

# **2025 Weed Control Update**

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**North Dakota State University**

# **No Dicamba in soybeans in 2025!**

- **Xtendimax, Engenia, Tavium labels withdrawn**
- **The Dicamba labels do not allow PRE use in ND**
  - **Do not make dicamba preplant applications to soybeans in areas with average annual rainfall < 25"**
- **Roundup-resistant weeds:**
  - **Kochia, horseweed, ragweed, waterhemp, Palmer**
- **What will be the primary workhorse herbicide in soybean?**

# Glufosinate-resistant Palmer amaranth found in Missouri Bootheel

This single case is likely the tip of the iceberg, say University of Missouri researchers.

By [University of Missouri](#) | Published on August 25, 2022



# Glufosinate-resistant pigweed found in Arkansas

After more than a decade of heavy reliance on glufosinate herbicides, researchers find a crack in the dam.



Ginger Rowsey  
March 12, 2021

🕒 3 Min Read





The legendary broadcast



Mike Pearson & Ma



Current Condit

Boone,

[Change Loc](#)

37°F



**How do we properly steward Liberty for Canola and Soybean?**

# **Liberty will be the primary POST herbicide in canola and soybean**

- **We have to properly steward Liberty.**
- **There is no POST alternative in Canola. A couple more options in soybean.**
- **How can we reduce selection pressure on Liberty?**

# Kochia control in soybean in 2025

## Soil-applied herbicides

- Spartan products
- Metribuzin
- Valor products
- Zidua products
- Yellow products

## POST-applied herbicides

- Liberty
- Flexstar, Ultra Blazer, Cobra
- Basagran

## How do we properly steward Liberty?

- Warm temps, higher humidity, sunny
- Medium droplets
- 15-20 gpa
- 3 lb AMS
- Small weeds (1-3 inches)
- Use for POST application, avoid using PRE
- Preplant: Use Gramoxone
- Beware: Some generic formulations are NOT equivalent and provide inferior weed control.
- Consider Treflan, Sonalan for Canola
- Have a strong weed control program the previous year

# Weed Resistance

- Short rotations: e.g., Canola, Wheat
- Previous experience showed average 7 years for resistance to develop
  - Soybean, Wheat (kochia)



## What not to do....

Year	Crop	Herbicide
2024	Soybean	Liberty 2X
2025	Canola	Liberty 2X
2026	Wheat	Starane
2027	Soybean	Liberty 2X

Try to use a crop sequence where you use Liberty once in 3 or 4 years.

## Crop rotation scenarios

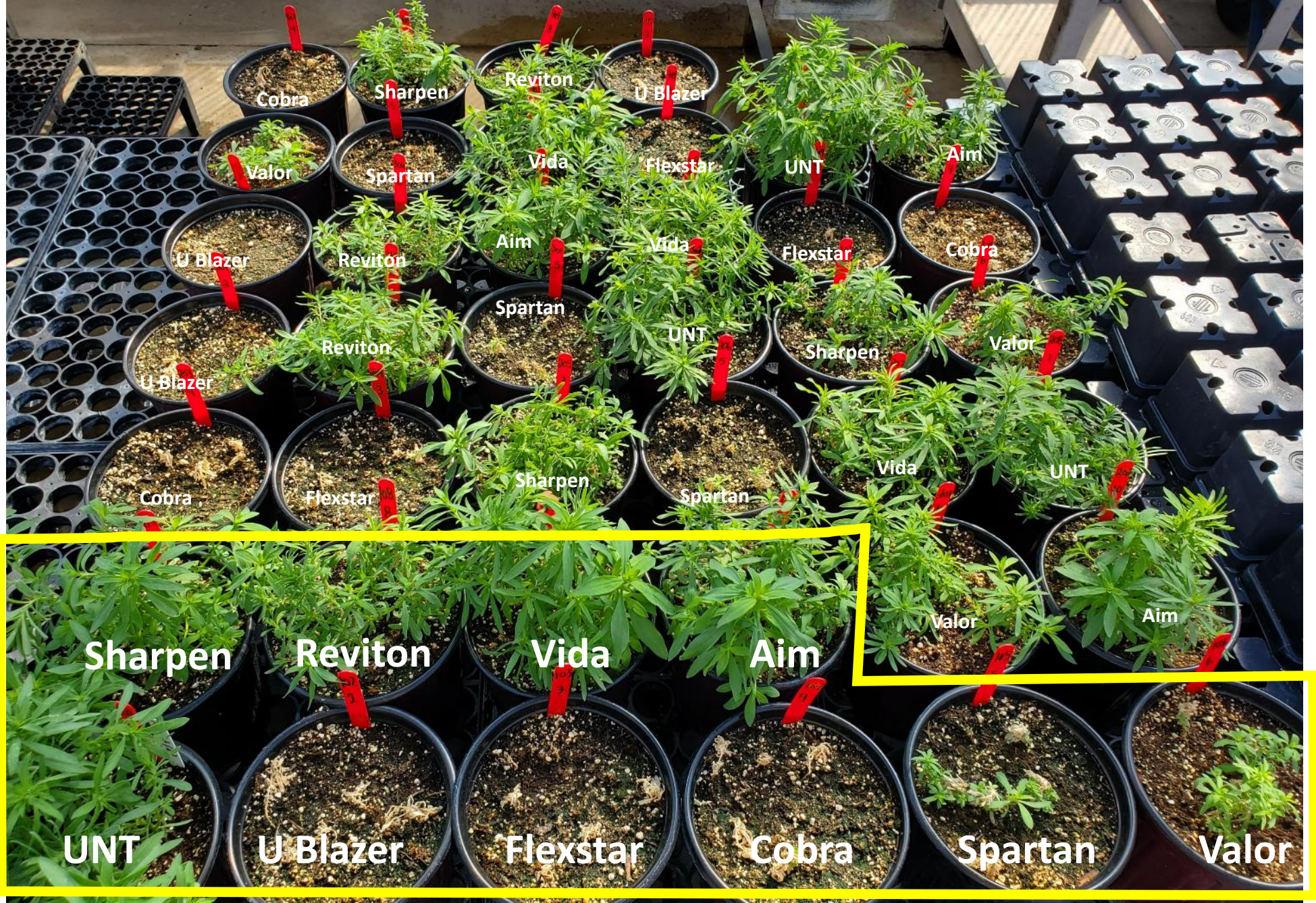
Year	Crop	Herbicide	Group
2024	Wheat	Starane + Bromoxynil	4 + 6
2025	LL Canola	Sonalan Liberty	3 10
2026	Wheat	Huskie FX	27 + 6 + 4
2027	LL Soybean	Spartan + Metribuzin Flexstar/UB/Basagran	14 + 5 14/14/6

# Group 14 Classification

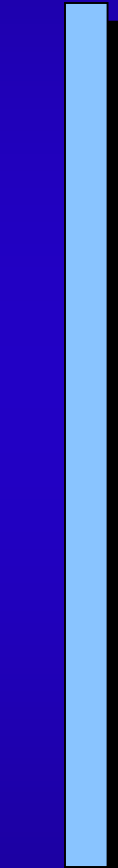
Class	Trade Name	Common Name
Diphenylether	Flexstar Cobra Ultra Blazer	Fomesafen Lactofen Acifluorfen
N-phenylimide	Valor Sharpen Reviton Cadet	Flumioxazin Saflufenacil Tiafenacil Fluthiacet
Phenylpyrazole	Vida	Pyraflufen
Triazolinone	Spartan Aim	Sulfentrazone Carfentrazone



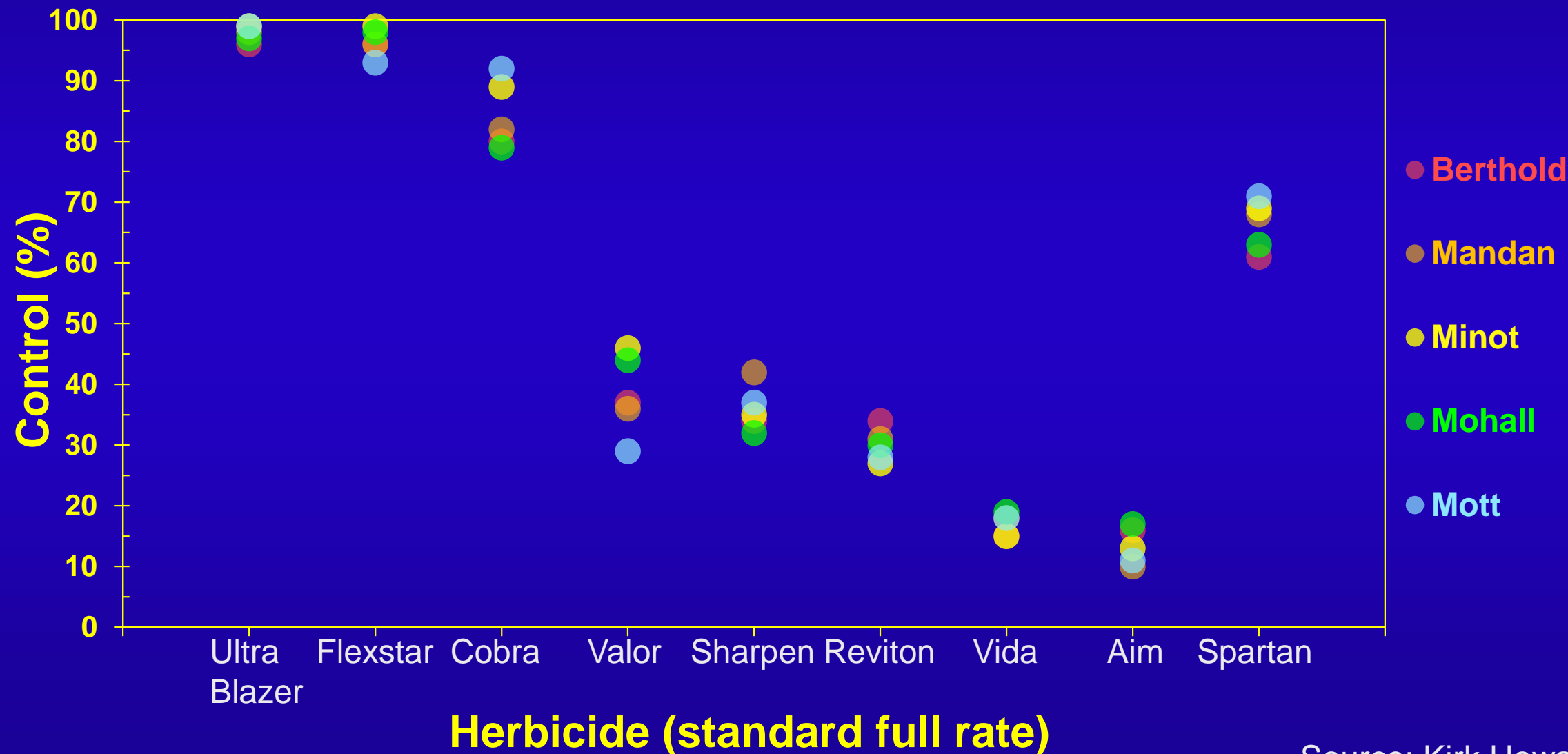
# Minot







# Responses of Five Kochia Lines to PPOs POST



**Group 14-resistant kochia has been identified  
in more than 50% of North Dakota counties.**

**21 DAT**

**UNT**

**Valor**

**Zidua**

**Fierce**

**Susceptible  
check 2**



**Minot**



**Mohall**



**Susceptible  
check 1**



**Valor 3 fl oz  
Zidua SC 2.5 fl oz  
Fierce 6 fl oz**

## Weed control with fall-applied Anthem Flex

Treatment	Rate	Weed Control						
		Kochia			Green foxtail			
		May 20	May 31	June 27	May 20	May 31	June 27	
		-----%-----			-----%-----			
Untreated		0	0	0	0	0	0	<u>\$/A</u> 18 23 35 24
Anthem Flex	3 oz	68	67	52	40	79	63	
Anthem Flex	4 oz	74	75	70	42	82	72	
Anthem Flex	6 oz	87	87	92	75	88	88	
Anthem Flex + Metri	3.5 oz + 0.33 lb	92	93	90	70	80	69	
LSD (0.05)		8.1	6.0	22.0	9.9	3.7	4.2	

\*Treatments applied Oct 16, 2023

**Anthem Flex = Zidua + Aim**





waterhemp, go out to the field, identify one individual and collect two leaf samples from





# Label/Submit Samples



Results for pigweed 1-2 weeks. Kochia, longer.

**prepaid envelope that will be sent to the  
National AG Genotyping Center for us to**

# **Tolvera = tolpyralate + bromoxynil**

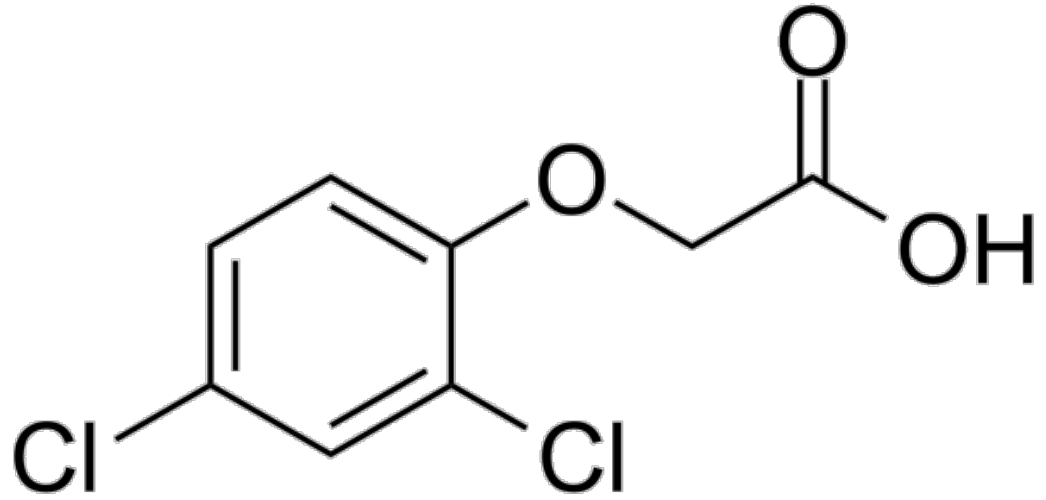
**Group 27**

**Group 6**

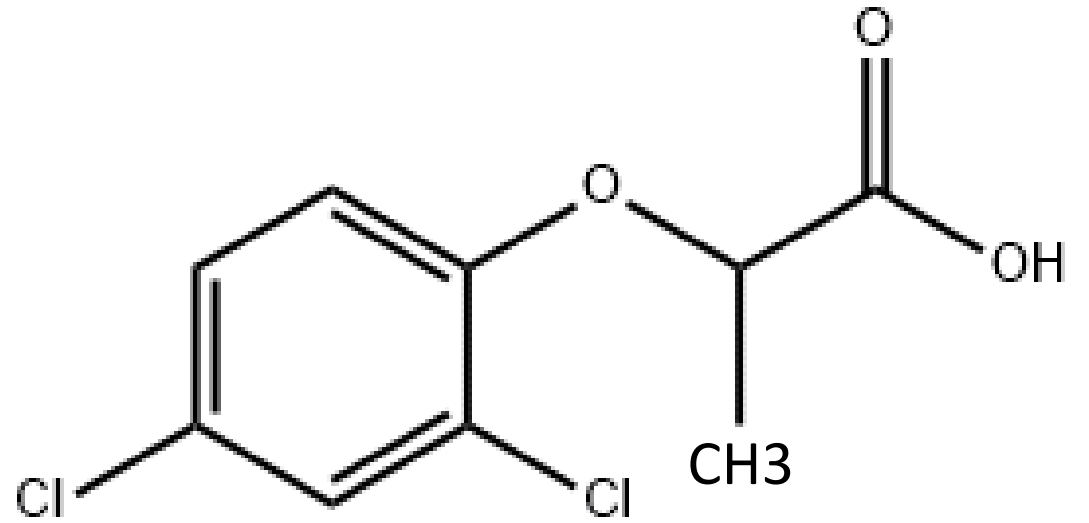
- **Tolpyralate has broadleaf and grass activity (not wild oat)**
- **May be tank mixed with other products to broaden spectrum**
- **6" kochia: 77-82% control**
- **1-4" kochia: 91-92% control**
- **1-2" kochia: 99% control**
- **Green foxtail: 80-92% control (better control on small foxtail)**

## Crop Rotation Interval Following Tolvera

Crop	Rotation Interval (months)
Corn, Wheat, Barley	0
Oat, Triticale, Rye	3
Alfalfa, Camelina, Canola, Chickpea, Dry bean, Flax, Lentil, Millet, Dry Pea, Safflower, Sorghum, Soybean, Sunflower	9
Potatoes (>8" in following 9 mo)*	9/15*
Other crops not listed	15
Sugar beet	18



2,4-D



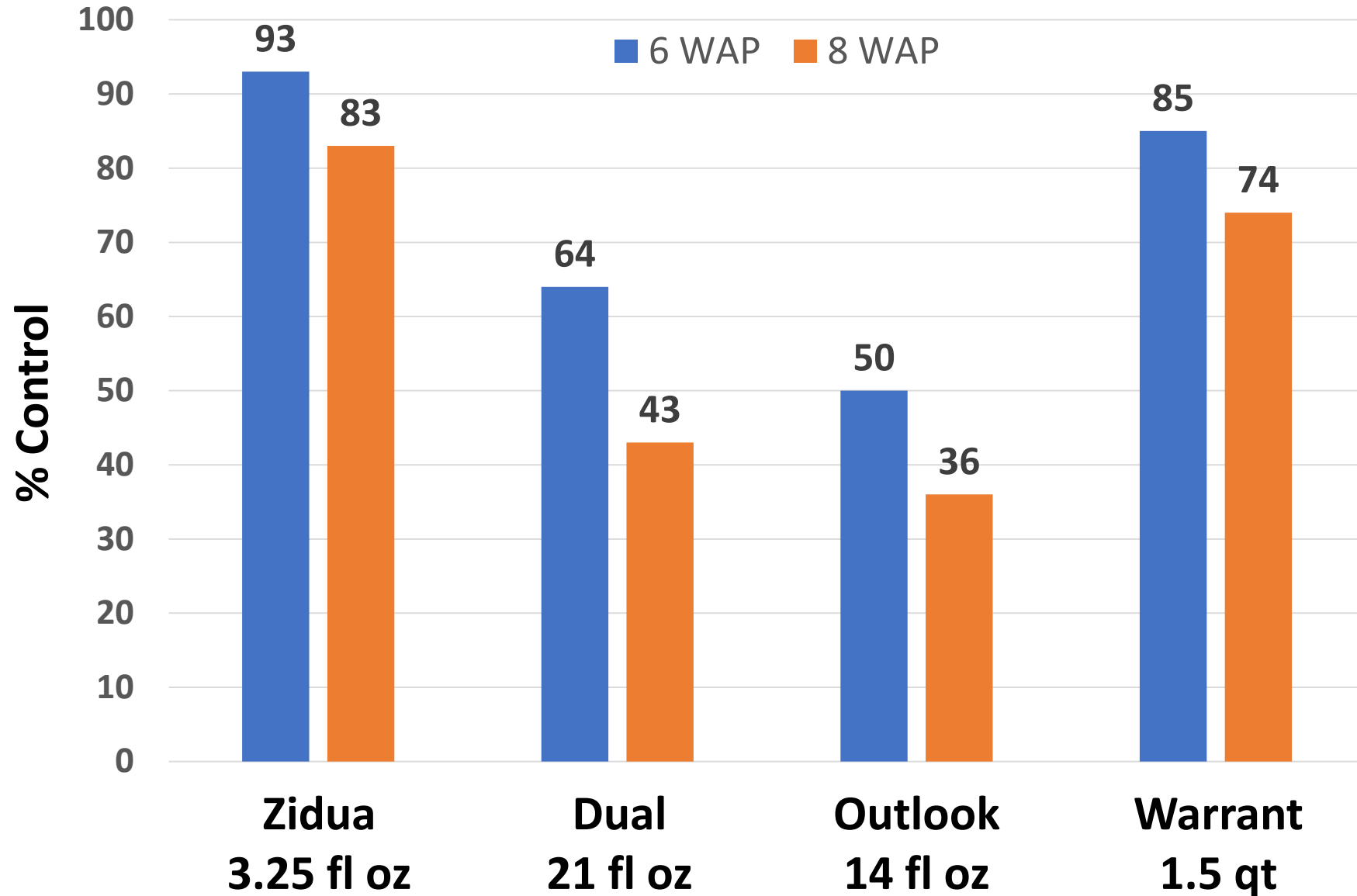
Dichloroprop

# Kochia size affects weed control with Dichlorprop and Bromoxynil

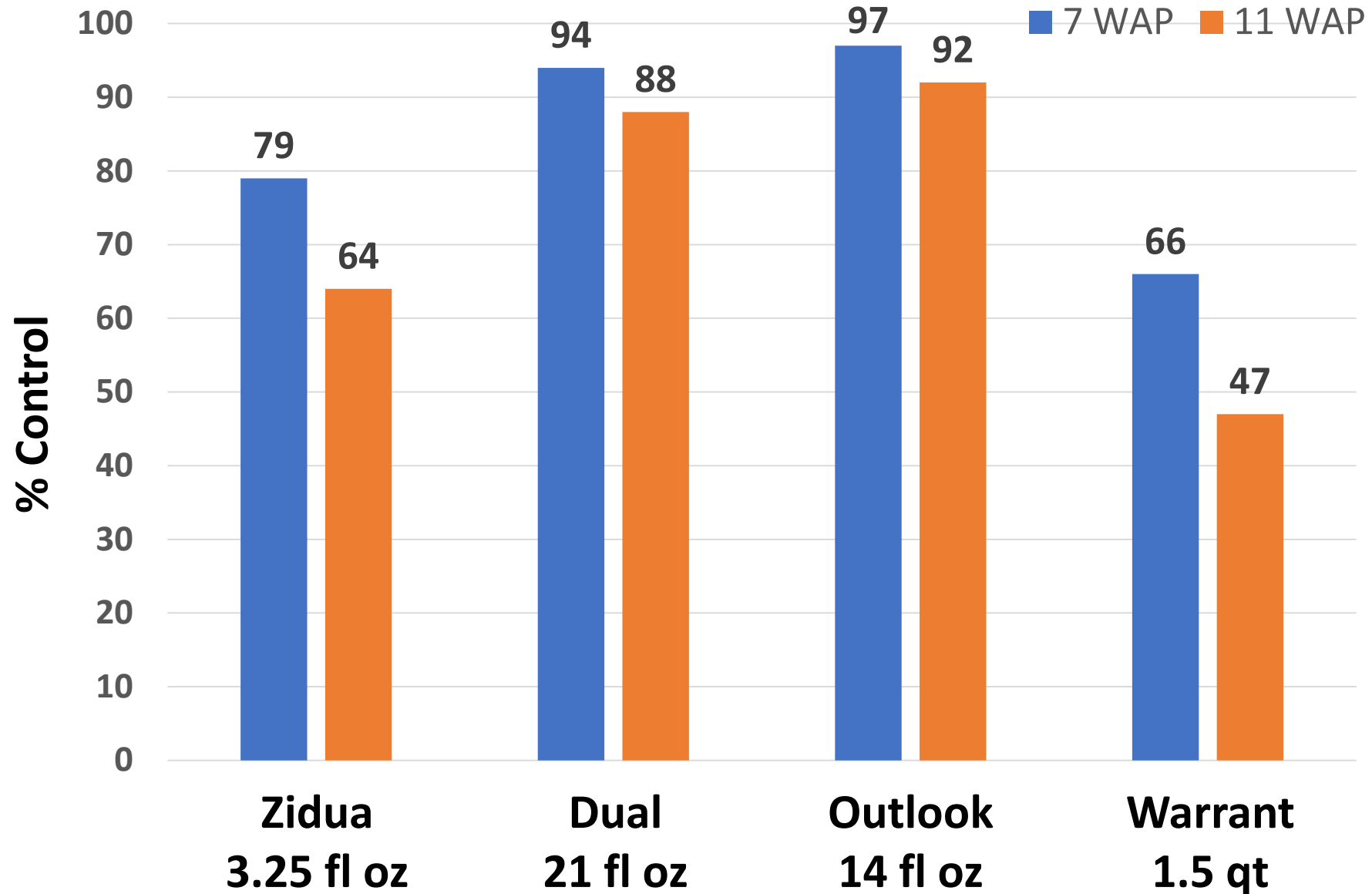
Year	Kochia size (inches)	Maestro EXT % control	Dichlorprop % control	Bromoxynil % control
2020	7	53-83	67	57
2021	4	89-97	80	86
2021	6	61-85	62	55
2022	1	99	91	99
2022	6	77-89	74	30
2023	3	93-97	--	--

**\*Little to no crop injury observed in any year**

# Waterhemp Control – Fargo 2024



# Green Foxtail Control – Minot 2024





Rep 3

Set 1

28 DAT





Rep 3  
Set 1

34 DAT





Rep 3  
Set 1

42 DAT





Rep 3  
Set 1

48 DAT





# Spring burndown weed control with Gramoxone tank mixes

Treatment	Weed Control <sup>de</sup>									
	Colq		Koch		Grft		Shep		Canola	
	4-Jun	22-Jun	4-Jun	22-Jun	4-Jun	22-Jun	4-Jun	22-Jun	4-Jun	22-Jun
	-----%-----		-----%-----		-----%-----		-----%-----		-----%-----	
Gram <sup>a</sup>	91	70	99	99	96	75	94	78	99	73
Gram + Sharpen <sup>b</sup>	99	87								
Gram+ Brom <sup>a</sup>										
Gram + Metri <sup>a</sup>	99	99			99	88	99	97	99	99
Gram + Tough <sup>a</sup>										
Gram + Aff BS <sup>c</sup>	96	90					97	93	99	90
Gram + Dicamba <sup>a</sup>	96	94								
Gram + 2,4-D <sup>a</sup>	99	81							99	86
LSD (0.05)	3.3	7.4	0.3	0.5	1.5	3.9	1.9	7.2	1.5	4.9

# New Express label

## INDIVIDUAL COMMODITIES OF THE FOLLOWING CROP SUBGROUPS:

- 6-22E (Pulses, dried shelled bean, except soybean, subgroup including African yam bean; American potato bean; Bean (*Lupinus* spp.; including, but not limited to Andean lupin, blue lupin, grain lupin, sweet lupin, white lupin, white sweet lupin, and yellow lupin); Bean (*Phaseolus* spp.; including, but not limited to black bean, cranberry bean, dry bean, field bean, French bean, garden bean, great northern bean, green bean, kidney bean, lima bean, navy bean, pink bean, pinto bean, red bean, scarlet runner bean, tepary bean, and yellow bean); Bean (*Vigna* spp.; including, but not limited to adzuki bean, asparagus bean, blackeyed pea, catjang bean, Chinese longbean, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea, urd bean, and yardlong bean); broad bean (fava bean); guar bean; goa bean; horse gram; jackbean; lablab bean; morama bean; sword bean; winged pea; velvetbean; cultivars, varieties, and/or hybrids of these commodities.
- 6-22F (Pulses, dried shelled pea subgroup including Pea (*Pisum* spp.; including, but not limited to dry pea, field pea, green pea, yellow pea, wrinkled pea, marrowfat pea, and garden pea); chickpea; grass pea; lentil; pigeon pea; cultivars, varieties, and/or hybrids of these commodities).

## APPLICATION TIMING

EXPRESS herbicide may be applied as a pre-plant burndown prior to planting any crop including dry beans and dry peas and the individual commodities of crop subgroups 6-22E and 6-22F

# **Express preplant before pulses/dry bean**

- **Intended for no-till**
- **Use 0.25 oz product of Express 50 SG.**
- **Don't use Harmony or Harmony-containing product!**
- **Label indicates preplant only.**
- **Mustards, Prickly lettuce, Narrowleaf hawksbeard, False chamomile, others.**
- **Expect essentially no injury to dry pea and chickpea.**
- **You could see some injury to lentil, but risk is low at 0.25 oz rate.**
- **Seeding depth of 1.5-2 inches reduces injury risk.**

# **Tough + Metribuzin POST in lentil**

- This should be considered a “rescue” treatment.
- But where the rescue comes at no more than 3-inch kochia.
- This is a tool, not a “you have to use it”.
- If you have few weeds, you probably don’t need it.
- If you have many weeds, it may be useful.
- You will see severe lentil injury.
- Yield generally was not reduced in 2024 research. Some growers said they would do it again, others not.



# Metribuzin Conversion Chart

					Glory 4L	Metricor 4F
				Dimetric	Metribuzin 4L	Tricor 4F
Metribuzin	Metribuzin	75DF	75DF	3 lb ai/gal	3.8 lb ai/gal	4 lb ai/gal
lb ai	g ai/ha	oz pr	lb pr	fl oz	fl oz	fl oz
0.07	78	1.5	0.093	3.0	2.36	2.2
0.094	105	2.0	0.125	4.0	3.17	3.0
0.141	158	3.0	0.188	6.0	4.75	4.5
0.188	210	4.0	0.25	8.0	6.32	6.0
0.25	280	5.3	0.33	10.7	8.42	8.0



# Study 2411: Rep 1 (102-109 POST)

POST: June 14  
Photo: June 20



101

Untreated



102

Tough 7



103

Tough 14



104

Tough 20



105

Tough 7+Met 2



106

Tough 14+Met 2



107

Tough 20+Met 2



108

Tough 7+Met 2 +  
Select+COC



109

Tough 7+Met 2 +  
NIS

## Rainfall:

June 15: 0.20

June 17: 1.09

June 24: 0.90

June 27: 0.23

July 1: 0.29

July 5: 0.82

July 14: 0.31

- Tough 5EC = fl oz
- Metribuzin 75DF = oz dry product



# Study 2411: Rep 1 (102-109 POST)

POST: June 14  
Photo: July 3



101

Untreated



102

Tough 7



103

Tough 14



104

Tough 20



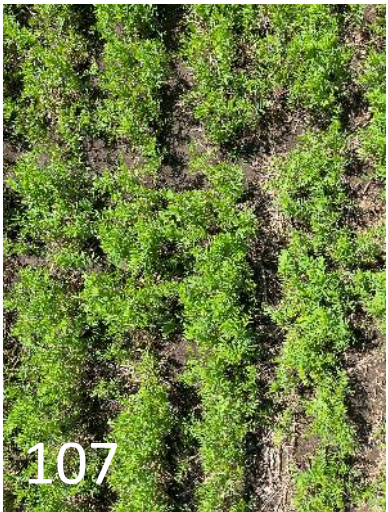
105

Tough 7+Met 2



106

Tough 14+Met 2



107

Tough 20+Met 2



108

Tough 7+Met 2 +  
Select+COC



109

Tough 7+Met 2 +  
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# Study 2411: Rep 1 (102-109 POST)

POST: June 14  
Photo: July 18



Untreated



Tough 7



Tough 14



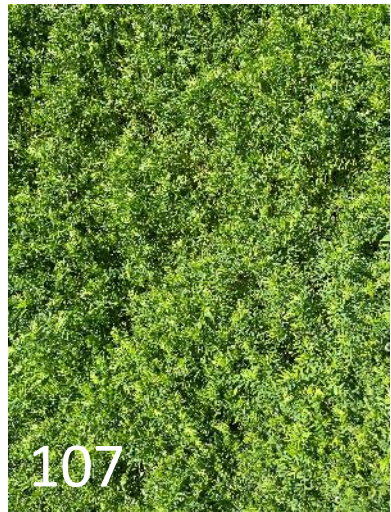
Tough 20



Tough 7+Met 2



Tough 14+Met 2



Tough 20+Met 2



Tough 7+Met 2 +  
Select+COC



Tough 7+Met 2 +  
NIS

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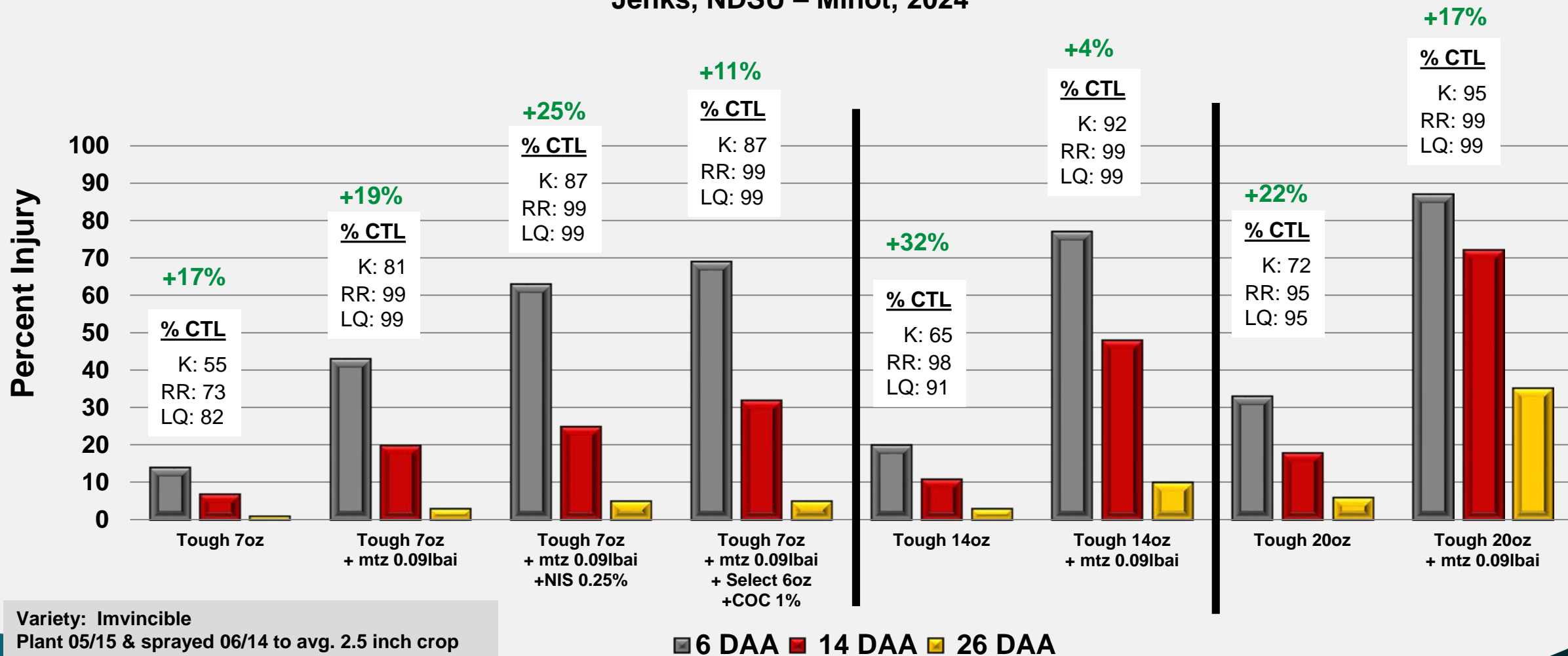
July 5: 0.82

July 14: 0.31



# Lentils – Crop Injury, Efficacy & Yield

Jenks, NDSU – Minot, 2024



Variety: Invincible

Plant 05/15 & sprayed 06/14 to avg. 2.5 inch crop

Temps 0-7 days of spray: 79–54F daily highs

Soil dry at application. Rainfall: 0.2", 1.2", 0.9",

0.23"; 1, 3, 10 & 13DAA respectively

Waiting on lab analysis of soil

Kochia: 1.5" (5ft2), RRPW: 1" (1ft2), CLQ: 0.5" (1ft2)

(24-303)

Green = % Relative Yield to the Nontreated

# **Lentil POST application recommendations with Tough + Metribuzin based on 2024 research and field experience.**

- **Lentil stage:  $\geq 2$  inches, apply by 35 DAP**
- **Rate: Kochia 1-2": Tough 10 oz + Metri 0.09 lb ai**
  - **Kochia 3": Tough 12 oz + Metri 0.09 lb ai**
- **Weed stage: 1-3 inches**
- **Kochia: Don't spray puffball kochia, prefer 1-2", do not wait until 4"**
- **15-20 gal/A water volume**
- **Medium to Coarse droplets**
- **Adjuvant will increase lentil injury, but should also improve weed control**
- **Don't rely on "total POST"**
- **Gramoxone burndown**
- **Soil-applied herbicide to reduce weed pressure (e.g., fall Valor, Prowl, Sonalan)**
- **Metribuzin PRE fb POST could increase injury risk**