



Reasons for Conducting a Prescribed Burn

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History of Burning in the Kansas Flint Hills

- ✦ Occurred since 1880s
- ✦ Lessees required that lands be burned (higher nutritive value of forage)
- ✦ Historically burning was done in January-February
- ✦ Gradually burning shifted to late March and April
- ✦ Growing season or fall burning

“Burning pastures in the spring is a common practice on many Kansas farms.”
– R.L. Hensel (1923)



Purposes for Burning

- ✦ Fuel reduction
- ✦ Seedbed preparation
- ✦ Disease control
- ✦ Thinning
- ✦ Suppression of shrubs
- ✦ Reduction of invasive species
- ✦ Removal of litter
- ✦ Wildlife habitat
- ✦ Increased herbage yields
- ✦ Increased availability of forage
- ✦ Improved grazing distribution
- ✦ Increased livestock gains

100 + years without fire!





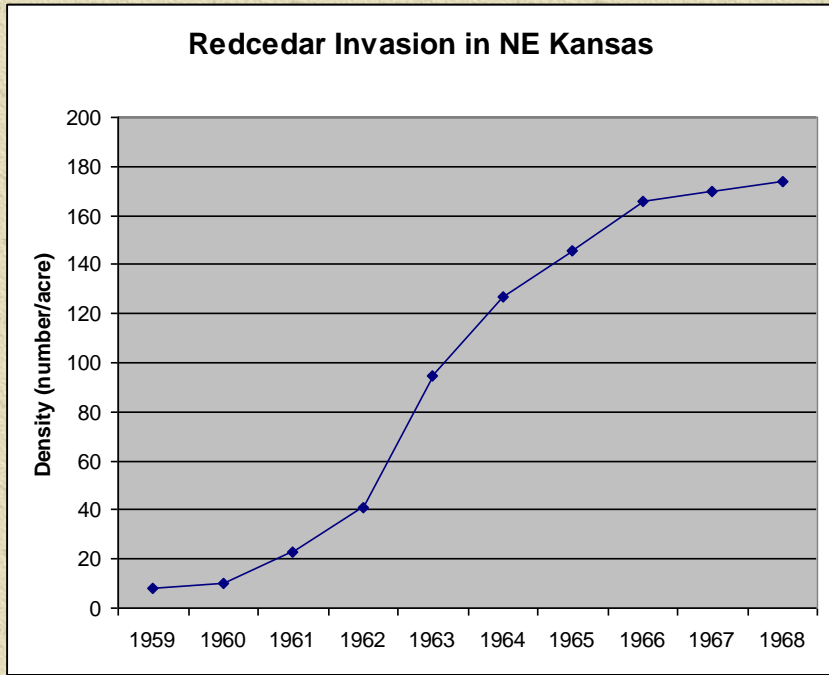
Woody Plant Invasion

- ✦ Bragg and Hulbert (1976): tree cover increased 24% from 1856 to 1969; combined tree and shrub cover increased 34% from 1937 to 1969
- ✦ Briggs and Gibson (1992): woody plant densities on Konza Prairie decrease slowly with annual burning and increase rapidly with less frequent burning
- ✦ Buckbrush, eastern redcedar, smooth sumac, roughleaf dogwood, inland ceanothus, leadplant



Eastern Redcedar



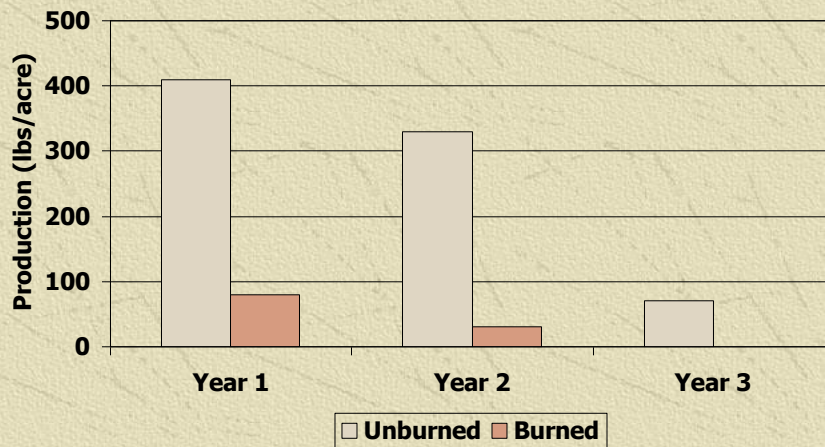


Kentucky bluegrass response to burning Bluestem range

Date	Basal cover	Composition
March 20	0.05 b	0.4
April 10	0.06 b	0.5
May 1	0.04 b	0.4
Unburned	1.25 a	10.8

Anderson et al. (1970)

Japanese Brome Response to Prescribed Burning





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

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

Alexander et al. 2017

Maintain Prairie Ecosystem Remove Thatch and Litter



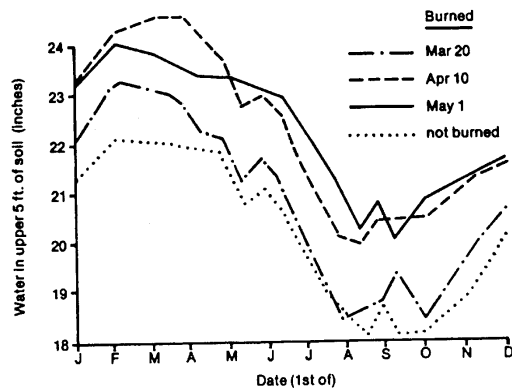
Prescribed burning can be used to benefit many species.

Forage and weed yields in lbs/acre on ordinary upland site (1958-1965)

Time of burning	Forage yield	Weed yield
March 20	2612 a	335 b
April 10	3238 b	289 b
May 1	3529 bc	161 a
Check	3919 c	300 b

Owensby and Anderson, 1967

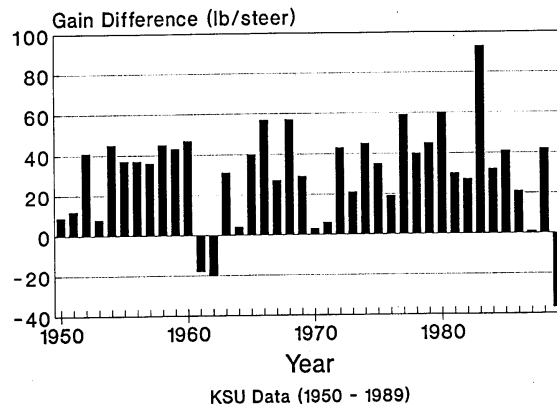
Soil moisture in upper 5 feet of soil



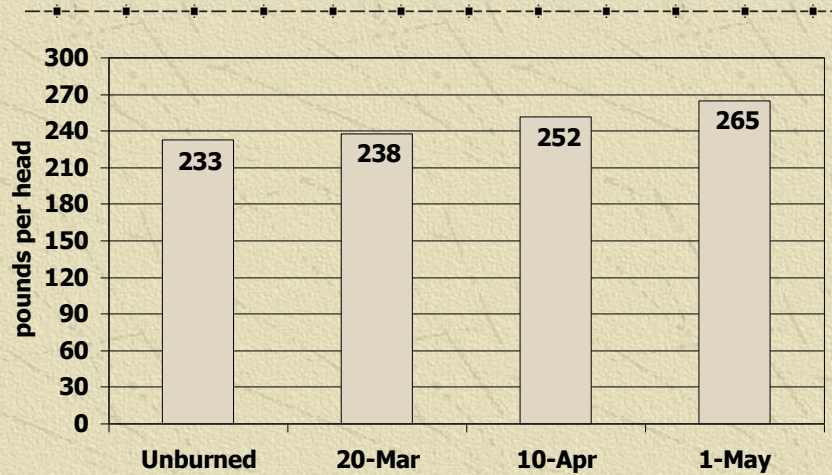
Grass response to burning of grazed rangeland in the Flint Hills

Species	UB	Early	Mid	Late
Big bluestem	1.50a	2.01b	2.22b	2.52c
Little bluestem	1.21b	0.78a	1.09b	1.17b
Indiangrass	0.34a	0.35a	0.64b	0.71b
Switchgrass	0.08a	0.08a	0.08a	0.16b
Sideoats grama	0.75a	0.97b	0.76a	0.79a
Kentucky bluegrass	1.25a	0.05b	0.06b	0.04b

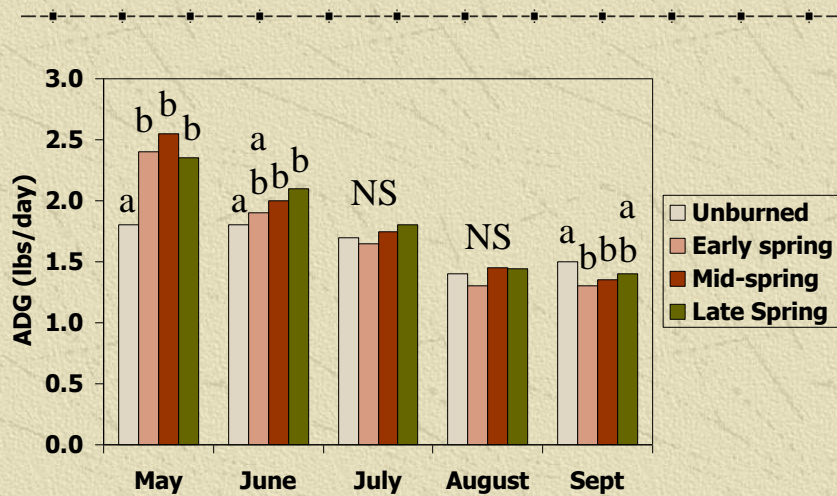
Steer gain on late spring burned pastures vs unburned



Average steer gains May 1 to October 1



Burning effects on steer gains (1950-1965)



Steer diets as affected by late-spring burning

Parameter	Unburned	Burned
% Crude protein	10.2 a	10.9 a
% NDF	80.7 a	82.4 a
% ADF	53.0 a	51.4 a
% Digestibility	49.8	49.2

Woolfolk et al., 1975

Special Cases

- ✦ Prairie threeawn: reduce by fall burning prior to early December (Owensby and Launchbaugh, 1977)
- ✦ Annual broomweed: removal of mulch by fall or winter burning increases broomweed compared to unburned (Towne and Owensby, 1983)
- ✦ Patch burning (Fuhlendorf and Engle, 2001)

Initial BW, final BW, total BW gain, and ADG by treatment

Item	CON	PB	P-Value
Initial BW, lbs	562	562	0.98
Final BW, lbs	834	841	0.51
Total BW gain, lbs	272	279	0.35
ADG lbs/day	2.36	2.43	0.35

CON = control pastures burned yearly. PB = patch-burn pastures, where one-third of the pasture was burned yearly on a rotation.

Farney et al. 2017

Contact Information

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