

***Observations on Control
and Persistence of
Old World Bluestems***

Keith Harmoney, KSU-ARCH, Hays

**Warning: This plant may be harmful to
your native rangeland ecosystem.**



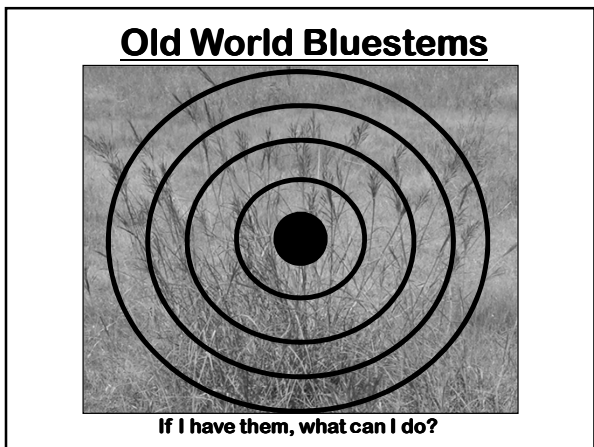


Avoid getting or spreading more OWB!

If seeding any acres to grass, make sure seedlot is not contaminated with OWB seed

If feeding hay on range, make sure it doesn't contain any OWB (beware of road ditch hay and out of state grass hay)

In pastures already with OWB, manage to avoid seed production: heavily graze, mow or burn patches (especially prior to applying herbicide)

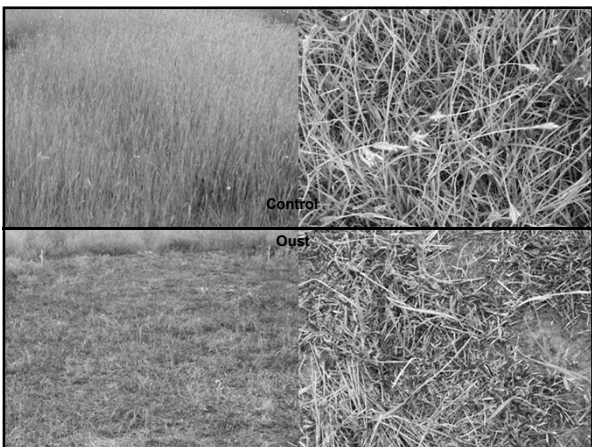


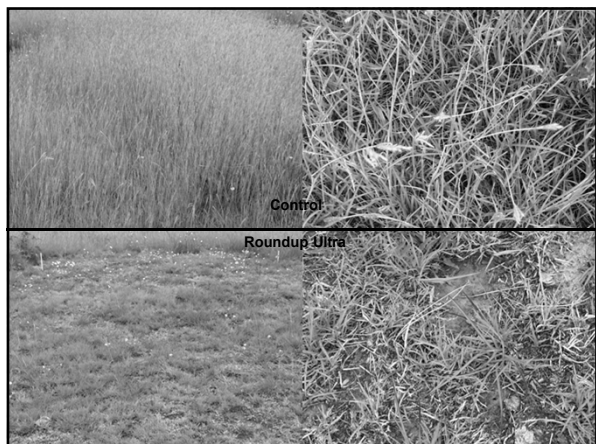
Our very 1st control study:
Effects of 9 herbicides applied to yellow old world bluestem at 4 leaf stage

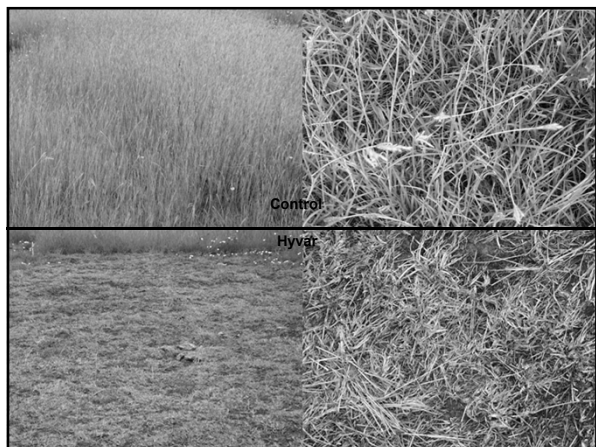
Herbicide (AI rate)	Cont.	Freq.	Yield
	%	%	lb/acre
Arsenal (imazapyr, 1.25 lb/acre)	96	13	110
Hyvar (bromacil, 7 lb/acre)	87	47	256
Oust (sulfometuron, 3 oz/acre)	63	86	618
Plateau (imazapic, 2.25 oz/acre)	57	85	976
Pursuit (imazethapyr, 1.6 oz/acre)	42	88	1060
Pramitol (prometon, 16 lb/acre)	31	90	1450
Roundup (glyphosate, 3 lb/acre)	43	96	894
Poast Plus (sethoxydim, 4 oz/acre)	11	98	1546
Select (clethodim, 3 oz/acre)	18	99	1323
Control (no herbicide)	0	98	1954











Our 2nd Study

Herbicide Split Application – 2003-2005
1st at 4-5 leaf stage, 2nd 8 weeks later

	AI rate/acre	Tillers #/ft ²	Freq. %	Cont. %	Heads #/ft ²	Yield lb/a
Arsenal	Imazapyr 0.25 lb	47	14	82	0.4	1028
Roundup	Glyphosate 1.0 lb	10	12	96	0.7	577
Oust	Sulfometuron 0.14 lb	302	86	67	16.5	2061
Plateau	Imazapic 0.09 lb	255	92	33	42.7	2814
Pursuit	Imazethapyr 0.05 lb	239	96	20	99.8	3155
Control	Control	223	97	0	80.0	3842











Our 3rd Study
Glyphosate Single or Split Application – 2006-2008
Early at 4-5 leaf stage, Late 8 weeks later

Glyphosate Single or Split Application – 2006-2008
Early at 4-5 leaf stage, Late 8 weeks later

Name	AI Rate/application	
	Early	Late
Control	n/a	n/a
Glyphosate	1 lb/ac	n/a
	2 lb/ac	n/a
	3 lb/ac	n/a
	n/a	1 lb/ac
	n/a	2 lb/ac
	n/a	3 lb/ac
	1 lb/ac	1 lb/ac
	1 lb/ac	2 lb/ac
	2 lb/ac	1 lb/ac
	2 lb/ac	2 lb/ac
	3 lb/ac	1 lb/ac
	3 lb/ac	2 lb/ac

Glyphosate Single or Split Application – 2006-2008

Caucasian Bluestem		Frequency %		Yield lb/ac	
		2006	2008	2006	2008
Control	n/a	94	99	3330	5100
Glyphosate	1 lb early	96	80	3190	3740
	2 lb early	80	64	1890	3390
	3 lb early	51	61	1470	1990
	1 lb late	72	89	2510	4160
	2 lb late	51	83	1860	3060
	3 lb late	44	67	1830	2820
	1 lb / 1 lb	54	12	1690	390
	1 lb / 2 lb	19	3	1300	360
	2 lb / 1 lb	29	7	840	100
	2 lb / 2 lb	9	1	1360	0
	3 lb / 1 lb	9	6	1020	10
	3 lb / 2 lb	3	3	1330	210

LSD_{0.05}

18

830

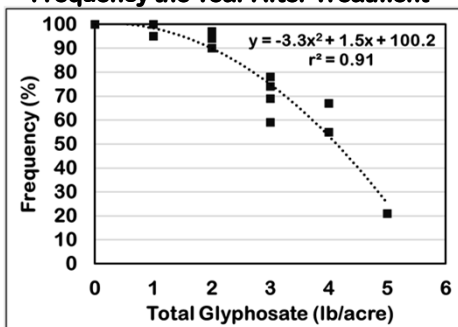
Glyphosate Single or Split Application – 2006-2008

Caucasian Bluestem		Year After Frequency %	
		2006	2008
Control	n/a	100	99
Glyphosate	1 lb early	100	77
	2 lb early	94	58
	3 lb early	69	52
	1 lb late	95	81
	2 lb late	90	11
	3 lb late	59	2
	1 lb / 1 lb	97	2
	1 lb / 2 lb	78	0
	2 lb / 1 lb	74	0
	2 lb / 2 lb	67	0
	3 lb / 1 lb	55	2
	3 lb / 2 lb	21	0

LSD_{0.05}

19

**Relationship of Glyphosate Total lb/acre
in 2006 and Caucasian OWB
Frequency the Year After Treatment**





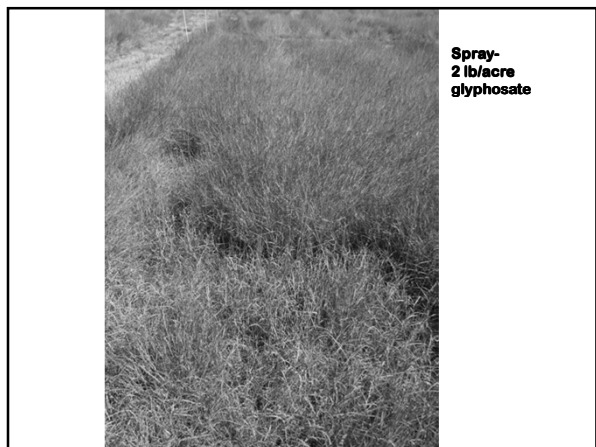
A 4th Study: Ropewick Application

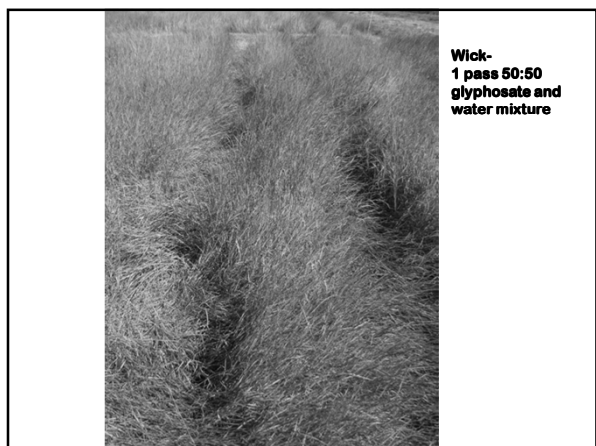
Ropewick - glyphosate 50:50 mixture with water
Spray - glyphosate 2 lb/acre broadcast

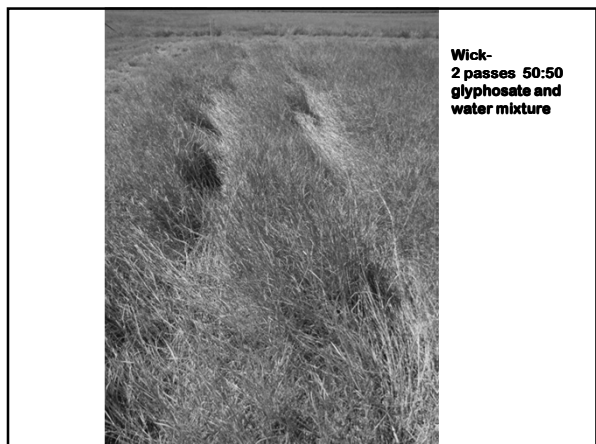
**Applied at head emergence, two consecutive years
on the same plots**

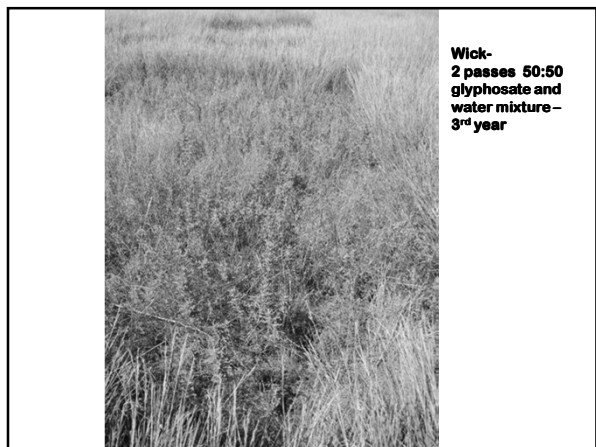
	%Control		
	1 st Year	2 nd Year	3 rd Year
Ropewick, 1 pass	31	69	65
Ropewick, 2 passes	64	91	91
Spray	93	99	98
Untreated	0	0	0

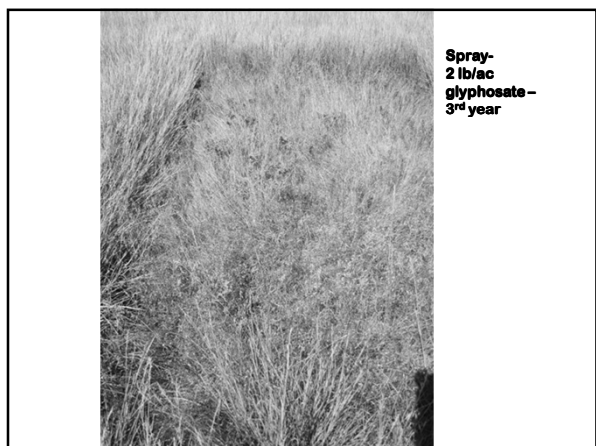












**Old World Bluestem Seedbank:
An On Farm Evaluation- Marion Cty**

- 2005- Sprayed with 2 lb/ac glyphosate**
- 2006- Sampled in 50 pairwise frames between sprayed and non-sprayed areas**
- 2006- Sprayed again with 2 lb/ac glyphosate**
- 2007- Sampled in 50 pairwise frames between sprayed and non-sprayed areas**
- 2008- Sampled in 50 frames in previously sprayed areas**





**Old World Bluestem Seedbank:
An On Farm Evaluation- Marion Cty**

	OWB Seedlings plants/ft ²	
Spray ←	2006-	7.10
Spray ←	2007-	0.11
	2008-	0.06



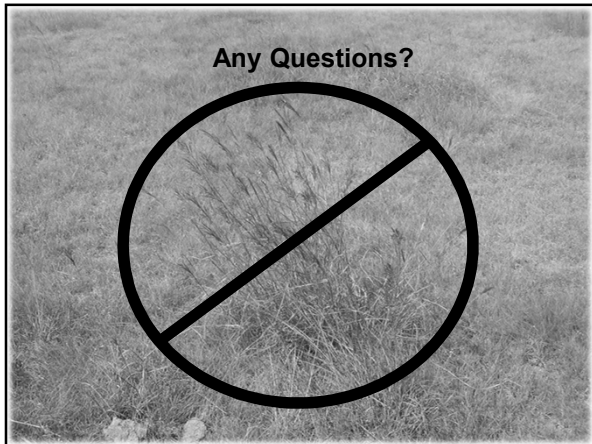
**Old World Bluestem Seedbank:
An On Farm Evaluation- Marion Cty**

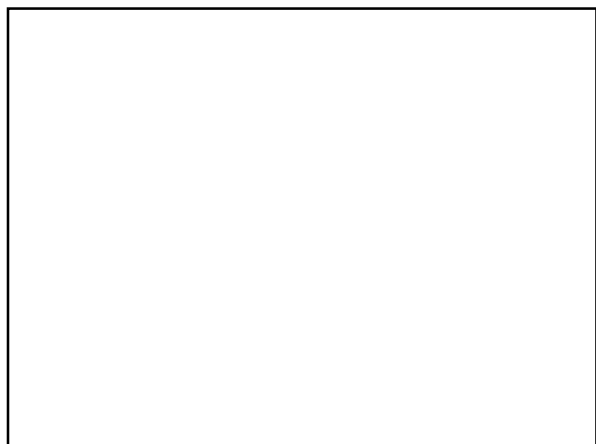
	<u>Untreated</u> <u>% Cover</u>	<u>Glyphosate</u> <u>% Cover</u>
Big bluestem	10.5	0.2
Little bluestem	25.2	2.8
Indiangrass	15.7	1.8
Tall dropseed	1.6	4.8
Switchgrass	20.2	4.8
Sideoats grama	3.8	2.9
Caucasian OWB	0.0	1.2
Western ragweed	2.1	23.0
Annual broomweed	0.0	6.9

Precautions


- 1. Treating with glyphosate will injure most all vegetation**
- 2. Controlled bare areas susceptible to weeds and erosion**
- 3. Reseeding to native species may be necessary**
- 4. Time to re-establishment by OWB in seedbank unknown**
- 5. Almost no research on OWB re-invasion, so information is greatly lacking**







Where is OWB found?
Road survey of Ellis, Trego, and Russell Counties



— Caucasian Bluestem
— Yellow Bluestem