9% of fields (#21/22) – 0 found in summer

▪ Found in 1 county in summer:

- Rolette: 12.5% of fields (21/23)

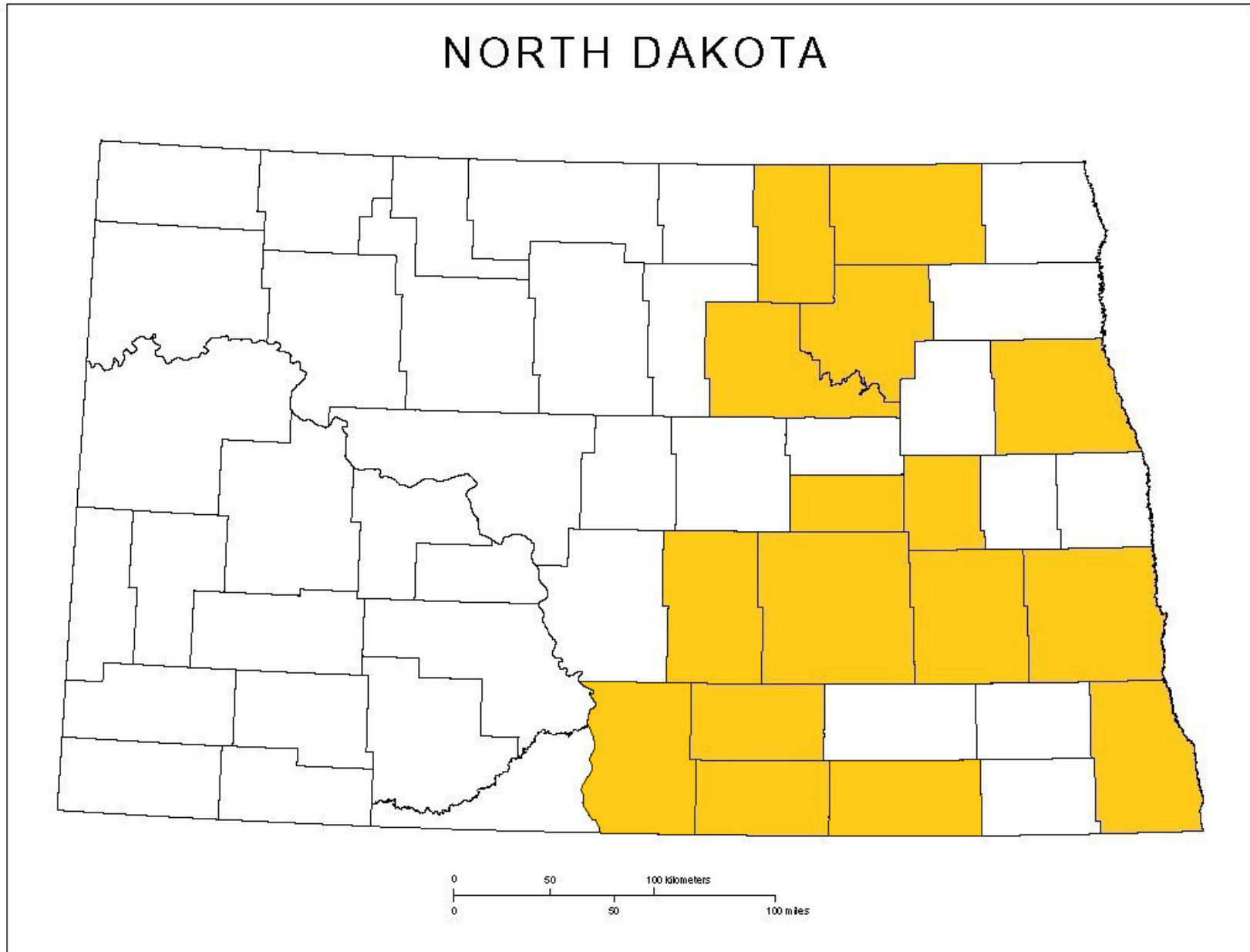
▪ State-wide:

- Spring: 0.3% of fields (pigweed species 26.3% of all fields)
- Summer: 0.2% of fields (pigweed species 24.6% of all fields)





Group 14-Resistant Waterhemp – 2025



Dicamba-Resistant Waterhemp



0 lb/a

0.0625 lb/a

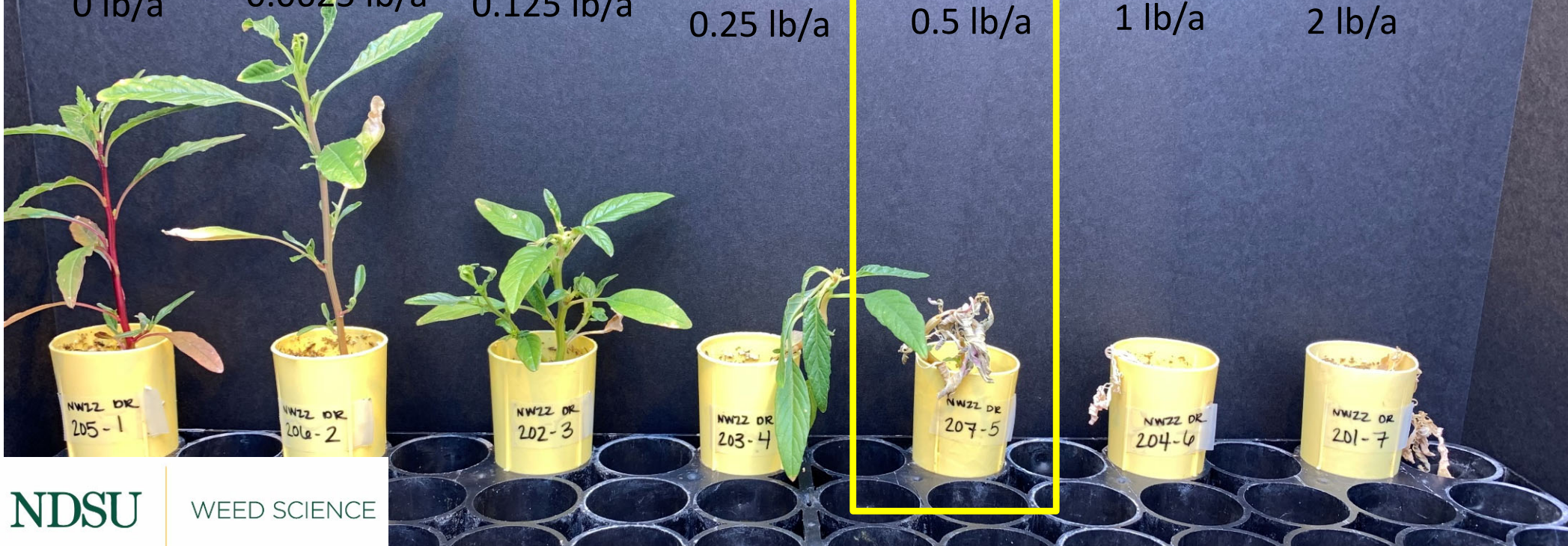
0.125 lb/a

0.25 lb/a

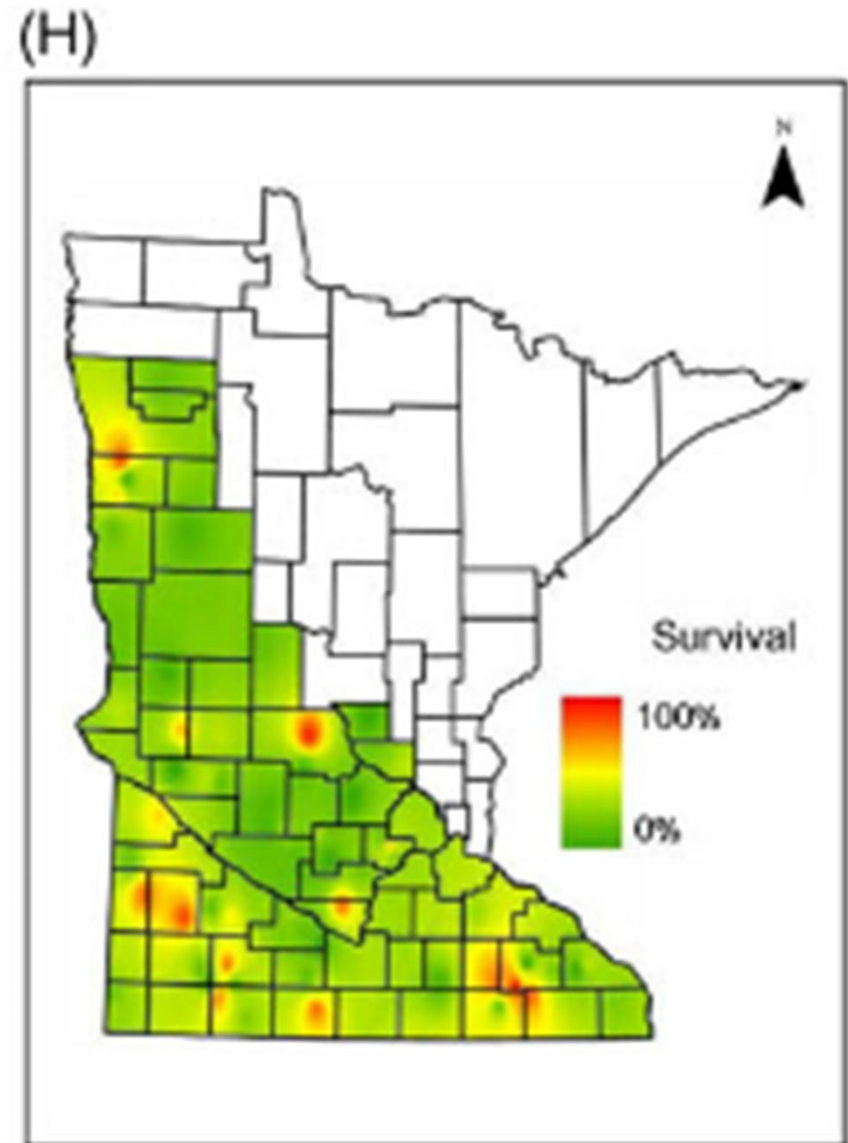
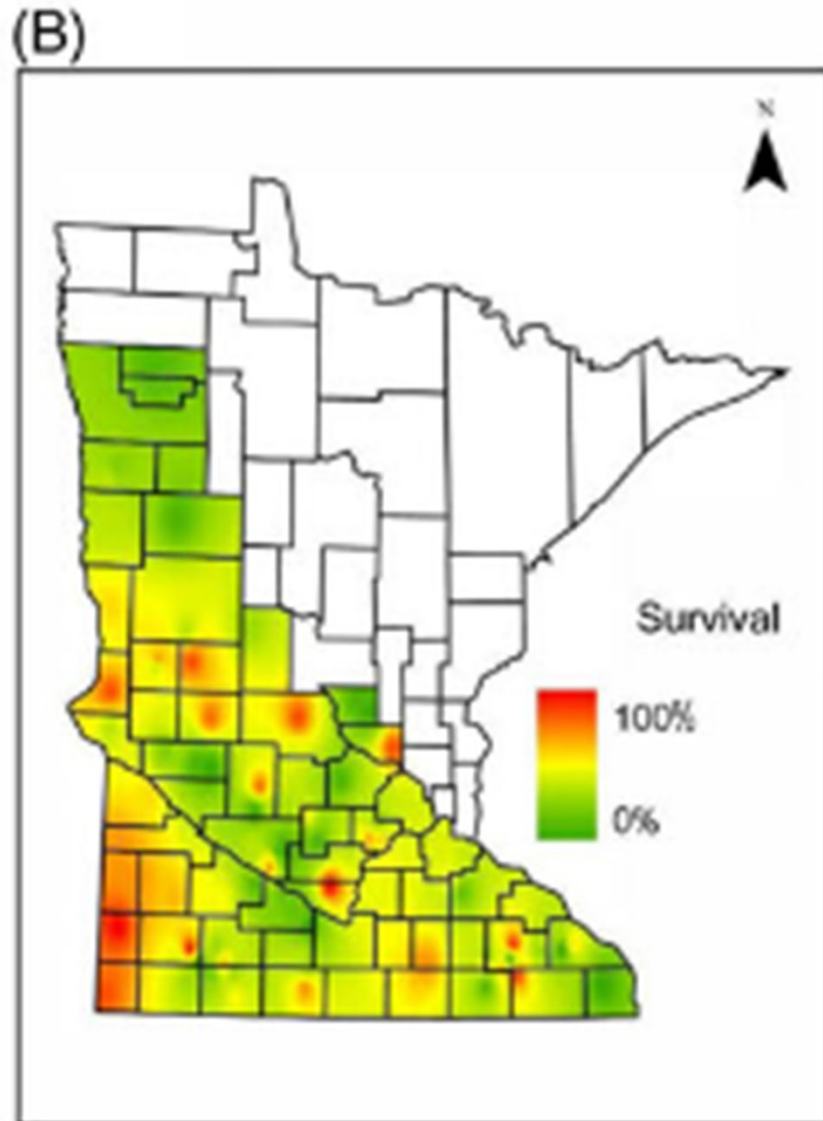
0.5 lb/a

1 lb/a

2 lb/a



Waterhemp Surviving Atrazine (B) and Mesotrione (H)



Atrazine and Mesotrione – ND

- Barnes, Cass, Sargent – 18 populations
- Atrazine: 60% of plants R
 - 0.5 and 1.5 lb
 - Rate doesn't matter
- Mesotrione: 15% of plants R
 - 3 and 9 fl oz Callisto
 - Rate...kinda matters
- 2,4-D: One population matters
 - 6/16 plants survived
 - 1X or 3X

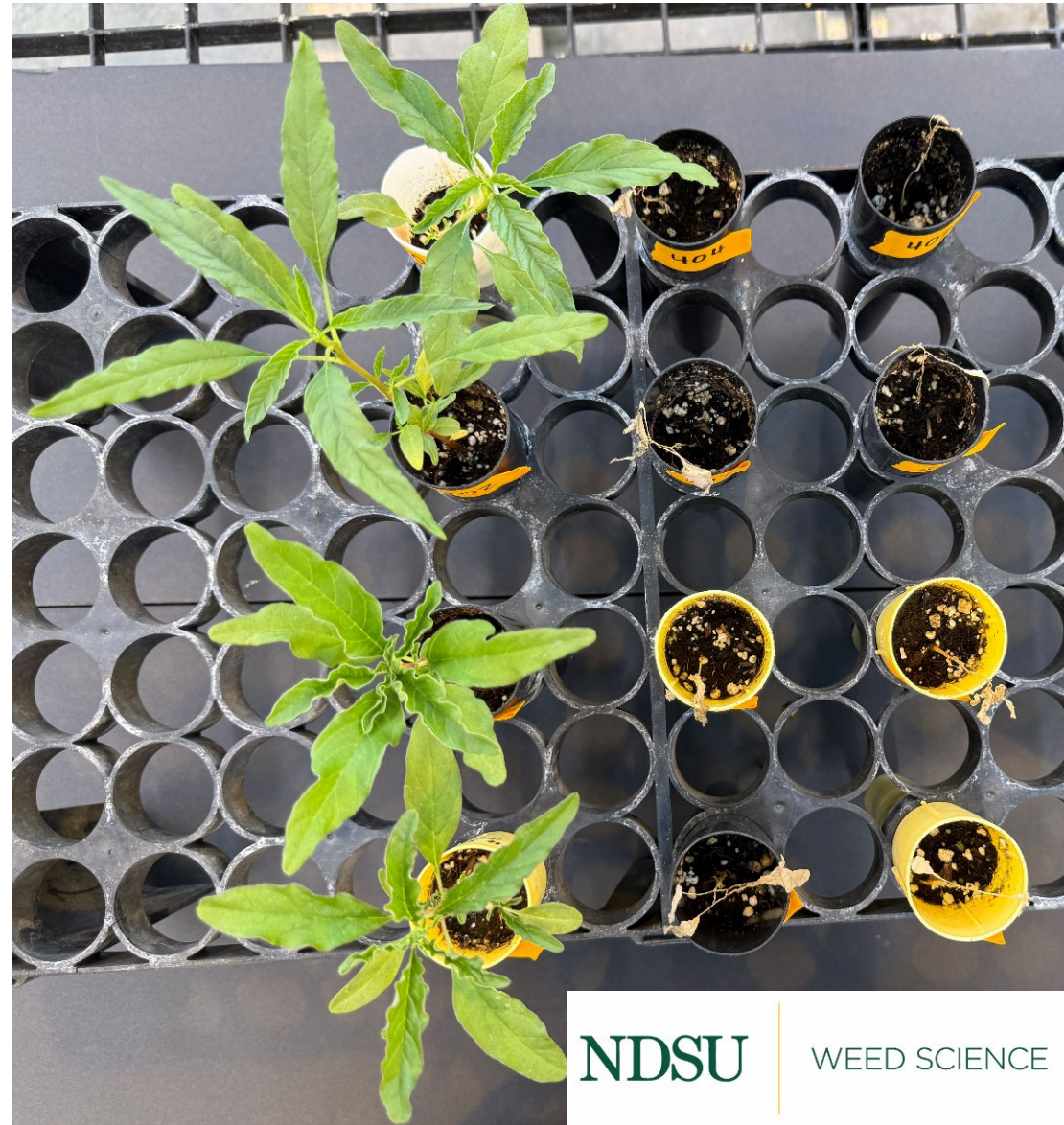
Atrazine – 0, 0.5, 1.5 lb



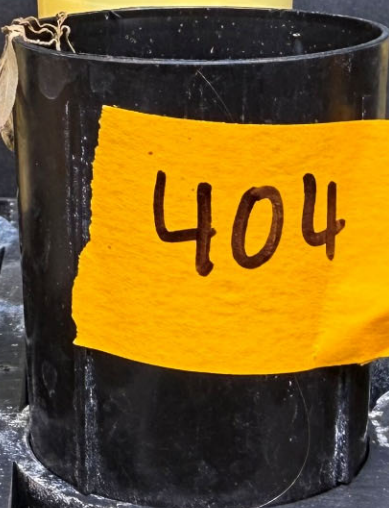
Mesotrione



Enlist One – 1 Qt/A



0, 1, 3 Qt Enlist One



2,4-D



2,4-D



Atrazine and Waterhemp – NW22 Case Study

- 2021 – no resistant plants
 - Susceptible population in greenhouse

- 2021-2025
 - 2 corn trials
 - Complete control with tank-mixtures
 - Same quarter as corn production with waterhemp escapes

- 2025:

1 lb Atrazine



1 lb Atrazine

July 11

July 24



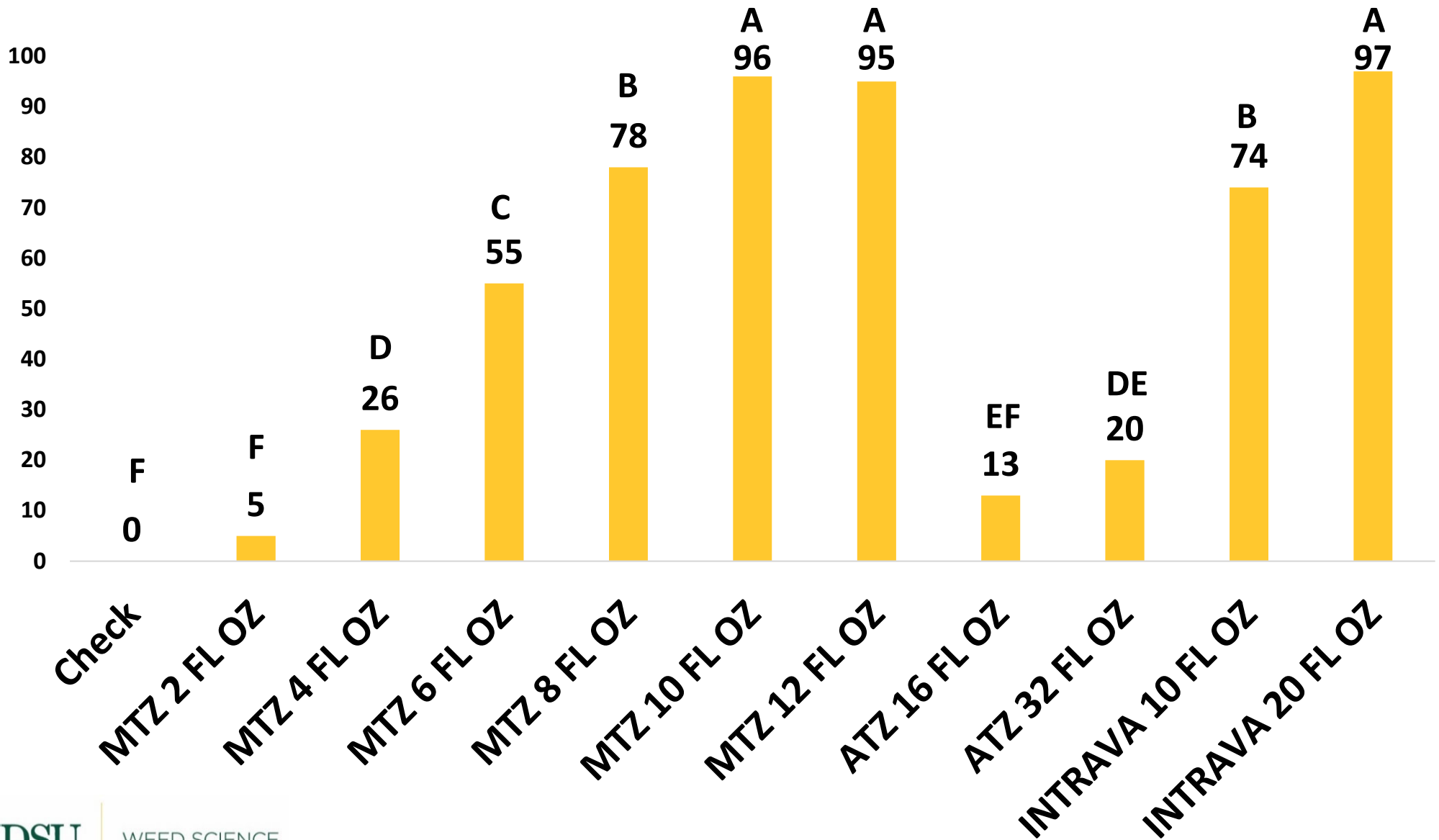
Metribuzin in Corn?



			TRICOR 4F FIELD C
STATES		APPLICATION TIMING	TRICOR 4F FL OZ/A
Iowa Kansas Missouri	Nebraska South Dakota	Preplant 0 to 30 days	3 to 8
		Pre-emergence	
Illinois Indiana Kentucky Michigan	Minnesota Ohio Wisconsin	Preplant 10 to 30 days	3 to 8
		Preplant 0 to 9 days	3 to 6
		Pre-emergence	

Waterhemp Control – Fargo 2025

4 Weeks After Planting



6 Weeks After Planting

Check

1 lb atrazine



6 Weeks After Planting
0.25 lb metribuzin

1 lb atrazine



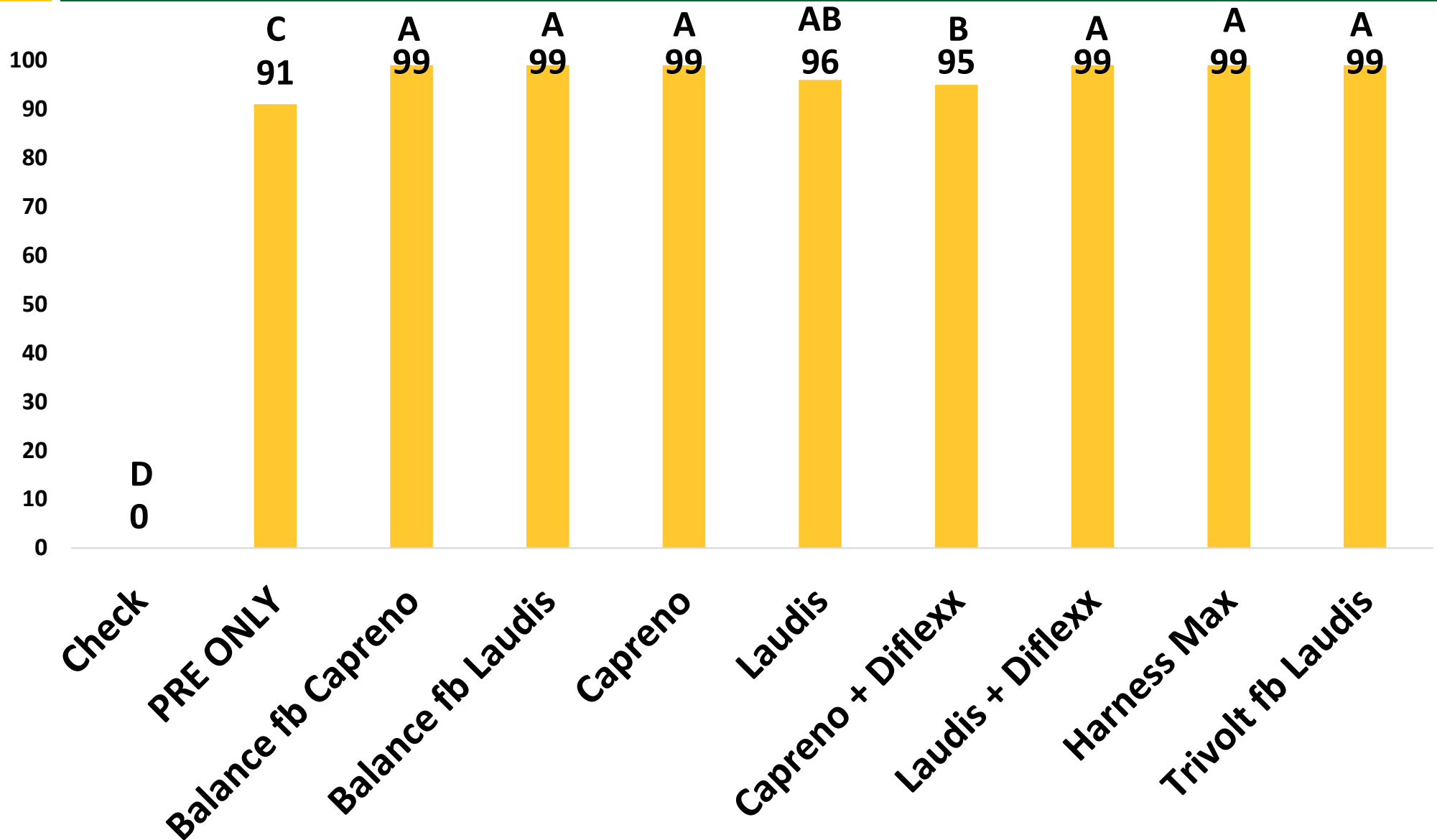


Waterhemp Control – Corn 2025

Treatment	Rate (A)
Balance Flexx + Harness + Atrazine – PRE	5.5 fl oz + 2.5 pt + 0.5 lb
Balance Flexx – PRE	4 fl oz
Capreno + Harness + glyphosate + ATZ – POST	3 fl oz + 2 pt + 1.125 lb + 0.5 lb
Balance Flexx – PRE	4 fl oz
Laudis + Harness + glyphosate + ATZ – POST	3 fl oz + 2 pt + 1.125 lb + 0.38 lb
Capreno + Harness + glyphosate + ATZ – POST	3 fl oz + 2 pt + 1.125 lb + 0.5 lb
Laudis + Harness + glyphosate + ATZ – POST	3 fl oz + 2 pt + 1.125 lb + 0.38 lb
Capreno + Diflexx + glyphosate + ATZ – POST	3 fl oz + 0.5 pt + 1.125 lb + 0.5 lb
Laudis + Diflexx + glyphosate + ATZ – POST	3 fl oz + 0.5 pt + 1.125 lb + 0.38 lb
Harness Max + glyphosate + ATZ – POST	36 fl oz + 1.125 lb + 0.5 lb
Trivolt– PRE	12 fl oz
Laudis + Harness + glyphosate + ATZ – POST	3 fl oz + 2 pt + 1.125 lb + 0.38 lb

Waterhemp Control – Fargo 2025

6 Weeks After Planting



JUNE 25TH – 6 WA Planting, 1 WA POST

Nontreated

Balance fb Capreno + gly + atz

Capreno + gly + atz



JULY 14TH – 9 WA Planting, 4 WA POST

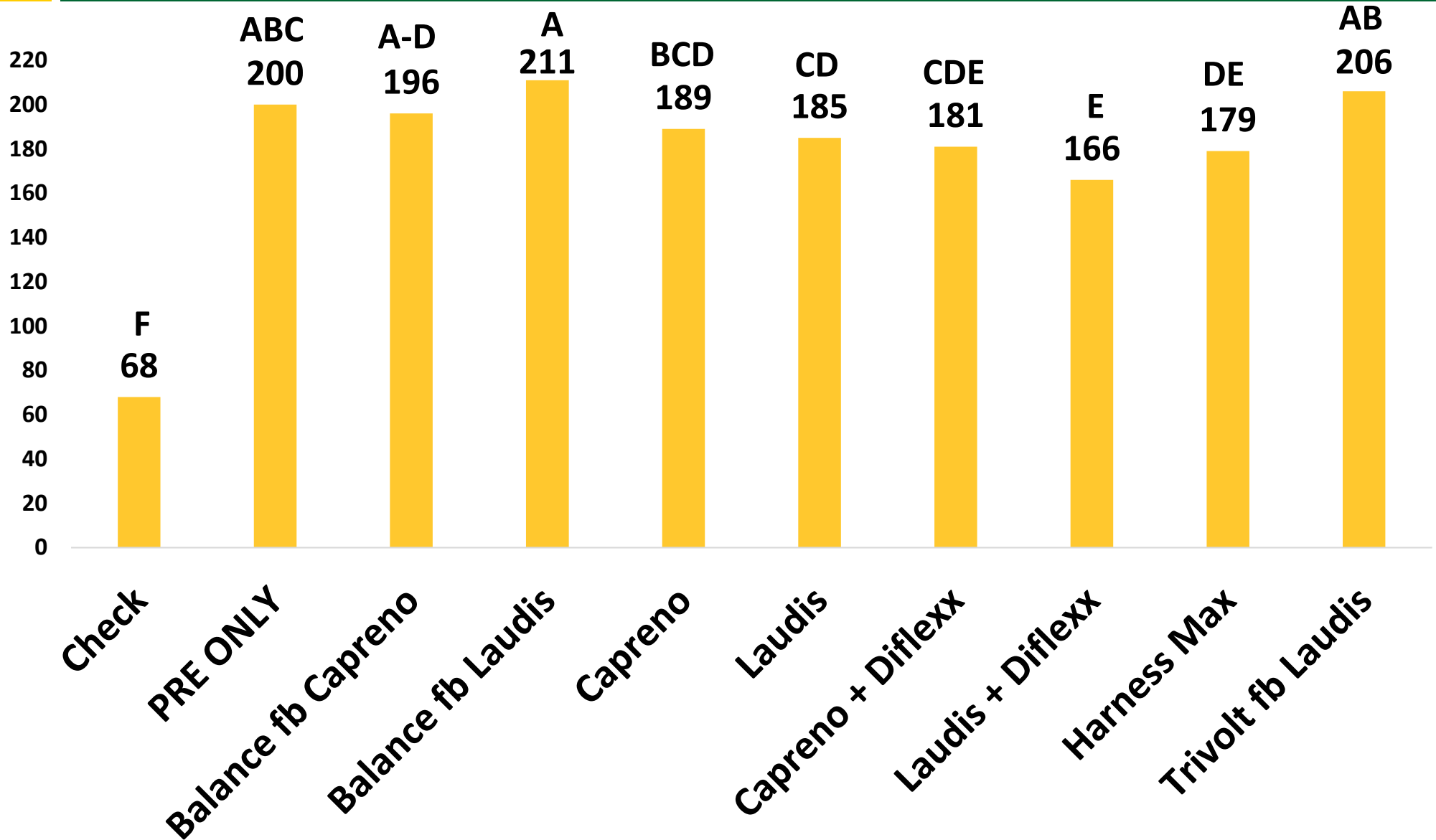
Nontreated

Balance fb Capreno + gly + atz

Capreno + gly + atz



Yield – Fargo 2025



War Against Weeds Podcast



WEED SCIENCE



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