



# **Controlling Old World Bluestem & Integrating Fire in Rangeland Weed Control Programs**

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Caucasian Bluestem



Yellow Old World Bluestem

Photos by Mike Haddock

# Caucasian bluestem (*Bothriochloa bladhii*)

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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 terpine when crushed
- Also called Australian bluestem, B. Dahl



# Yellow bluestem

## (*Bothriochloa ischaemum*)

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- Introduced from China, Africa, Eurasia, Mediterranean
- Up to 3 ft tall
- Stems decumbent at base, grooved on one side, glabrous to short-hairy at nodes
- Also called King Ranch Bluestem, Turkestan Bluestem, Plains, WW-SPAR, Ironmaster
- Major identifying characteristic is digitate inflorescence

# Old World Bluestem in Riley County

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# Stand of Caucasian Bluestem in Greenwood County, KS

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## Old World Bluestems

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- Caucasian bluestem (*Bothriochloa bladhii*)
- Yellow OWB (*Bothriochloa ischaemum*)

Planted in central and southern Great Plains

- Ease of establishment
- Production potential
- Available seed
- Cost





# Characteristics of Old World Bluestems

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- More abundant on heavy textured soils
- Reproduces by seed and roots
- Invades disturbed areas, waste ground abandoned fields, roadsides, and pastures
- Less palatable than most native grasses
- Allelopathy



# Previous Research

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- Medlin et al. 1998. Weed Tech.12:286-292
- Harmony et al. 2004. Weed Tech. 18:545-550
- Harmony et al. 2007. Weed Tech. 21:573-577
- Fick 2009. Abstracts Soc. Range Manage. Paper No. 83-4.
- Robertson, 2009 Oklahoma St. Univ.
- Harmony et al. 2010. Invasive Plant Sci. and Manage. 3:310-314



# Ropewick Study by Keith Harmoney at Hays, KS

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- 50:50 mixture of glyphosate with water
- Spray 2 lbs/acre broadcast
- Applied at head emergence

	Y1	Y2	Y3
Ropewick, 1 pass	31	69	65
Ropewick, 2 pass	64	91	91
Spray	93	99	98

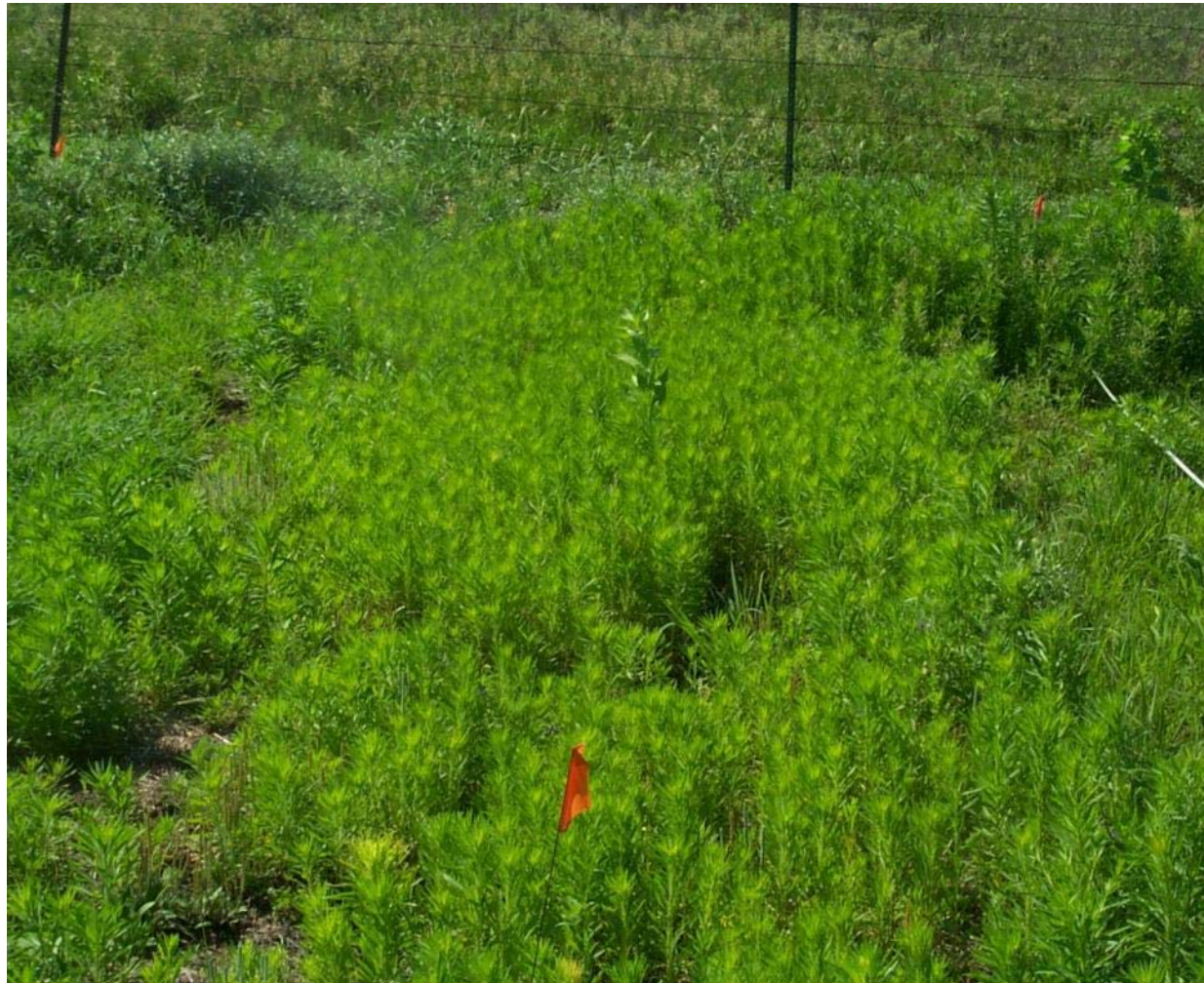
## Caucasian bluestem at 4-5 leaf stage

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3 lbs/acre Glyphosate – 1 year after treatment

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1 lbs/acre Imazapyr – 1 year after treatment

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# Chase County – June 13, 2014

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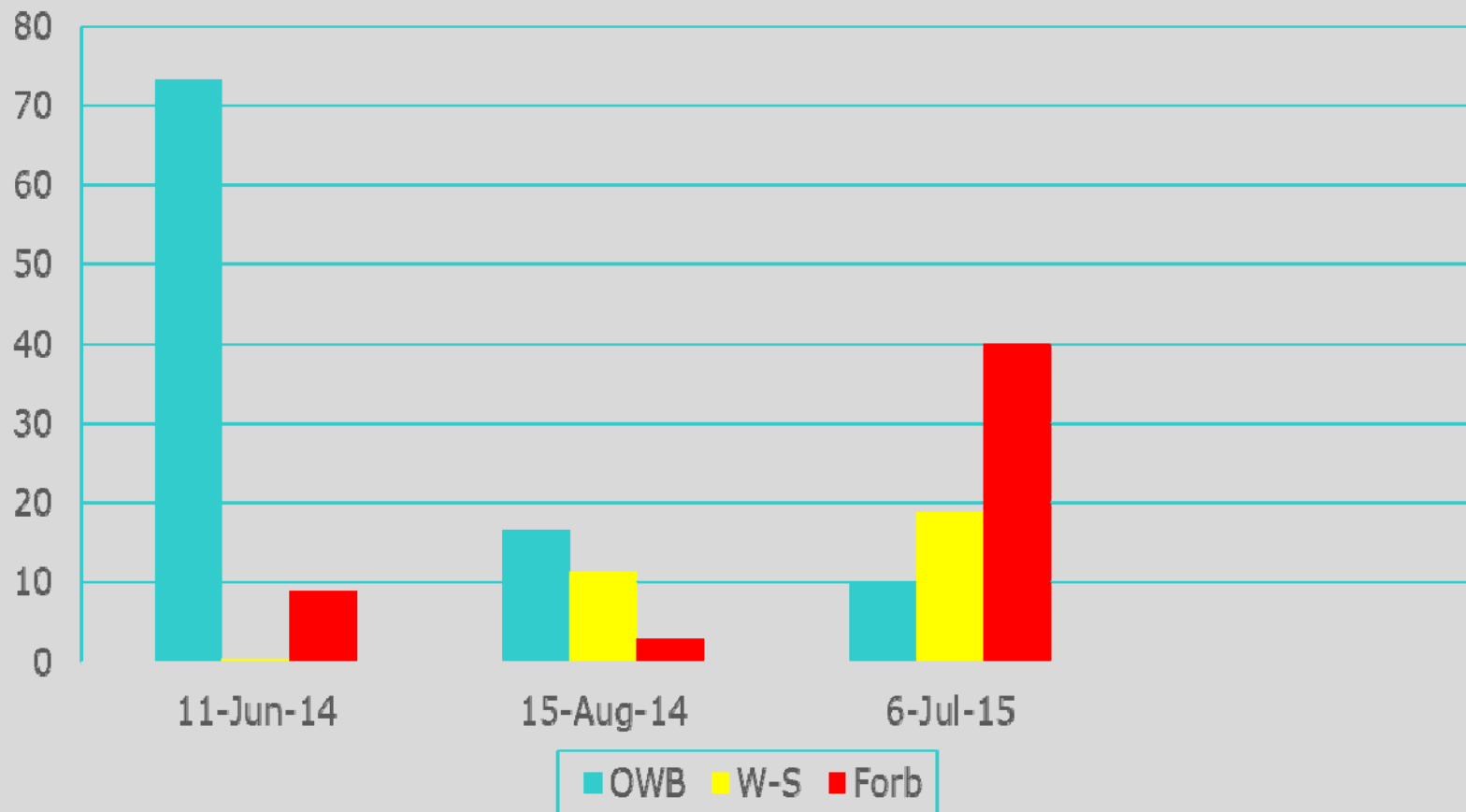
# Chase County – July 15, 2014 (0.25 lb/A Imazapyr)

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## Vegetative Cover With 0.25 lbs Arsenal Chase County



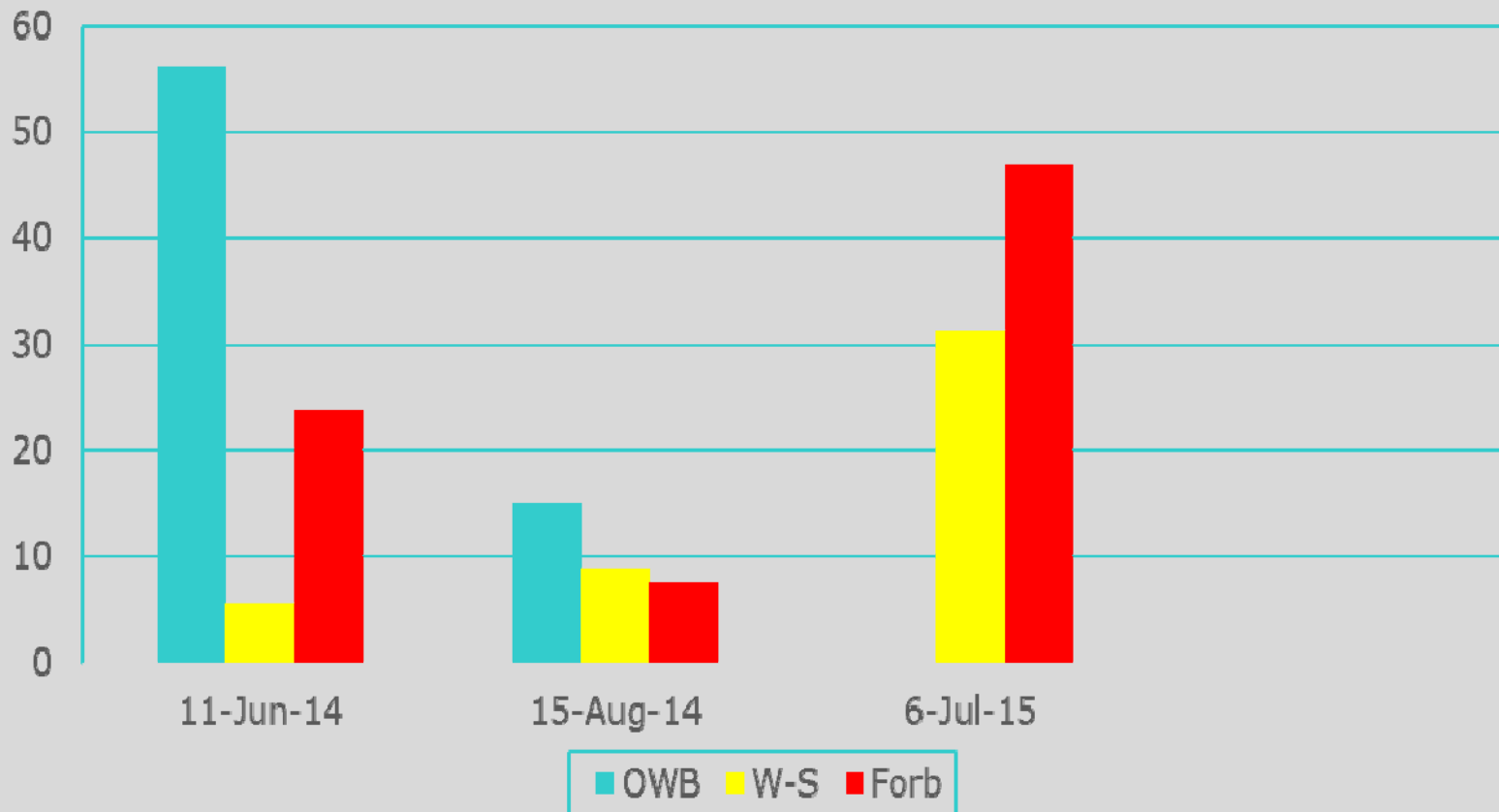
# Chase County – September 15, 2014

(1 or 2 applications of 0.25 lb/A imazapyr)

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## Vegetative Cover With 0.25 lbs Arsenal Applied Twice Chase County



## Chase County – 0.25# Imazapyr 3 MAT

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## Chase County – 0.5# Imazapyr 3 MAT

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

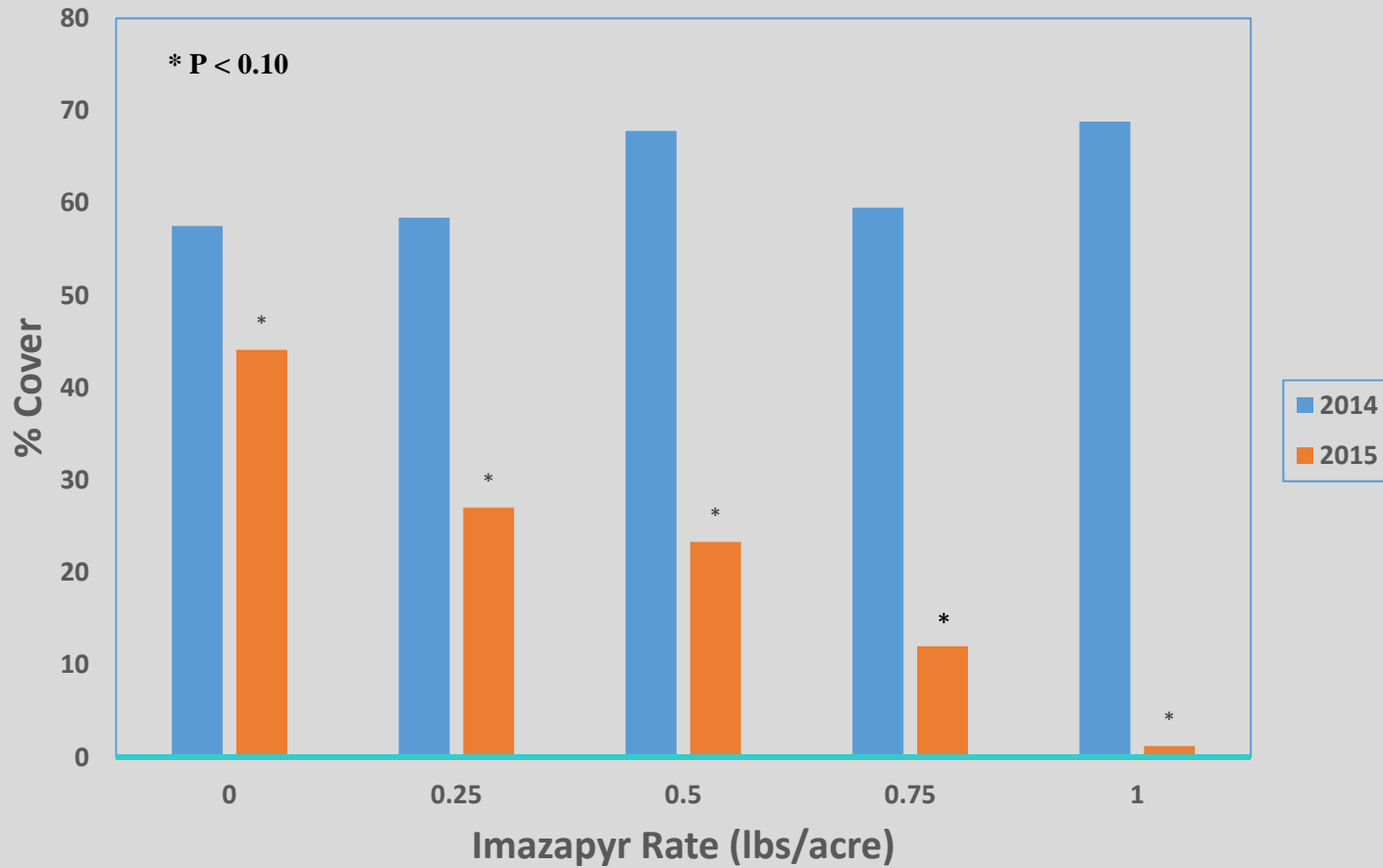
Category	0	0.25	0.5	0.75	1
Old World Bluestem	30	10	8	13	4
Warm-season grass	19	30	41	30	35
Cool-season grass	1	5	4	2	2
Forbs	21	16	18	22	20
Bare ground	14	21	18	30	28
Litter	3	3	2	2	2

# Caucasian bluestem – Riley County

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# Change in OWB Cover Riley County







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

<b>Category</b>	0	0.25	0.5	0.75	1
<b>Old World Bluestem</b>	44	27	23	12	1
<b>Warm-season grass</b>	7	8	3	7	2
<b>Cool-season grass</b>	3	5	2	3	6
<b>Forbs</b>	28	37	43	44	43
<b>Bare ground</b>	9	23	39	44	52
<b>Litter</b>	12	3	6	4	8



## Percent cover response to herbicide treatment in Chase County – July 8, 2016

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<b>Arsenal (0.5)</b>	<b>Litter</b>	<b>Bare</b>	<b>OWB</b>	<b>W-S</b>	<b>C-S</b>	<b>Forb</b>
Original	0.5	11.7	28.4	25.2	2.4	18.0
11 MAT	7.6	13.8	7.3	31.3	1.5	28.3
<b>Roundup (2.0)</b>	<b>Litter</b>	<b>Bare</b>	<b>OWB</b>	<b>W-S</b>	<b>C-S</b>	<b>Forb</b>
Original	0.7	13.4	20.9	29.8	1.8	16.1
11 MAT	13.4	29.6	0.2	0.6	4.1	55.7
<b>Untreated</b>	<b>Litter</b>	<b>Bare</b>	<b>OWB</b>	<b>W-S</b>	<b>C-S</b>	<b>Forb</b>
Original	0	15.6	31.6	19.8	1.4	18.1
11 MAT	5.6	19.1	28.8	15.6	0.8	18.1



## Old World Bluestem Control Options

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- Spot treatment with glyphosate
- Wiping or wicking glyphosate
- Tillage and planting Roundup Ready crop
- Burn or mow prior to herbicide application
- Imazapyr treatment
- Renovation of OWB infested sites needs further study



# Use of fire in rangeland weed control

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- Late spring prescribed burning
- Integrating prescribed burning and herbicides
- Late summer prescribed burning



# Consumption of forbs by steers in the Flint Hills

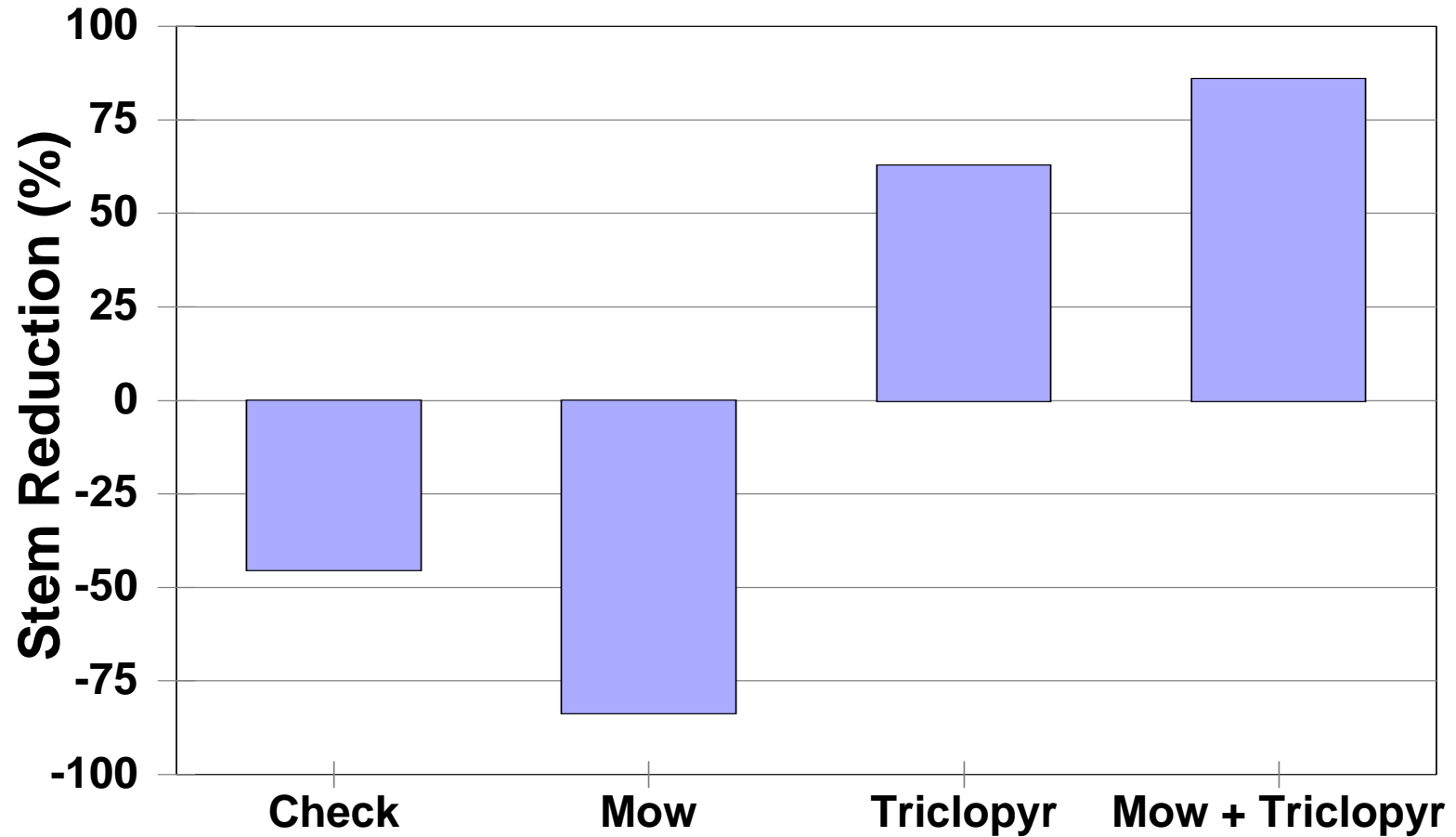
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<b>Treatment</b>	<b>Yield (lbs/acre)</b>	<b>% Disappearance</b>
<b>Late spring burn</b>	<b>160</b>	<b>31</b>
<b>Not burned</b>	<b>300</b>	<b>40</b>



5/25/2005

# Integrated Sericea Lespedeza Control 1997 Blaine, KS - 1 YAT









## Effects of prescribed burning on dry matter and seed production of sericea lespedeza

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<b>Item</b>	<b>April 1</b>	<b>August 1</b>	<b>September 1</b>
DM (mg/plant)	3954a	460b	163b
Seed wt (mg/plant)	924a	42b	1b
Seeds (no./plant)	711a	33b	0.5b



# Contact Information

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