

**Old World Bluestems**

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**Outline of presentation**

- Native bluestems
- Old World Bluestems
- Previous research
- Ongoing research
- Control options

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**Big Bluestem (*Andropogon gerardii*)**



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**Little Bluestem**  
**(*Schizachyrium scoparium*)**



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**Silver bluestem**  
**(*Bothriochloa laguroides*)**



- Native, warm-season, perennial bunchgrass
- 2-4 ft tall
- Silver-colored seedheads
- Crooked stems
- Nodes with flattened hairs
- Also called silver beardgrass

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**Caucasian bluestem**  
**(*Bothriochloa bladhii*)**



Photo by Mike Haddock

- Introduced South Asia and Australia
- 2-3 ft tall
- Stems glabrous
- Usually with long hair at base of leaf blade
- Leaves smell like terpineol when crushed
- Also called Australian bluestem

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## Comparison of seedheads

Silver bluestem



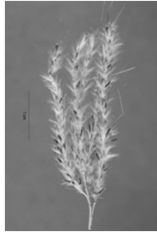
Photo by Mike Haddock

Caucasian bluestem



Photo by Mike Haddock

Yellow bluestem



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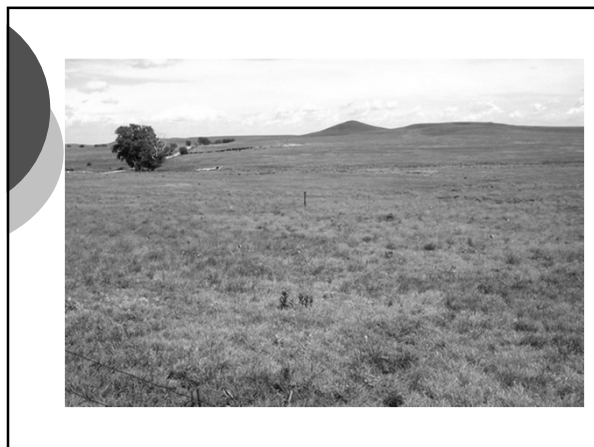
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## Objectives

- Determine the efficacy of glyphosate and imazapyr for control of Caucasian bluestem
- Determine the impact of these herbicides on associated species

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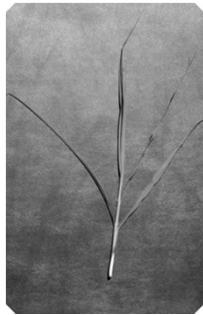
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Caucasian bluestem at 4-5 leaf stage



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% Control of Caucasian Bluestem  
June 1, 2006

Herbicide	Rate (lbs/A)	4 MAT	1 YAT
Glyphosate	2	42	76
Glyphosate	3	75	94
Glyphosate	4	66	77
Imazapyr	1	99	99
Imazapyr	1.25	100	96
Check	--	0	1

LSD<sub>0.05</sub> = 17 20

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3 lbs/acre Glyphosate – 4 days after treatment



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3 lbs/acre Glyphosate – 4 months after treatment



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3 lbs/acre Glyphosate – 1 year after treatment



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**% Control of Caucasian Bluestem  
June 5, 2007**

Herbicide	Rate (lbs/A)	4 MAT	1 YAT
Glyphosate	2	91	88
Glyphosate	3	96	97
Glyphosate	4	96	93
Imazapyr	1	100	99
Imazapyr	1.25	99	100
Check	--	0	4

LSD<sub>0.05</sub> =      4      8

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1 lbs/acre Imazapyr – 4 months after treatment




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1 lbs/acre Imazapyr – 1 year after treatment




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**Warm-season grass response (% change)  
to herbicides applied June 1, 2006**

Herbicide	Rate (lbs/A)	4 MAT	1 YAT
Glyphosate	2	-100	-93
Glyphosate	3	-100	-100
Glyphosate	4	-100	-99
Imazapyr	1	-62	-32
Imazapyr	1.25	-22	+10
Check	--	-35	+15

LSD<sub>0.05</sub> =      59      83

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**Warm-season grass response (% change)  
to herbicides applied June 5, 2007**

Herbicide	Rate (lbs/A)	4 MAT	1 YAT
Glyphosate	2	-100	-99
Glyphosate	3	-100	-100
Glyphosate	4	-100	-100
Imazapyr	1	-29	-21
Imazapyr	1.25	-74	-78
Check	--	+23	-43

LSD<sub>0.05</sub> =      48      35

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**Remnant native grass 4 MAT with Imazapyr**




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### Summary (Fick, 2009)

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- Caucasian bluestem control - 2006
  - Imazapyr provided nearly 100% control and glyphosate 42-75% control 4 MAT
  - Glyphosate at 2 lbs/acre provided only 76% control 12 MAT
- Caucasian bluestem control - 2007
  - All treatments provided > 88% control 4 and 12 MAT

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### Summary (Fick, 2009)

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- Warm-season grass response
  - Native w-s grasses were negatively impacted by all treatments in both years, but were more tolerant to imazapyr

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### Chase County – June 13, 2014

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Chase County – July 15, 2014  
(0.25 lb/A Imazapyr)




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Chase County – 2014  
(% Composition after treatment with imazapyr)

Category	June 15	August 15	September 15
OWB	47	20	5
Warm-season	24	41	67
Cool-season	1	7	7
Forbs	28	31	21
Bare ground	10	16	21
Litter	1	22	29

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Chase County – September 15, 2014  
(1 or 2 applications of 0.25 lb/A imazapyr)




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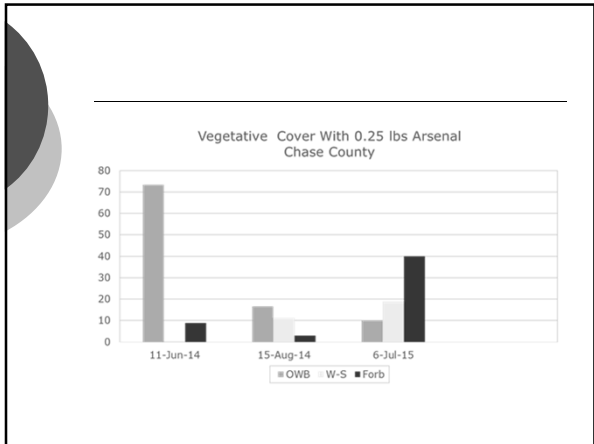
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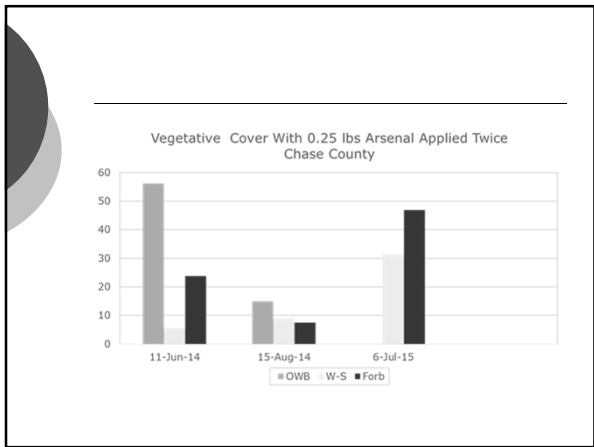
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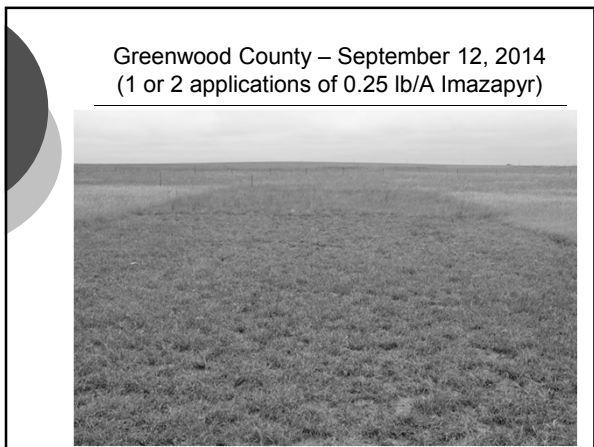
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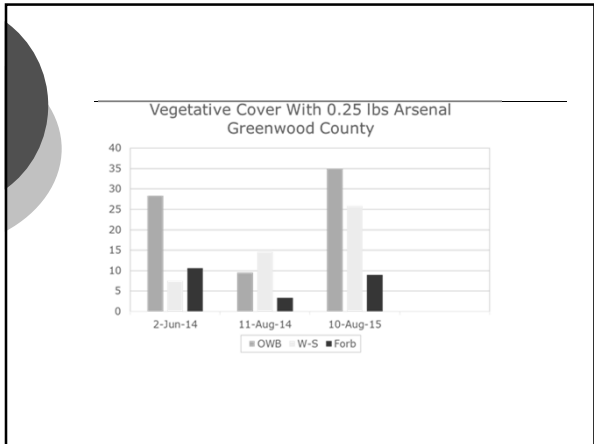
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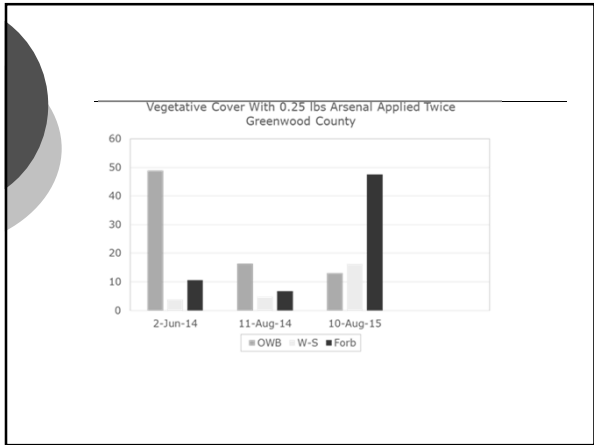
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**Chase County – 2014 Rate Study**  
(% composition after treatment with imazapyr – September 15)

Category	0	0.25	0.5	0.75	1
OWB	56	12	4	12	2
Warm-season	28	69	87	77	88
Cool-season	5	6	6	5	6
Forbs	11	13	3	6	4
Bare ground	11	12	16	20	18
Litter	10	11	16	25	24

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**Chase County – 0.25# Imazapyr 3 MAT**



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**Chase County – 0.5# Imazapyr 3 MAT**



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**Chase County – 0.75# Imazapyr 3 MAT**



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**Chase County – 1.0# Imazapyr 3 MAT**




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**Chase County – 2014 Rate Study (0-1 lb/acre imazapyr)  
(% cover 1 year after treatment)**

Category	0	0.25	0.5	0.75	1
Old World Bluestem	30	10	8	13	4
Warm-season grass	19	30	41	30	35
Cool-season grass	1	5	4	2	2
Forbs	21	16	18	22	20
Bare ground	14	21	18	30	28
Litter	3	3	2	2	2

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**Old World Bluestem in Riley County**




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Riley County – 2014 Rate Study (0-1 lb/acre imazapyr) (% cover 1 year after treatment)					
Category	0	0.25	0.5	0.75	1
Old World Bluestem	44	27	23	12	1
Warm-season grass	7	8	3	7	2
Cool-season grass	3	5	2	3	6
Forbs	28	37	43	44	43
Bare ground	9	23	39	44	52
Litter	12	3	6	4	8

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- Old World Bluestem Control Options**
- Spot treatment with glyphosate
  - Wiping or wicking glyphosate
  - Tillage and planting Roundup Ready crop
  - Burn or mow prior to herbicide application
  - Imazapyr treatment

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**Contact Information**

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