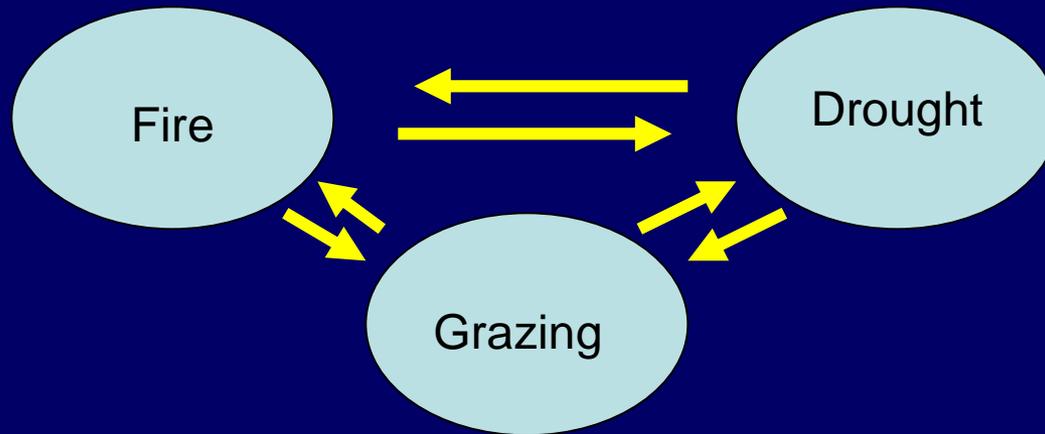


Grazing Management after Fire and Drought

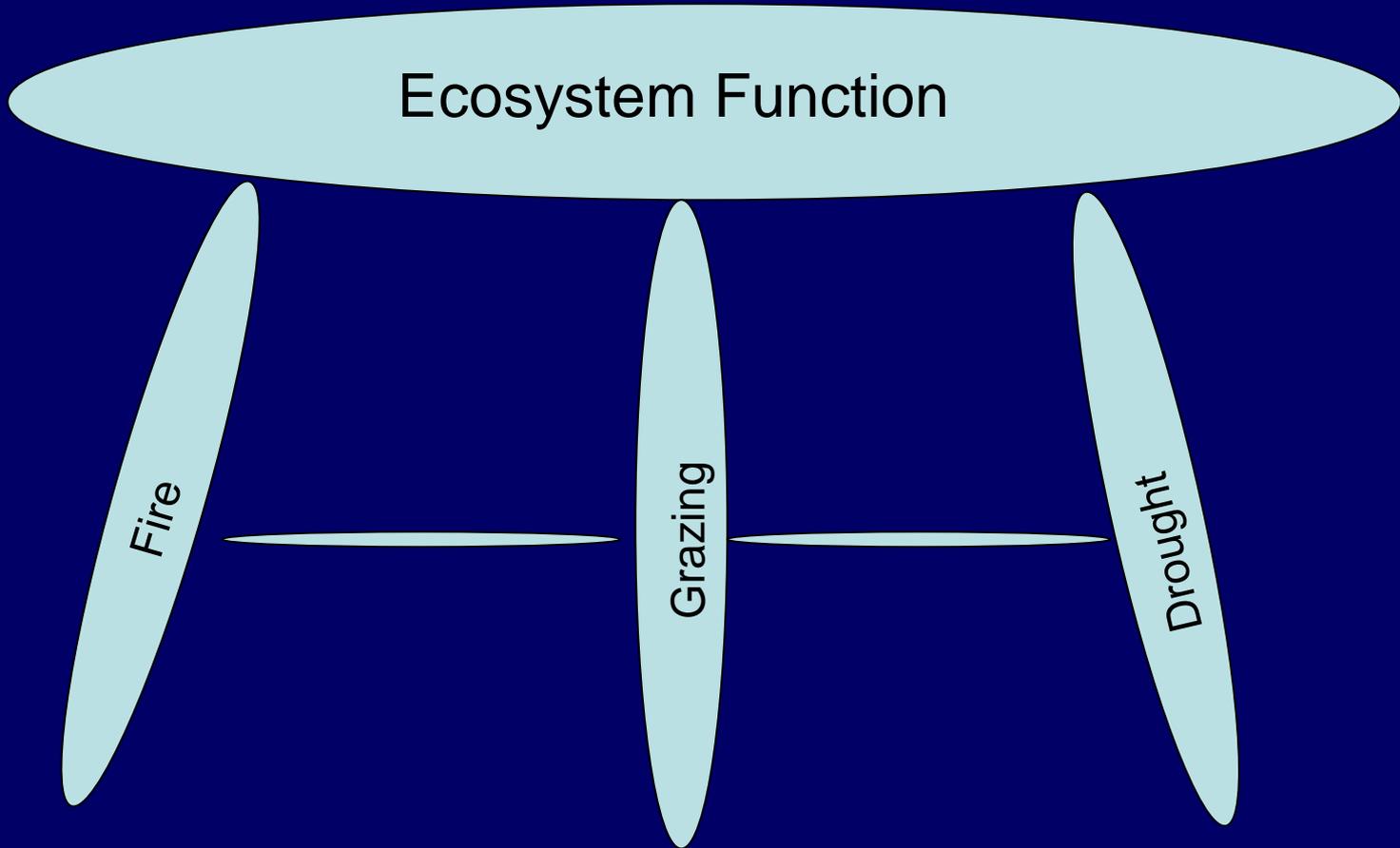


**Texas AgriLIFE Research-Sonora
Charles “Butch” Taylor
angora@sonoratx.net**

Fire, Drought, and Grazing are natural disturbances of Semi-arid Rangelands



1. **Fire, drought, and grazing** are linked and promote heterogeneity on rangelands
2. heterogeneity on rangelands can lead to simultaneous:
 - Increases in biological diversity
 - Maintenance of livestock/wildlife production
 - Sustained ecological processes
 - If, grazing management is proper



Ecosystem Function

Fire

Grazing

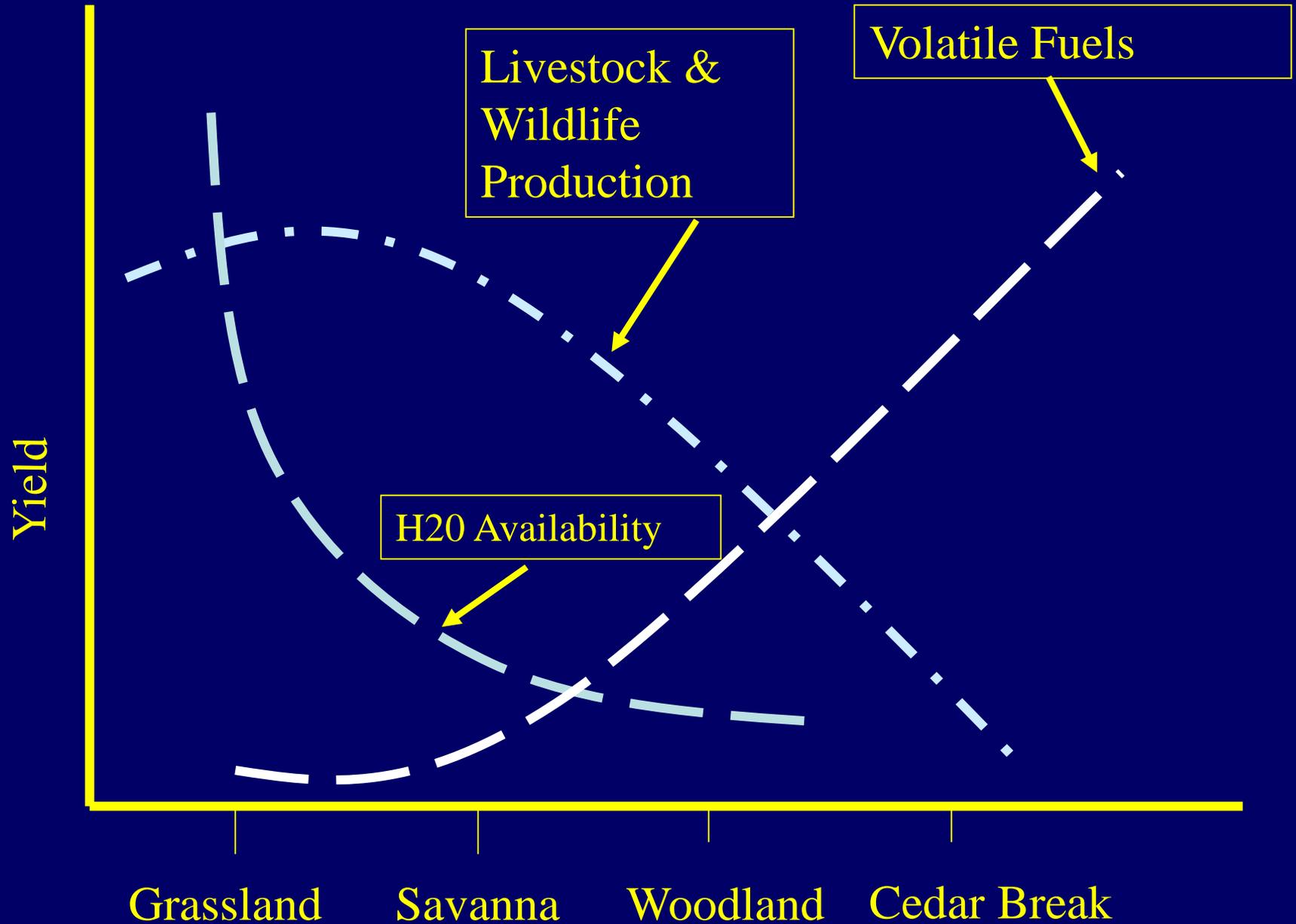
Drought



60-years of no grazing/browsing or prescribed fire



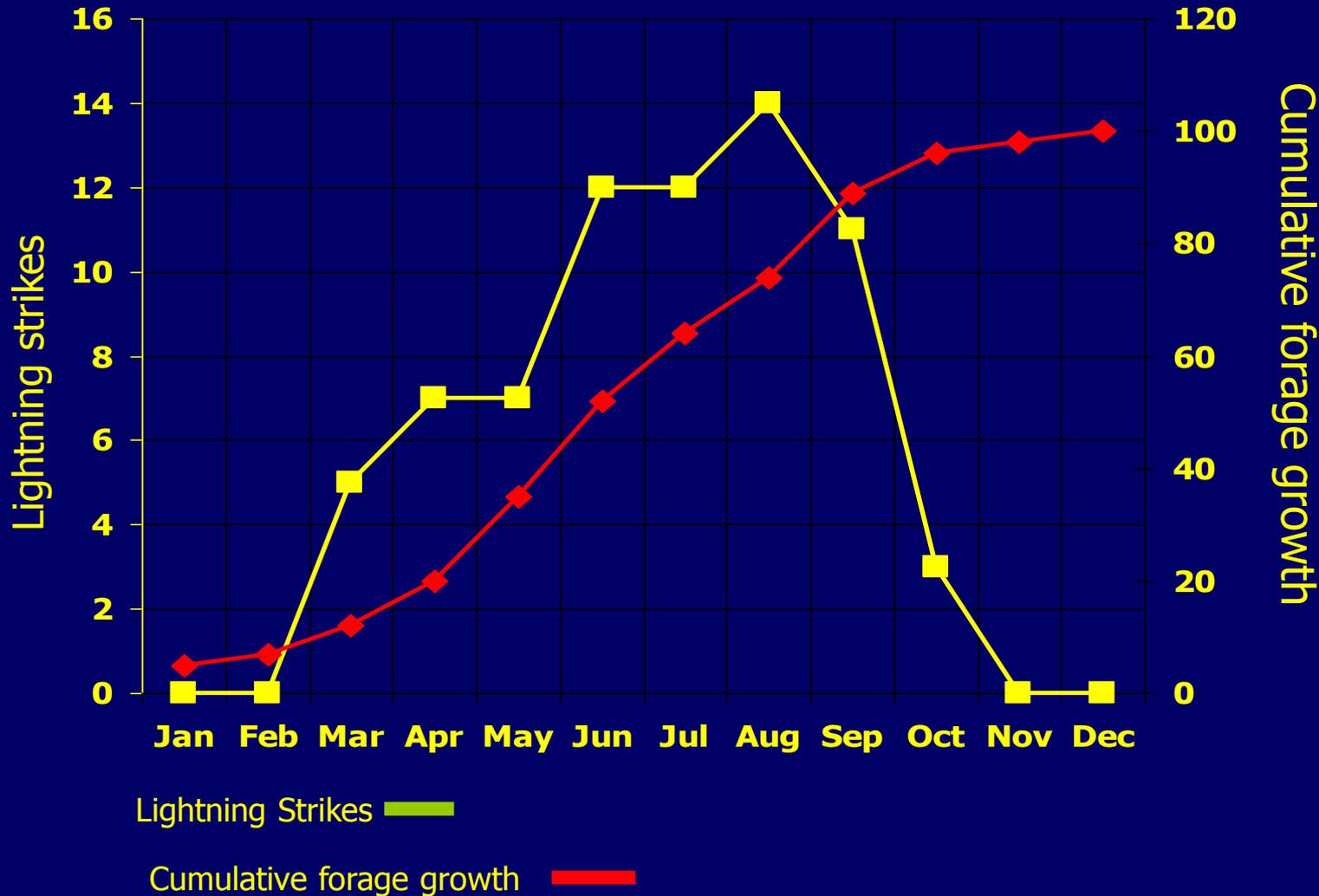
Effects of Cedar on Rangeland Products





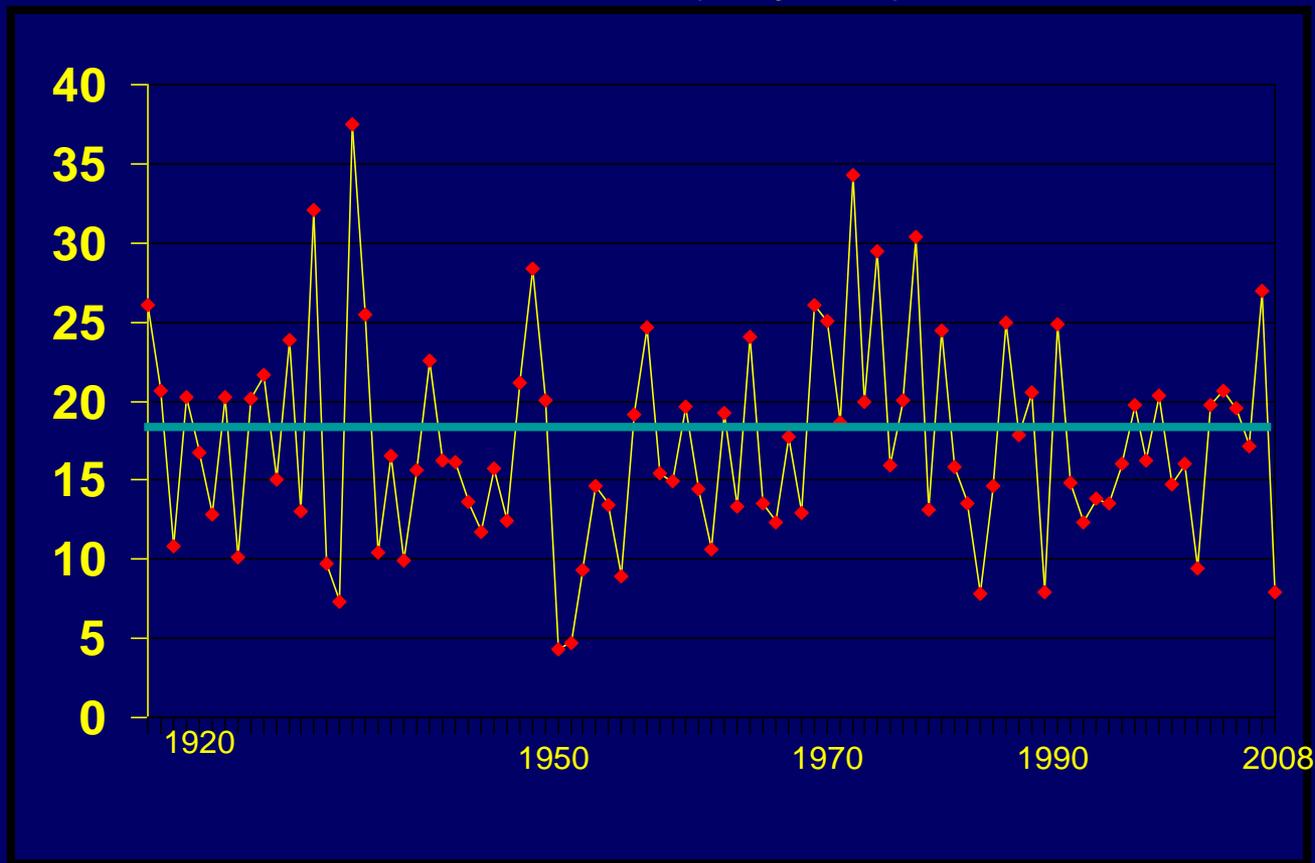
Adapted from Frost 1998

Lightning strikes and cumulative forage growth



Long-Term "Growing-Season" Precipitation on the Texas AgriLIFE-Sonora (Semi-arid environment)

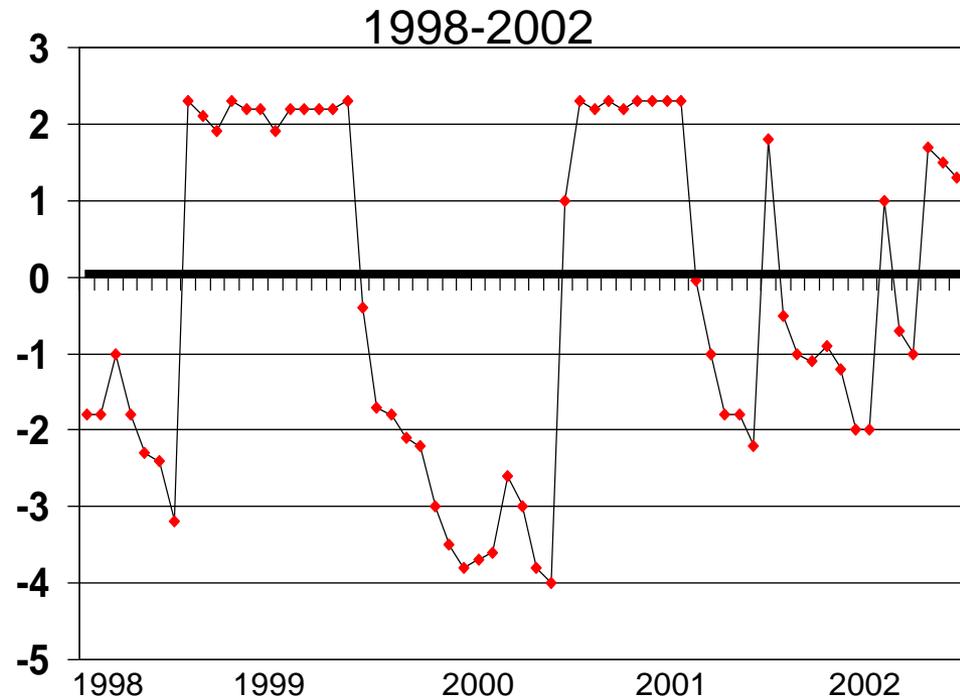
1919-2008 (89-years)



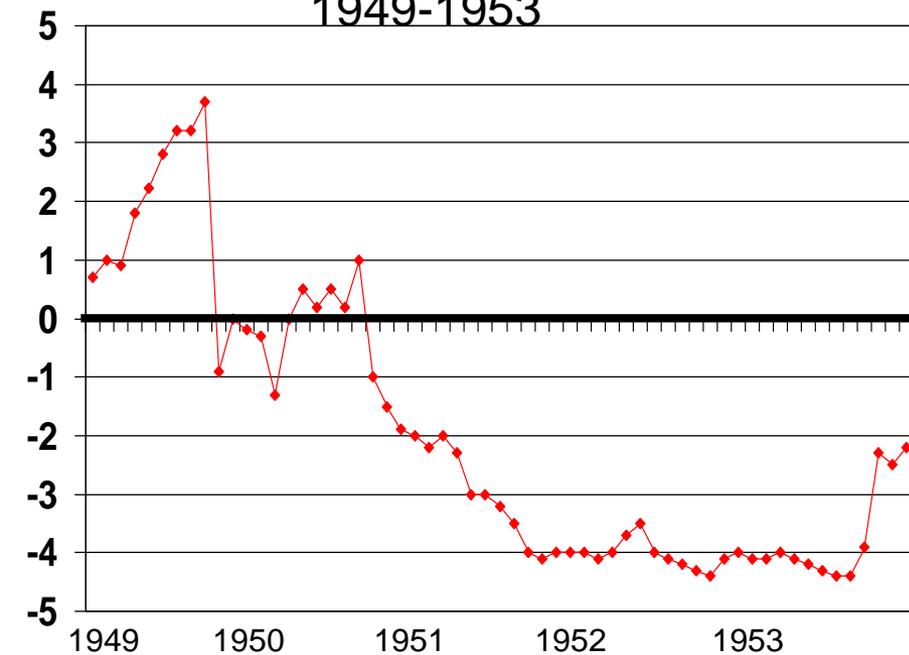
A major portion of Texas is a semi-arid region. In a desert, one knows what to expect of the climate and plan accordingly. The same is true of the humid regions. Men have been badly fooled by the semi-arid regions because they are sometimes humid, sometimes desert, and sometimes a cross between the two.

Palmer Drought Severity Index values for the years 1949 to 1959 & 1992 to 2002 for the Texas AgriLIFE Research Station-Sonora.

PDSI measures the accumulated effect of deficit or surplus rainfall relative to the rainfall needed to maintain adequate soil water content for normal (water stress free) growth of plants (Palmer 1965, PDSI 2003).



1949-1953



4 and above = extreme moist period.

3 to 3.9 = very moist period.

2 to 2.9 = unusual moist period.

1 to 1.9 = moist period.

.5 to .9= incipient moist period.

.4 to -.4= near normal.

-.5 to -.9= incipient drought.

-1 to -1.9= mild drought.

-2 to -2.9= moderate drought

-3 to -3.9= severe drought

-4 and below= extreme drought

Drought – Is an insidious hazard (risk) of ranching

“The Time It Never Rained”

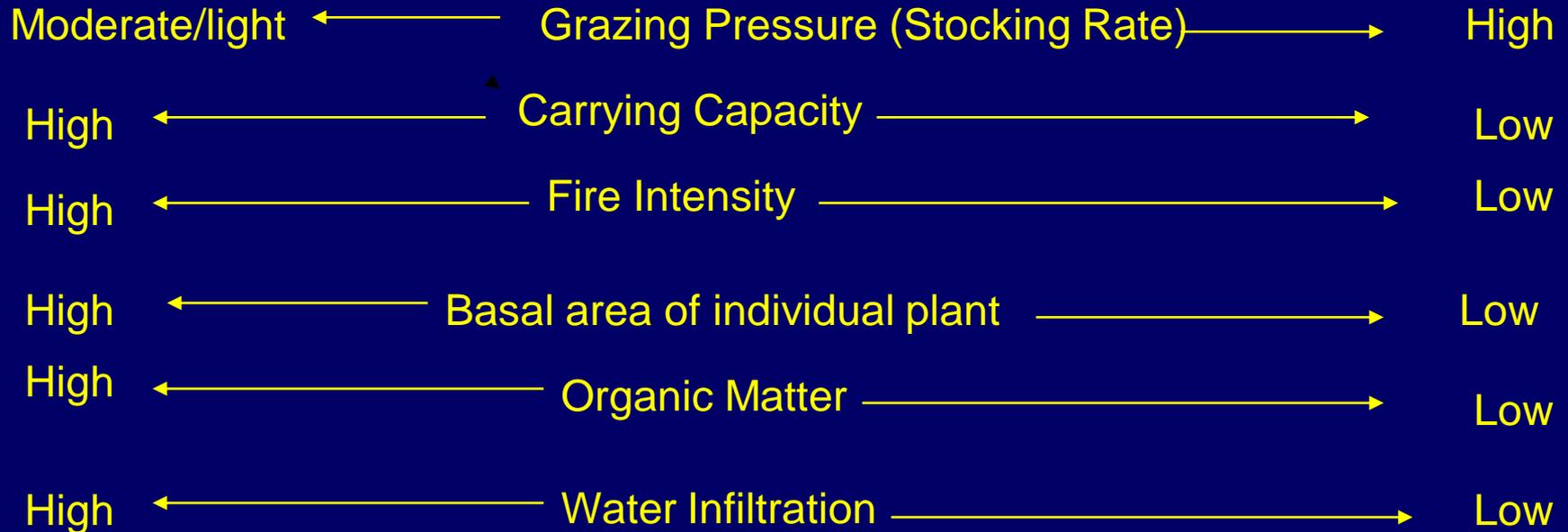
Elmer Kelton

“Each new generation tends to forget – until it confronts the sobering reality – that dryness has always been the normal condition in the western half of the state. Wet years have been the exceptions.”

Influence of Grazing

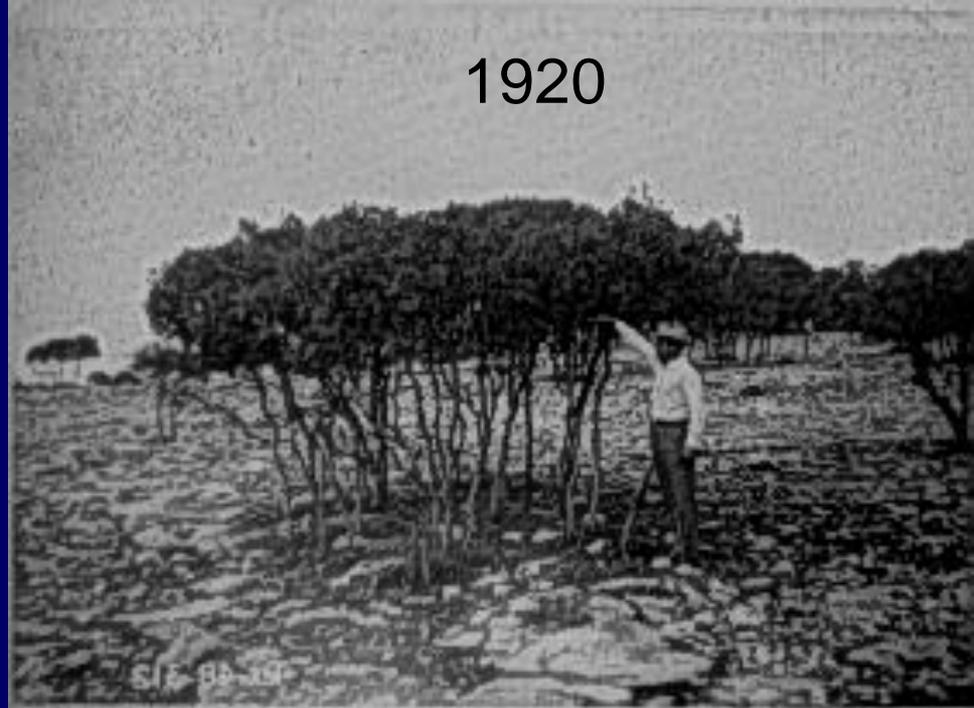
Midgrasses

Shortgrasses

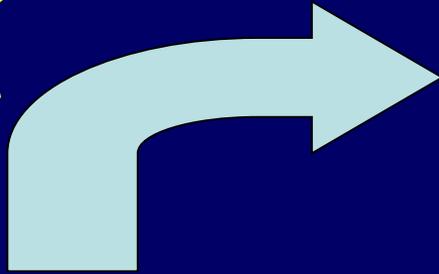


Decreases in individual basal area per plant can increase the susceptibility of a plant community to the impacts of drought.

1920



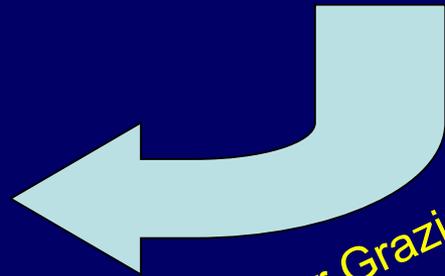
Poor Grazing
Management
(no fire)



1993

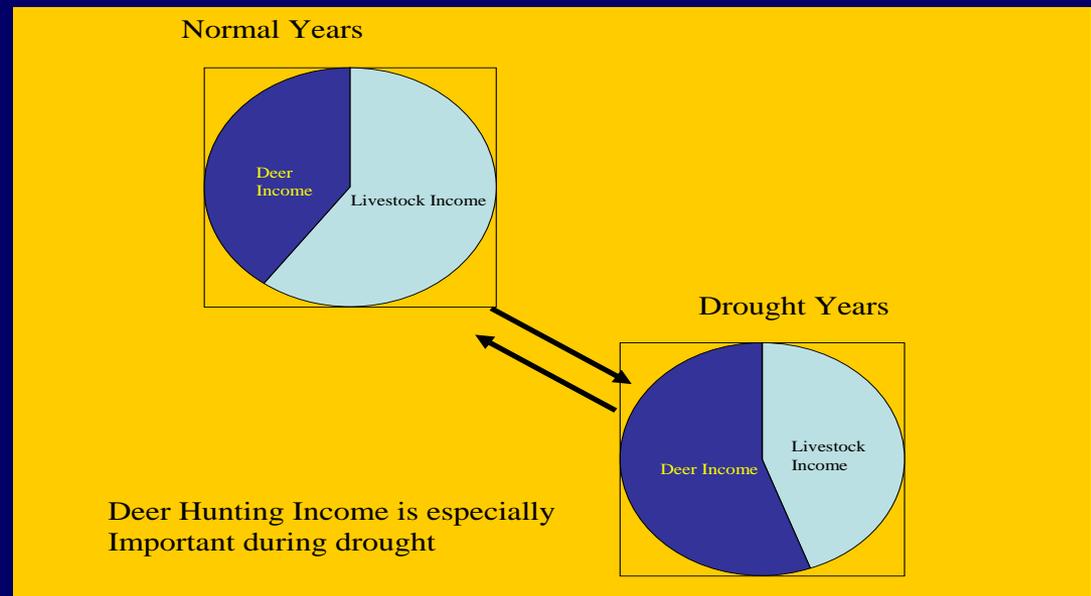


Proper Grazing
Management
(frequent fire)



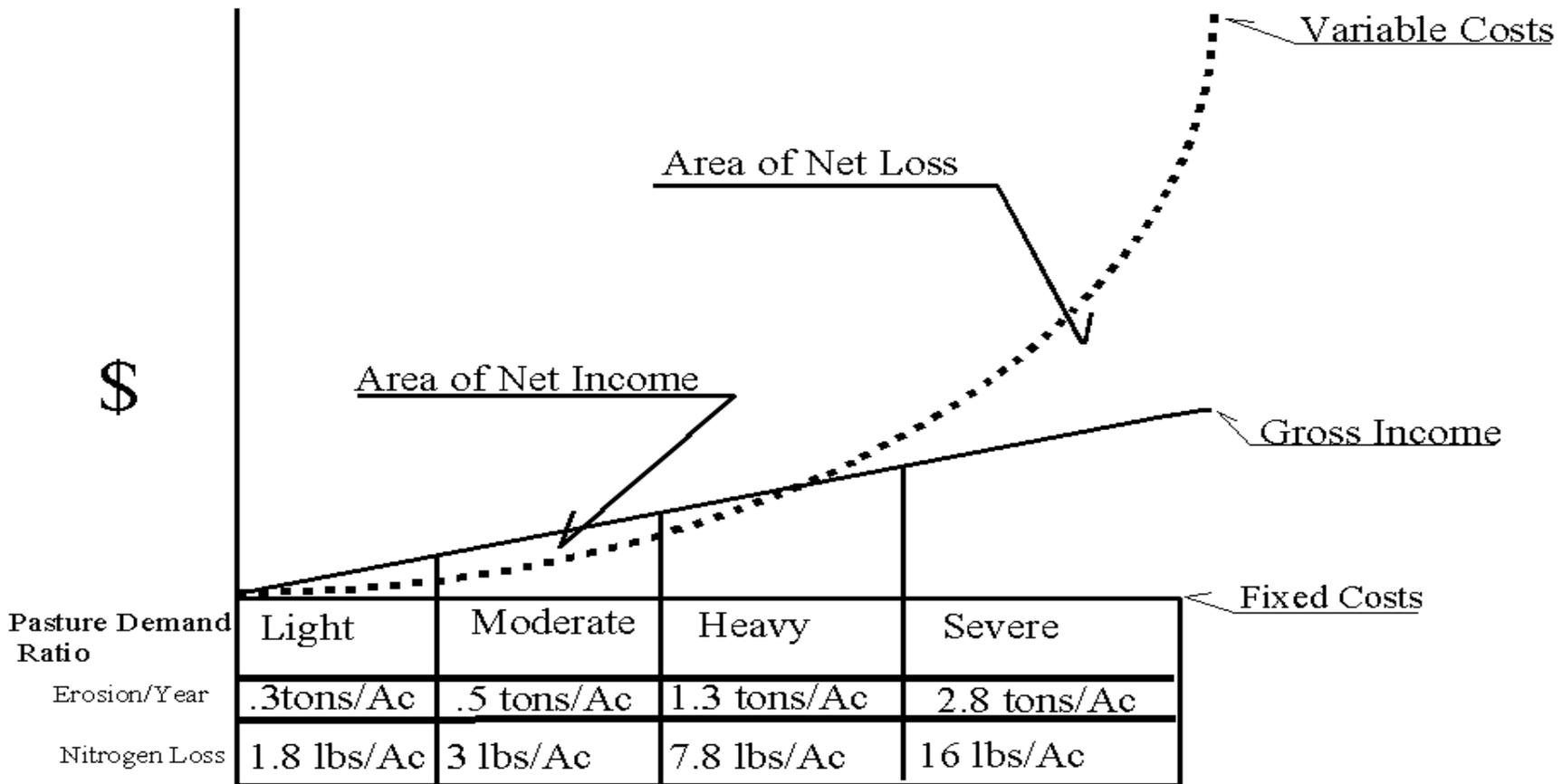
Proper Grazing Management

1. Stocking rate has to be flexible (balance forage supply with forage demand)
2. Managing for a mixture of kinds and classes of livestock & wildlife offers more flexibility and marketing opportunities.



3. Implement a monitoring system for grazing/browsing” use on vegetation and an estimate of forage production.
4. Use “Grazing Manager software” to make adjustments in stocking rate

Relationship Between PDRs, Income, and Resource Depletion



Erosion= Assumes a Tarrant soil with an average 8% slope in C factor zone 36B.

Nitrogen loss= Assumes 3g of nitrogen per 1kg of soil.



Fire = {prescribed fire}; {wild fire}; {controlled fire}

Does wildfire affect vegetation differently than prescribed fire?

NO, It's the management following fire.

Sterling Fire 2008

District: NORTH CONCHO RIVER SOIL & WATER CONSERVATION DISTRICT

Field Office: STERLING CITY SERVICE CENTER
Agency: USDA-NRCS



“Since 1996, there have been five winters in which La Niña conditions were present: 1996, 1999, 2000, 2001, and 2006. In three of them, Texas has experienced severe fire seasons; 1996, 2000, and 2006” **Source: Texas Forest Service (October, 2007)**

“They (the indians) habitually burned off the grass in the spring and fall preceeding the rains to keep down the underbrush, to provide green grazing for game and their ponies and to improve hunting”Youngblood 1921

Plants, both herbaceous or woody, increase in nutritional quality following fire (Dills 1970, Rogers 2004, Wood 1988).

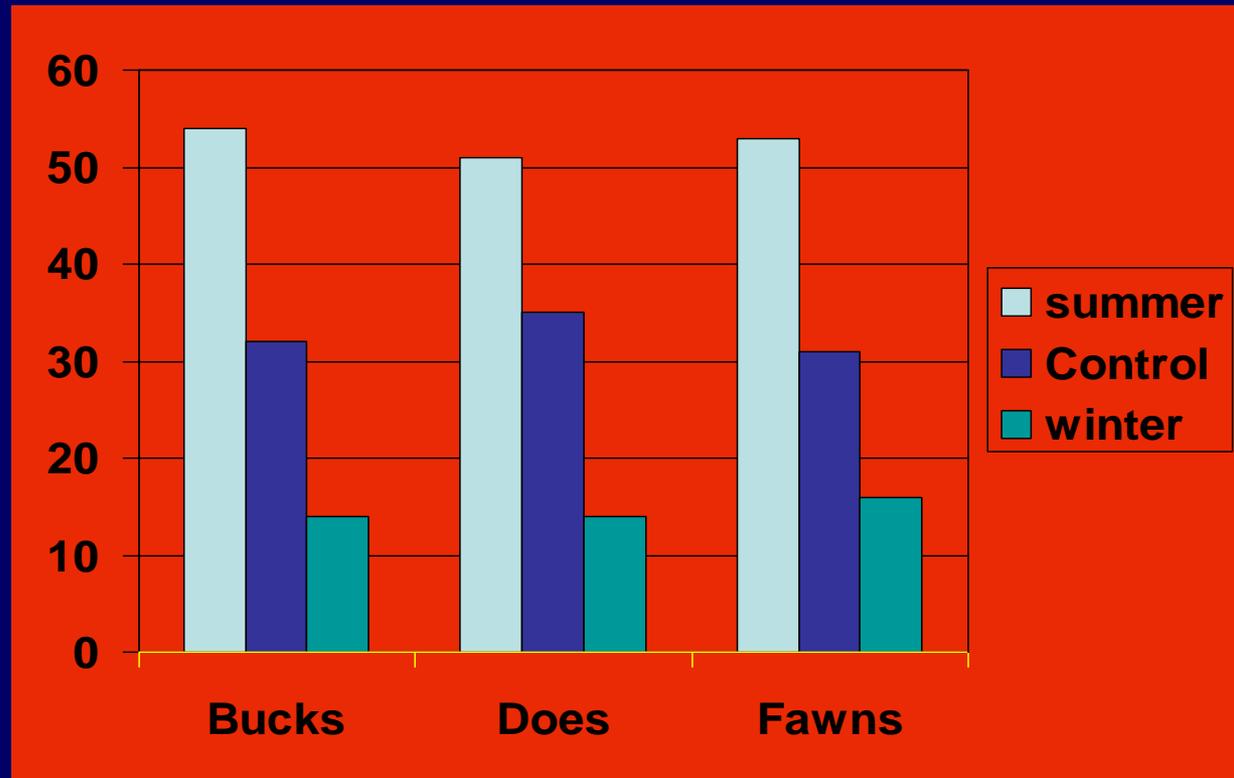
Cattle spend 75% of their grazing time in patches burned during the past yearFuhlendorf & Engle 2004

Cattle prefer areas altered by fire for up to 2-years post fire compared to unburned areas.....Williams et al. 1980





Time spent foraging (%) by white-tailed deer in summer and winter burned patches and control (no burning) on the Sonora Station (data were collected from August 29, 2006 thru November 2, 2006).



Winter burns were conducted in January, 2006 - Summer burns were conducted in July, 2006

More forbs and browse available in summer burned treatments compared to control and winter burns.

Deer spent time in control treatments foraging for pear apples which were not present in summer or winter burn treatments.

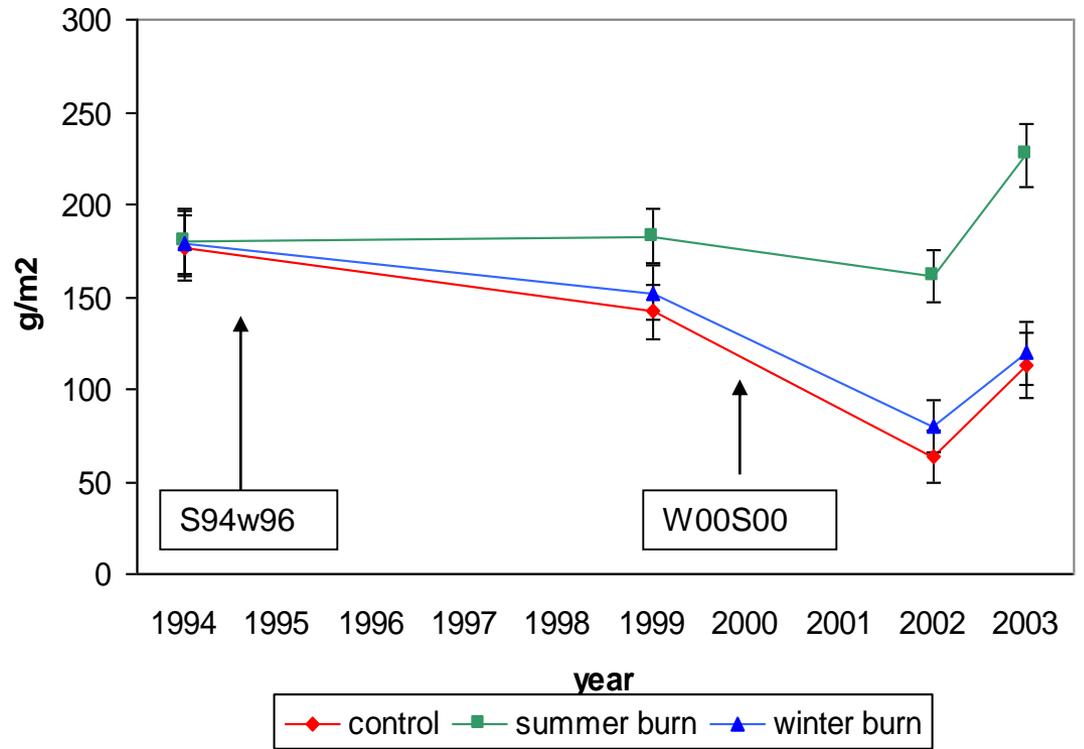
Photo taken 9/24/03

Burned 9/10/02

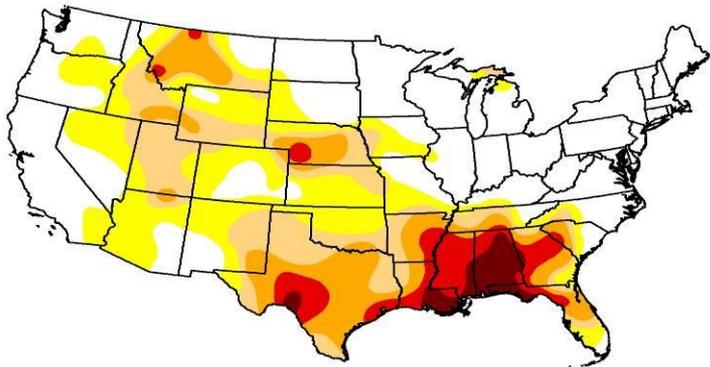
Burned 3/22/03



Standing crop



August, 2000



Preburn May. 2000



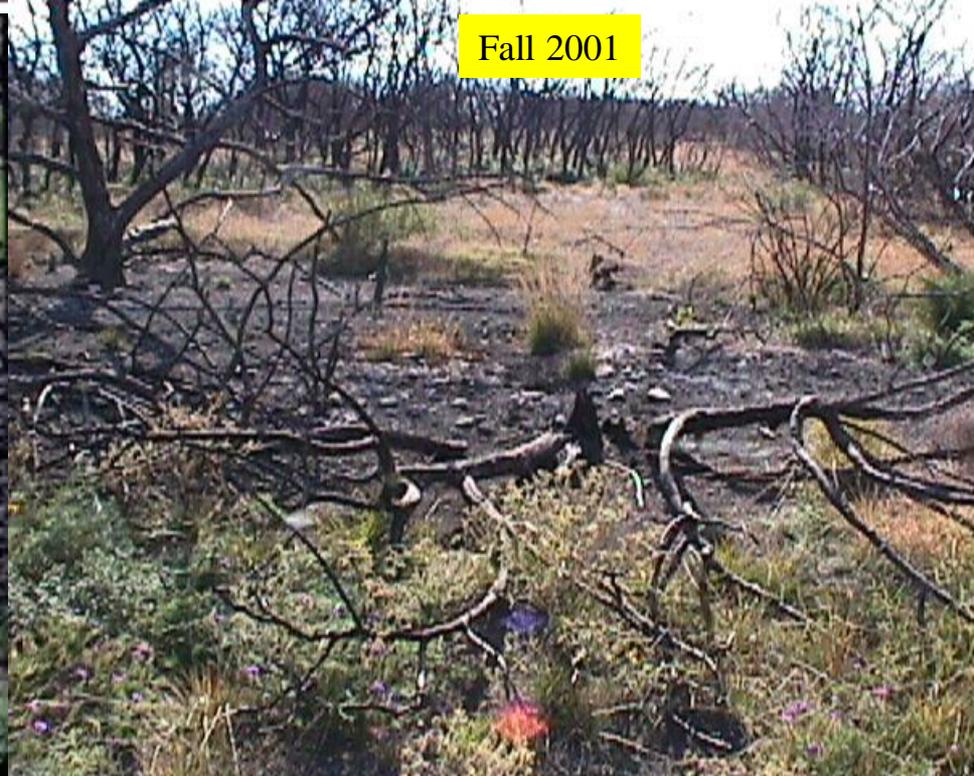
Post burn Aug 2000



Spring 2001



Fall 2001





Summer 2003

Education and training is the Key
Academy for Ranch Management

2 ½-day workshops on Prescribed fire
<http://www.ranchmanagement.org>



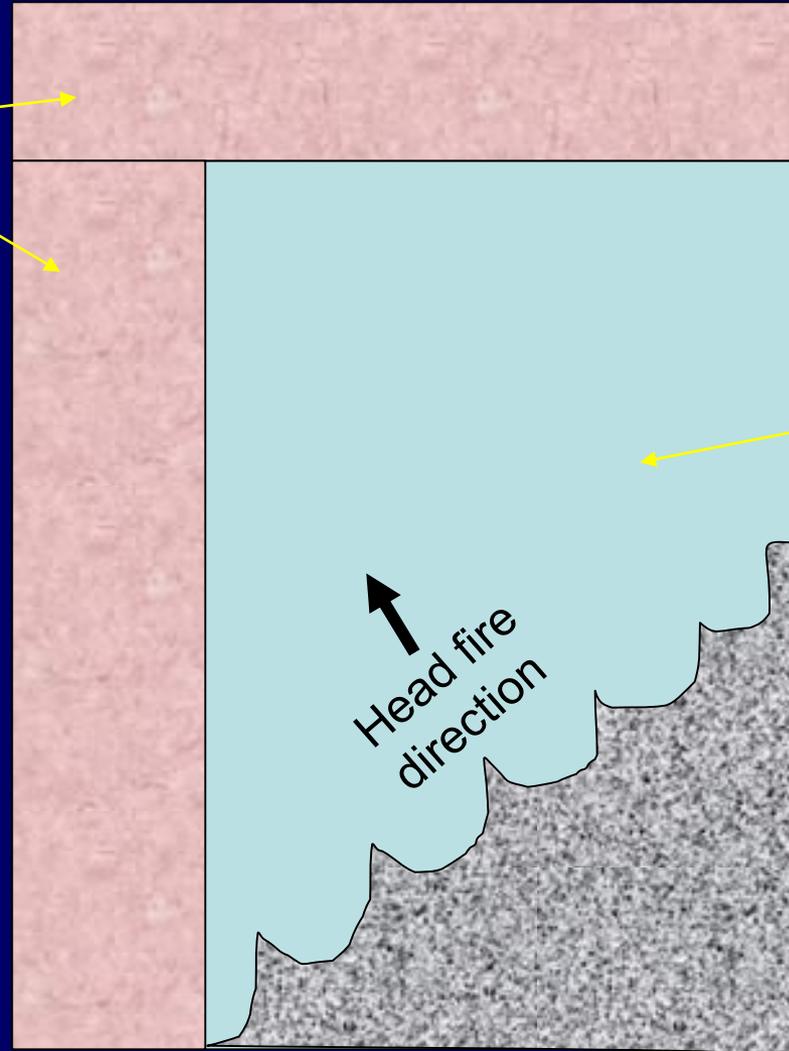
Burn Schools

February 19, 20, & 21

March 5, 6, & 7



Burned under moderate conditions (i.e., winter burn). Livestock are used to maintain low fuel load.



Burned in hot, dry summer time for maximum effect on juniper and prickly pear.

Planned Prescribed fire during summer of 2008



Prescribed fire March 7, 2008



R.H. $\leq 20\%$; Temp ≥ 100 ; W.D.= S-SE; W.S. $> 6\text{mph} \leq 20\text{mph}$;
1-hr time lag fuel moisture $< 6\%$

Factors Affecting Fire Intensity

