

2022 Weed Control Update

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Wild oat resistance testing (% resistant)

Herbicide	Group	2016-2019	2020
Puma	1	76	71
Axial XL	1	38	42
Everest	2	72	65
GoldSky	2	77	55
Varro	2	87	78
Raptor	2	53	51
Assure II	1	75	64
Select	1	6	18
		n=153	n=55

*Samples not randomly collected

Green foxtail resistance testing (% resistant)

Herbicide	Group	2016-2019	2020
Puma	1	59	88
Axial XL	1	43	60
Discover	1	62	84
Everest	2	11	20
GoldSky	2	17	12
Varro	2	17	16
Raptor	2	0	0
Assure II	1	41	60
Select	1	1	8

n=93

n=25

*Samples not randomly collected

Reduced green foxtail control may be due to drought stress

“Although drought-stressing green foxtail before and up to 1 d after herbicide application did not reduce control with fluazifop-P in growth chamber trials, extending the drought stress for 2 to 4 d after herbicide application reduced control of green foxtail with fluazifop-P by 40 and 57%, respectively.” (Boydston, Weed Sci.)

Low soil water content for 10 to 14 days before and 7 days after herbicide application reduced control of green foxtail with fenoxaprop, fluazifop-P, haloxyfop, and sethoxydim. Withholding irrigation for 10 to 14 days before herbicide application did not reduce control of green foxtail with normal use rates of herbicides if plots were irrigated at the time of application.” (Boydston, Weed Sci).

Reduced green foxtail control

Effect of soil pH on green foxtail growth?

**“Growth of green foxtail was greater at pH 4.8 than at pH 7.3.
(Weaver and Hamill, Weed Sci.)**

Here are some options for wild oat, not in any specific order.

1. RR crops: corn, soybean, canola
2. LL crops: corn, soybean, canola
3. Barley is very competitive. Take out early flush or two with tillage or Roundup.
4. Far-Go can be used in small grains, dry pea
5. Axial still works for some growers, not all.

6. Zidua is a long shot, but may work in some situations. I don't see Zidua being very effective for wild oat in conventional tillage because wild oat tends to be distributed 0-4 inches or deeper.

Zidua works best on the soil surface, needs to be in the germination zone. Thus, it may work better for wild oat or foxtail emerging close to the soil surface. In no-till, weeds are concentrated in the top inch or so, thus Zidua may be more effective in no-till.

However, Zidua needs a lot of rain (>0.5 inch) to be activated. Zidua can be tied up in old crop residue.

7. Later planting date to remove 1-2 weed flushes
8. Higher seeding rate to provide more competition
9. Taller variety
10. In no-till, spray glyphosate PRE as late as possible before crop emergence.
11. Always tank mix full rate Select with Liberty in LL canola (spray wild oat no later than 2-3 leaf stage of wild oat)
12. Consider a crop where you can use Select
13. May have to dust off Eptam off the shelf. It's still listed on CDMS.

Assuming a crop was in wheat in 2021, consider a heavy broadleaf rotation for a few years. One possible example may be:

RR Soybean – RR/LL Stack Canola – Barley – RR soybean – LL canola – Wheat

(In recent studies and grower experience, we have not seen sclerotinia become a huge problem in a tight soybean-canola rotation. But, still need to monitor and spray, especially in the canola.)

Anthem Flex = (Zidua + Air)

(dry pea, lentil, chickpea)

Best option?

- No-till
- Little crop residue
- Spray late as possible
- Rain to activate

- Needs significant rainfall event (0.5 inch)
- More useful in no-till where weeds are on surface with minimal old crop residue
- Intended primarily for control as weeds germinate, not POST

Anthem Flex Label:

- Fall or spring
- Can be tank mixed with Glyphosate or Liberty
- Use higher rate in soils with higher OM and heavy residue
- May result in temporary suppression of peas, lentil, chickpeas in wet conditions
- Dry weather may reduce efficacy
- Heavy trash may reduce efficacy
- Controlled: Barnyardgrass, foxtails, pigweeds,
- Suppressed: Downy brome, Japanese brome, wild oat, wild buckwheat, horseweed, kochia, nightshades, common ragweed

Anthem Flex = (Zidua + Aim)

(Sunflower)

- Needs significant rainfall event (0.5 inch)
- More useful in no-till where weeds are on surface with minimal old crop residue
- Intended primarily for control as weeds germinate, not POST

Anthem Flex Label:

- **Fall, Preplant, PPI, PRE**
- **Can be tank mixed with Spartan or Spartan Charge**
- Use higher rate in soils with higher OM and heavy residue
- May result in temporary suppression of sunflower in wet conditions
- Dry weather may reduce efficacy
- Heavy trash may reduce efficacy
- **Controlled:** Barnyardgrass, foxtails, pigweeds,
- **Suppressed:** Downy brome, Japanese brome, wild oat, wild buckwheat, horseweed, kochia, nightshades, common ragweed

Anthem Flex = (Zidua + Aim)

(Spring or Winter Wheat)

- Needs significant rainfall event (0.5 inch)
- More useful in no-till where weeds are on surface with minimal old crop residue
- Intended primarily for control as weeds germinate, not POST

Anthem Flex Label:

- **Delayed PRE, Early POST**
- **Apply when 80% of germinated seeds have a shoot at least 0.5 inch long**
- Use higher rate in soils with higher OM and heavy residue
- May result in temporary suppression of wheat in wet conditions
- Dry weather may reduce efficacy
- Heavy trash may reduce efficacy
- **Controlled:** Barnyardgrass, foxtails, pigweeds,
- **Suppressed:** Downy brome, Japanese brome, wild oat, wild buckwheat, horseweed, kochia, nightshades, common ragweed



Assure II

Select

**Assure II
+ Select**

Weed of the year: Kochia



There was a time when we planned to just spray Roundup POST

- **Fall burndown + residual:**
- **Spring burndown + residual:**
- **POST:**

Kochia control with fall-applied Fierce (2019)

(Fierce = Valor + Zidua)

Treatment ^a	Rate (oz)	Timing	Kochia control			
			May 14	May 23	Jun 5	Jul 3
			-----%-----			
Untreated			0	0	0	0
Glyphosate	32	Fall (Oct 18)	0	0	0	0
Fierce + Glyphosate	3.75 + 32	Fall	96	91	85	78
Spartan + Glyphosate	4 + 32	Fall	83	78	74	64
Fierce + Gly / Spartan Charge + Gly ^b	4.5 + 32 / 5 + 32	Fall / Spring	93	100	99	96
LSD			16.0	16.4	16.6	23.2

^a Glyphosate (Roundup Powermax) applied with AMS 2.5 gal/100 gal

^b Applied with MSO (1%)

Kochia control with fall-applied herbicides (2021)

			Kochia	Ruth
Treatment ^{ab}	Rate	Timing	Jun 7	Jun 7
			-----%-----	
Untreated			0	0
Glyphosate	32 oz	Fall	0	0
Gly + 2,4-D	32 oz + 1 pt	Fall	0	0
Gly + Clarity	32 oz + 4 oz	Fall	0	0
Gly + Sharpen	32 oz + 1 oz	Fall	0	0
Gly + Sharpen + 2,4-D	32 oz + 1 oz + 1 pt	Fall	0	0
Gly + Valor	32 oz + 3 oz	Fall	63	80
Gly + Valor + 2,4-D	32 oz + 3 oz + 1 pt	Fall	64	79
LSD				

^a Treatments applied October 9, 2020.

^b All Glyphosate treatments applied with AMS. Sharpen applied with MSO.







No Fall Valor



Fall Valor

Spring kochia burndown



- **Glyphosate**
- **Glyphosate + Sharpen**
- **Glyphosate + Aim**

- **Gramoxone**
- **Spartan Charge (Spartan + Aim)**

- **Gramoxone + Metribuzin**
- **Spartan + Metribuzin**

- **Liberty prior to canola, corn, soybean, sugarbeet**

Target 1-2" kochia....less control on 3" kochia

Kochia control with fall- and spring-applied herbicides (2021)

Treatment ^{ab}	Rate	Timing	Kochia		Colq		Ruth	
			Jun 2	Jun 10	Jun 2	Jun 10	Jun 2	Jun 10
(oz)			-----%-----					
Untreated			0	0	0	0	0	0
Spartan Charge	5	Spring	94	93	99	99	99	99
Valor / Auth MTZ	3 / 11	Fall / Spr	99	98	99	99	99	99
Auth MTZ	11	Spring	99	97	99	99	99	99
Valor / Spartan + Sharpen	3 / 4 + 1	Fall / Spr	95	90	99	99	99	99
Spartan + Sharpen	4 + 1	Spring	95	90	99	99	99	99
Reglone + Metribuzin	1.5 pt + 0.25 lb	Spring	91	93	99	97	88	52
Glyphosate	32	Spring	72	74	99	98	98	84
LSD			4.2	8.6	1	1.9	4.6	13.4

^a Valor applied Oct 9, 2020. Spring treatments applied May 26, 2021. Kochia 0.5-2", Colq 0.5-2", Ruth 0.5-2"

^b Auth MTZ, Spartan, and Sharpen applied with AMS + MSO. Reglone + Metr applied with NIS. Glyphosate applied with AMS.

Lighter kochia density

Kochia control with spring-applied burndown herbicides (2021)

Treatment ^{ab}	Rate (oz)	Timing May 26	Kochia		Colq	
			Jun 2	Jun 18	Jun 2	Jun 10
			-----%-----			
Untreated			0	0	0	0
Sharpen	1		55	28	99	99
Gramoxone	40		97	92	96	91
Reviton	1		42	23	98	99
Reviton	2		47	27	99	99
LSD			5.7	8.9	1.7	4.5

^a Treatments applied May 26. Kochia 0.5-2", Colq 0.5-3"

^b Sharpen and Reviton applied with AMS + MSO. Gramoxone 2SL applied with AMS + COC.

High kochia density

July 13



Untreated

**Balance + Harness + Atrazine
(applied preemergence)**

PRE: May 10

May 20: 0.17

May 21: 0.27

May 22: 0.12

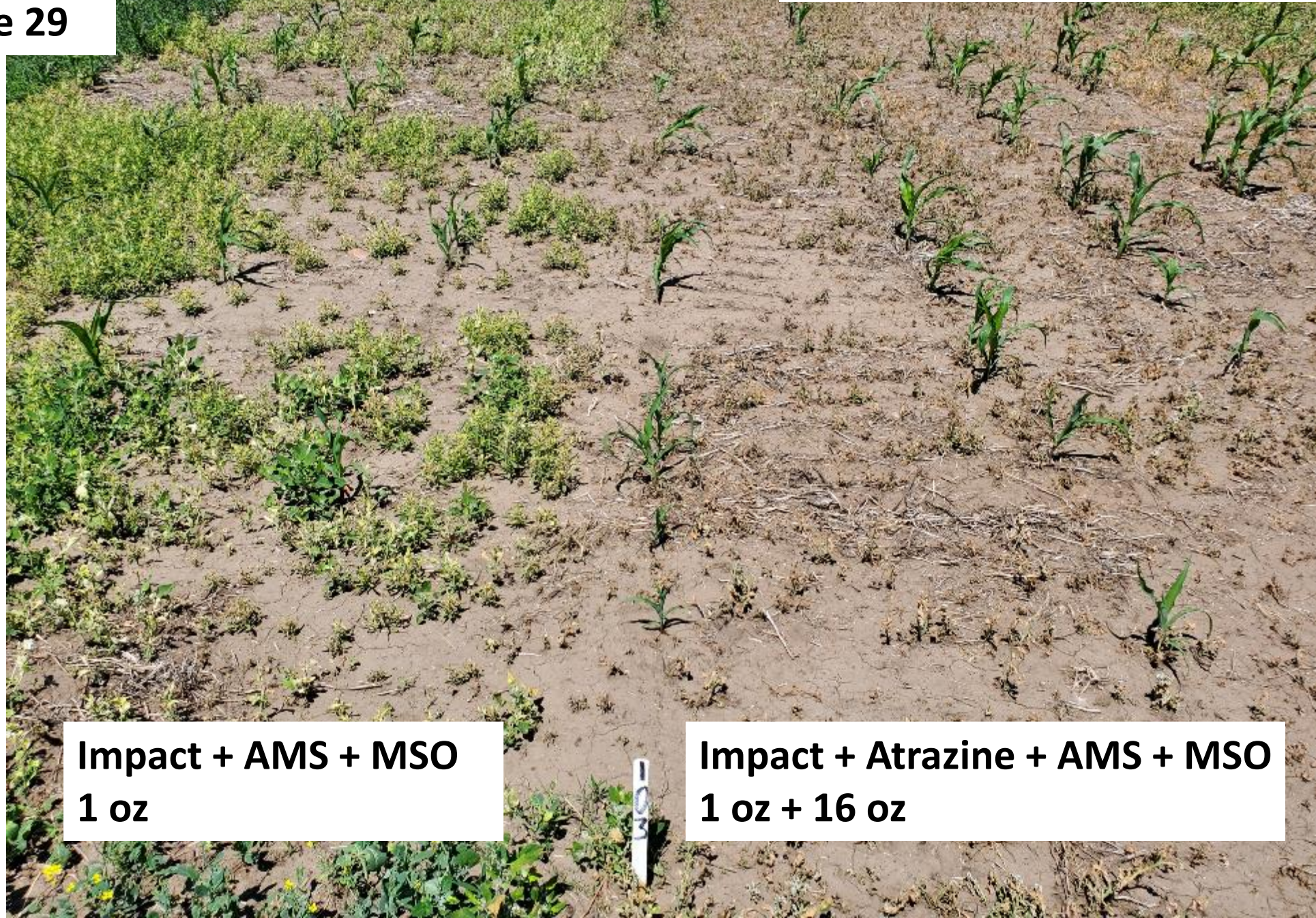
May 23: 0.23

May 24: 0.15

June 11: 0.95

Applied: June 22
Photo: June 29

Kochia control with Impact and Atrazine



Impact + AMS + MSO
1 oz

Impact + Atrazine + AMS + MSO
1 oz + 16 oz

Weed control in corn with Impact and Atrazine

Table. Weed control in corn with Impact and Atrazine. (2110)							
		Weed Control					
		Kochia			Common lambsquarters		
Treatment ^{ab}	Rate	Jun-29	Jul-7	Jul-23	Jun-29	Jul-7	Jul-23
		-----%-----			-----%-----		
Untreated		0	0	0	0	0	0
Impact	1 oz	59	90	75	20	94	94
Impact + Atrazine	1 oz + 16 oz	96	99	99	97	99	99
Impact	1.5 oz	64	96	84	23	98	98
Impact + Atrazine	1.5 oz + 16 oz	98	99	99	98	99	99
Impact	2 oz	65	97	84	27	98	98
Impact + Atrazine	2 oz + 16 oz	98	99	98	99	99	99
LSD (0.05)		5.5	1.0	5.6	6.1	1.1	1.2
^a Applied to 0.5-5 inch kochia and 3-7 inch lambsquarters							
^b Applied with MSO (1.2 pt) and AMS (5 gal)							

Huskie FX

- Bromoxynil + Pyrasulfatole + Fluroxypyr
- Huskie + Starane
- 13.5 – 18 fl oz
- Up to flag emergence
- Most annual broadleaf weeds

- Contains reduced Starane rate
- Equivalent to 0.18-0.24 pt Starane Ultra
- GoldSky has equivalent 0.27 pt
- Prefer up to 0.36 pt to minimize resistance development

Crop	ND Rotation Interval
Wheat, Barley	7 days
Oats, Rye, Triticale	1 month
Alfalfa ¹ , Corn, Millet, Soybeans	4 months
Canola, Chickpea, Dry bean, Flax, Dry pea, Mustards, Safflower, Sunflower	9 months
Lentil	18 months
¹ Thorough tillage prior to planting alfalfa and a minimum of 12 inches of rain is required between application and alfalfa seeding, in addition to the 4-month interval.	

Also consider:

Talinor + Starane (bicyclopyrone + bromoxynil + fluroxypyr)
Kochiavore/Cleansweep (2,4-D + bromoxynil + fluroxypyr)

Broadleaf weed control in wheat with Huskie FX

Table. Broadleaf weed control in wheat with Huskie FX. (2134)				
		Weed Control		
		Kochia		
Treatment ^a	Rate	Jun-23	Jul-9	Jul-29
		-----%-----		
Untreated		0	0	0
Huskie FX	15.5 oz	94	91	82
Huskie FX	18 oz	97	95	87
WideMatch + MCPA ester	16 oz + 8 oz	75	75	70
Talinor + CoAct+	13.7 oz + 2.75 oz	88	75	72
Bronate	16 oz	62	57	58
LSD (0.05)		3.2	7.8	9.9
^a Applied to 0.5-9 inch kochia				

Table 2. Kochia density and biomass and cover crop biomass in presence of kochia in fall- and spring-sown cover crop and fallow treatments in 2008 and 2009 at Garden City, KS.

Cover crop	Kochia density		Kochia biomass		Cover crop biomass	
	2008	2009	2008	2009	2008	2009
	plants/ft ²		lb/acre			
<i>Fall-sown</i>						
Fallow (no-cover control)	20.4 a [†]	2.5 a	93.7 a	51.8 a	0 c	0 c
Austrian winter pea	5.0 c	1.7 a-d	6.2 b	25.0 ab	1232 b	116 c Frost
Austrian winter pea-Winter triticale	1.3 c	0.6 bcd	0.3 b	0.9 b	2910 a	3142 a
Hairy vetch	10.0 b	2.2 abc	17.0 b	29.5 ab	1125 b	0 c Frost
Hairy vetch-Winter triticale	2.9 c	0.5 cd	0.6 b	0.3 b	2740 a	2660 a
Winter triticale	4.0 c	0.5 cd	0.9 b	0.3 b	1232 b	2615 a

Reviton label

PRODUCT INFORMATION

Weed Efficacy Information:

Postemergence Activity. Reviton is a nonselective contact (burndown) herbicide used to control or suppress a broad spectrum of emerged broadleaf and grass weeds. Reviton has excellent burndown activity on most young (generally less than 5 inches tall) annual weeds and suppresses the growth of perennial weeds by desiccating green foliage.

- Reviton must be applied with an adjuvant for optimum burndown activity (refer to adjuvant section for details).
- It is essential to obtain complete coverage of target weeds for adequate weed control. Inadequate coverage of target weeds, improper application technique, and/or application to mature, large (taller than 5 inches), stressed, or mown weeds will usually result in unacceptable weed control.
- Burndown activity may be slowed or reduced under cloudy and/or foggy or cooler weather conditions, or when weeds are growing under drought or other stress conditions.

Preemergence Activity. Reviton rapidly degrades following application and as a result, Reviton has no preemergence activity.

Canola tolerance to PP and PRE herbicides (2021)

		Preplant canola density	PRE canola density	DAP	Rain
Treatment ^a	Rate	3 WAP	3 WAP	5	0.07
	(fl oz)	m of row	m of row	7	0.23
Roundup	32	6.5	6.5	15	0.35
Reviton	1	2.5	5.3	18	0.47
Reviton	2	1.3	4.6		
Reviton	4	0.7	3.1		
LSD (0.10)		1.2	2.0		

^a Reviton applied with AMS + MSO (8.5 lb/100 gal + 1%).

Questions?