

Drought and Stocking Adjustments on Range and Pasture



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Drought Challenges Retreat - Feb. 12, 2013
Great Bend, KS**

**Regardless of Grazing Strategy:
Precipitation and Stocking Rate are the
Two Most Influential Factors on Annual
Rangeland and Livestock Production**



Stocking Rate: -affects animal performance
-affects grass composition
-affects grass yield
-affects resilience to stress
-affects net return



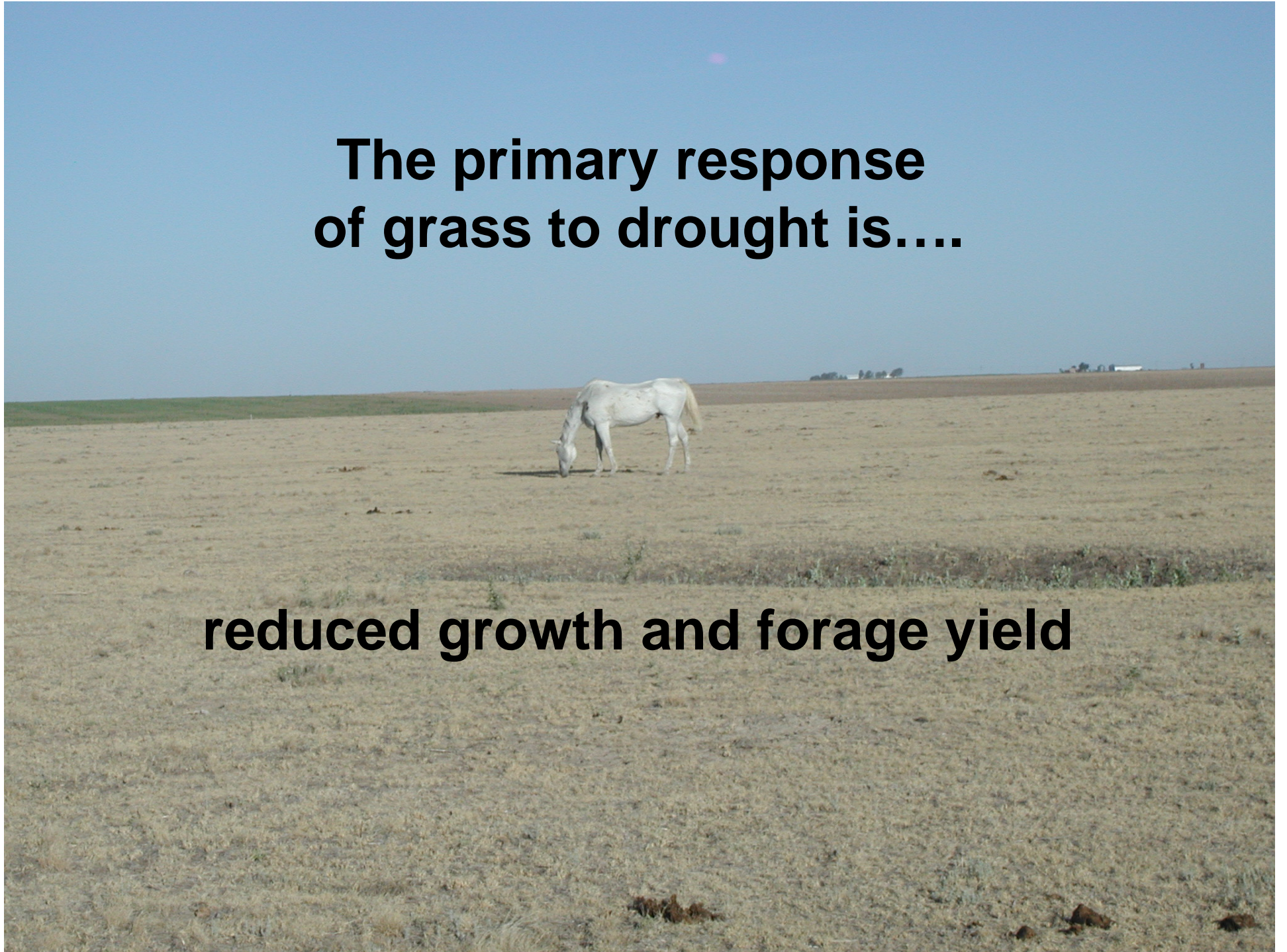


Drought

**Occurs 1 out of every 5 years in
western Kansas**

**The primary response
of grass to drought is....**

reduced growth and forage yield



**Soil
interception**

**Light
interception**

**Root
growth**

**Tiller & bud
initiation**

**Root volume
& root depth**

**Leaf
growth**

**CH₂O
storage**

**Nutrient &
water uptake**

**CH₂O
production**

What can we learn from rangelands during the drought of the 1930's?



Buffalograss and Blue Grama Cover- Moderate Grazed Pasture

1935 - 72%

1937- 3%

1939 - 27%

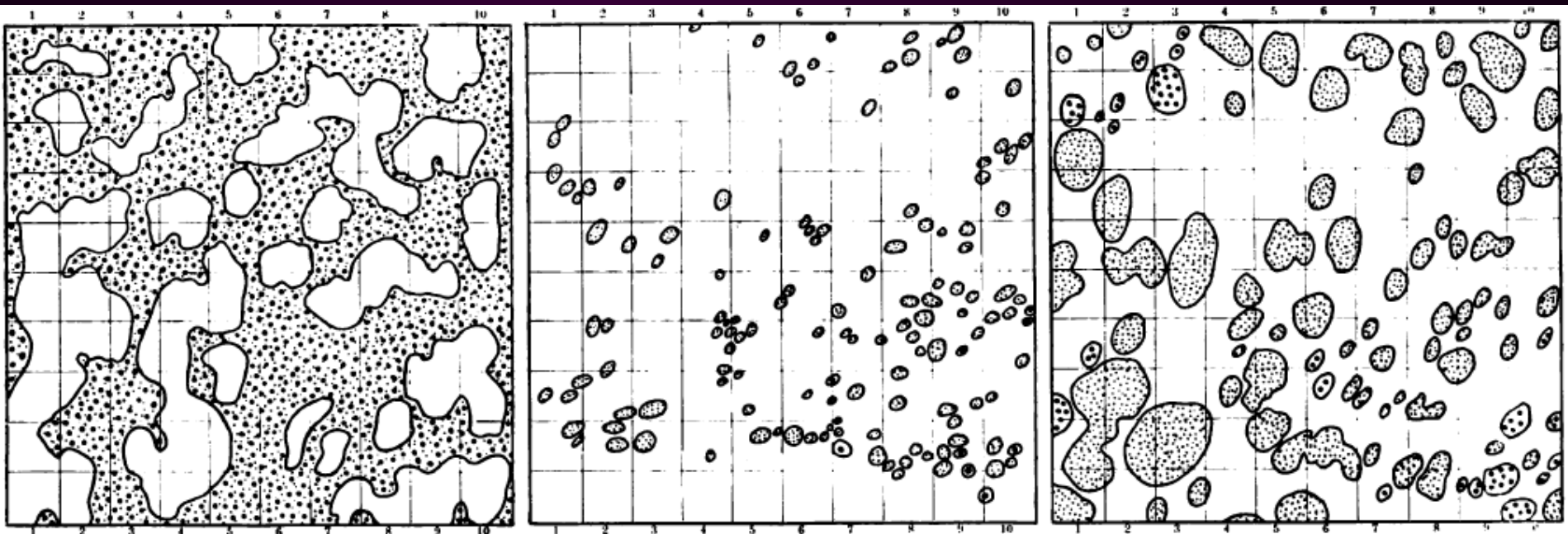


FIG. 24. Quadrat on moderately grazed short-grass type with dense cover. Cover of short grasses in the fall of 1935 (left) was 72.4 percent. A minimum cover of 0.15 percent of buffalo grass (large dots) and 2.8 percent of blue grama (small dots) was reached by 1937 (center). Significant gains were made by these grasses during 1938 and 1939 and, when charted in the fall of 1939 (right), buffalo grass had a cover of 3.1 percent and blue grama grass 24.2 percent.

Buffalograss and Blue Grama Cover- Heavy Grazed Pasture

1935 - 20%

1936 - 1%

1939 - 19%

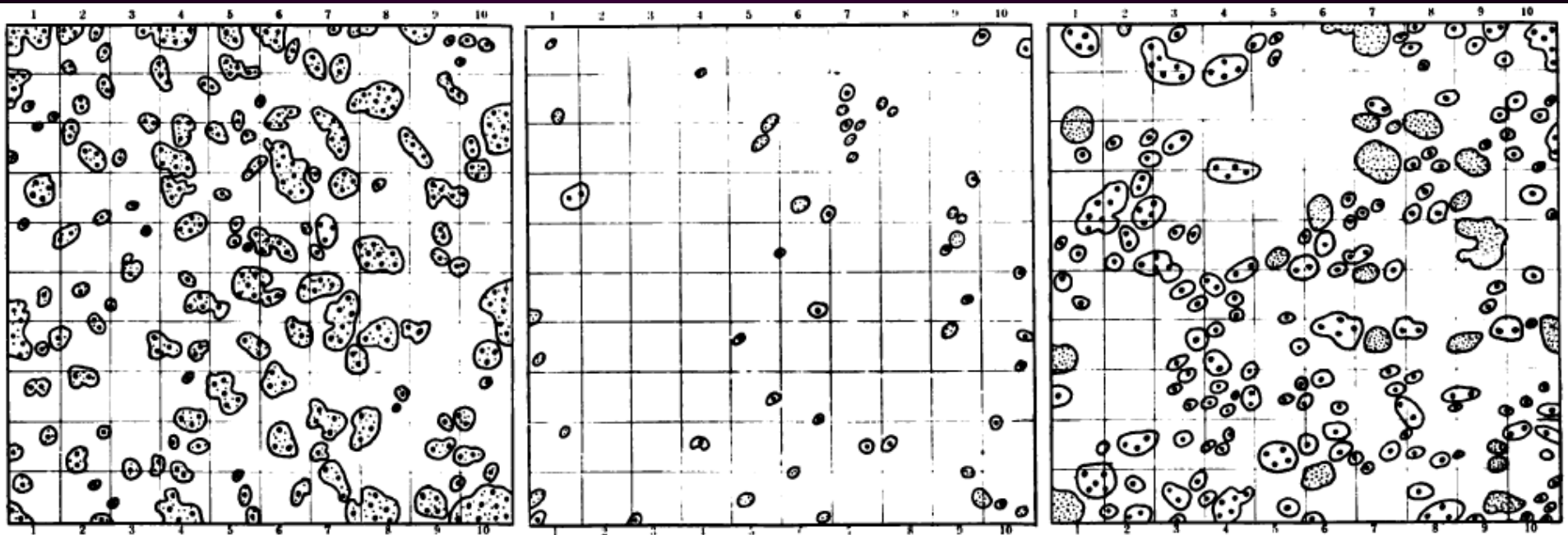
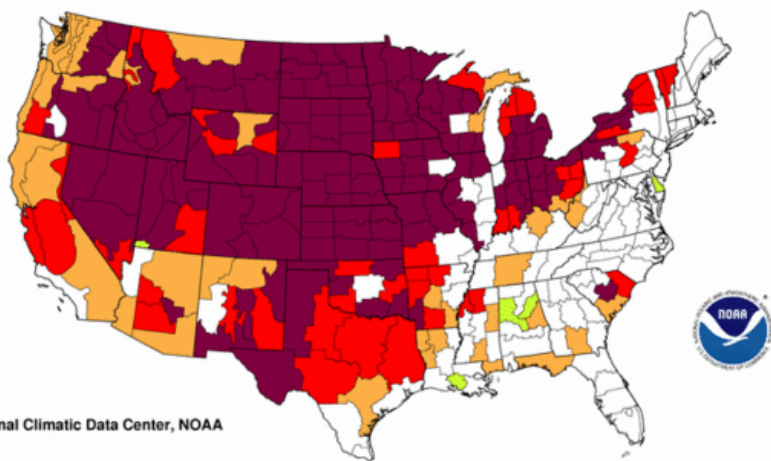


FIG. 26. Quadrat in typical overgrazed area of closed-type short grass. The buffalo grass (large dots) and blue grama (small dots) were not charted separately in 1935 (left), when the cover of the two grasses was 19.8 percent. The minimum of 0.84 percent was reached in 1936 (center). Note the rather uniform distribution of the surviving clumps throughout the quadrat. The basal cover increased to nearly 19.0 percent in 1939 (right).

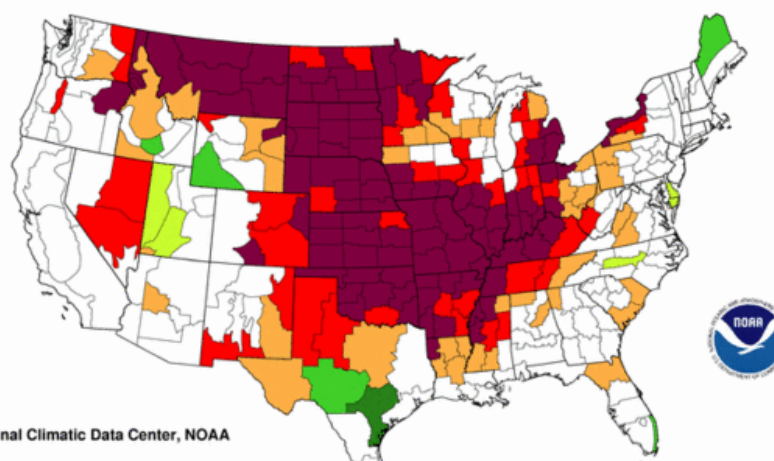
1934

Palmer Drought Severity Index
August, 1934

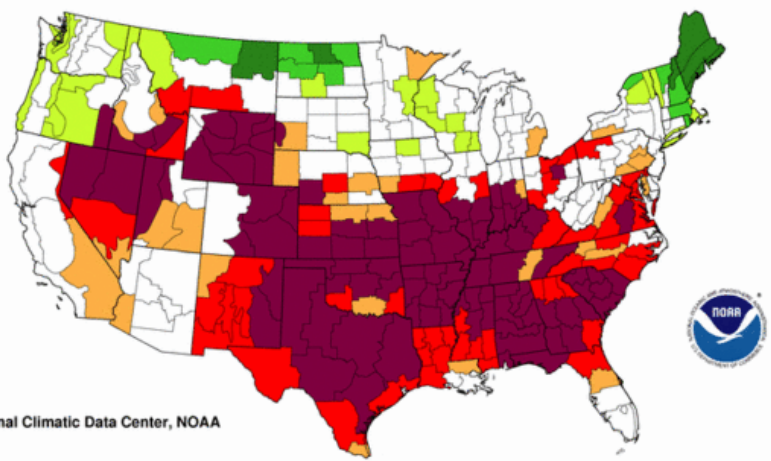


1936

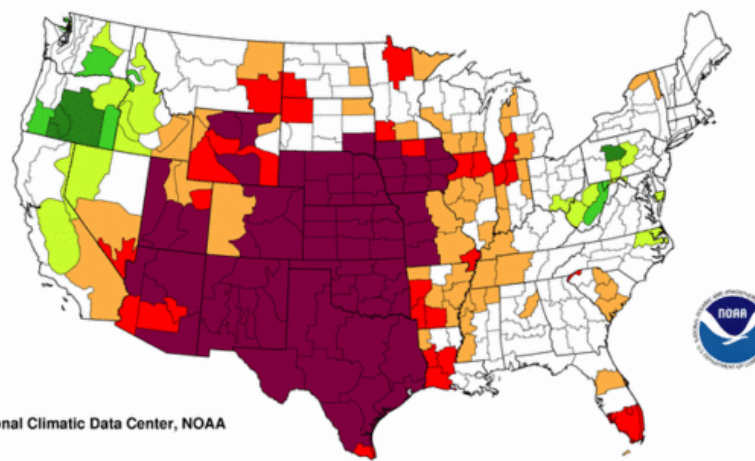
Palmer Drought Severity Index
August, 1936



Palmer Drought Severity Index
September, 1954



Palmer Drought Severity Index
October, 1956

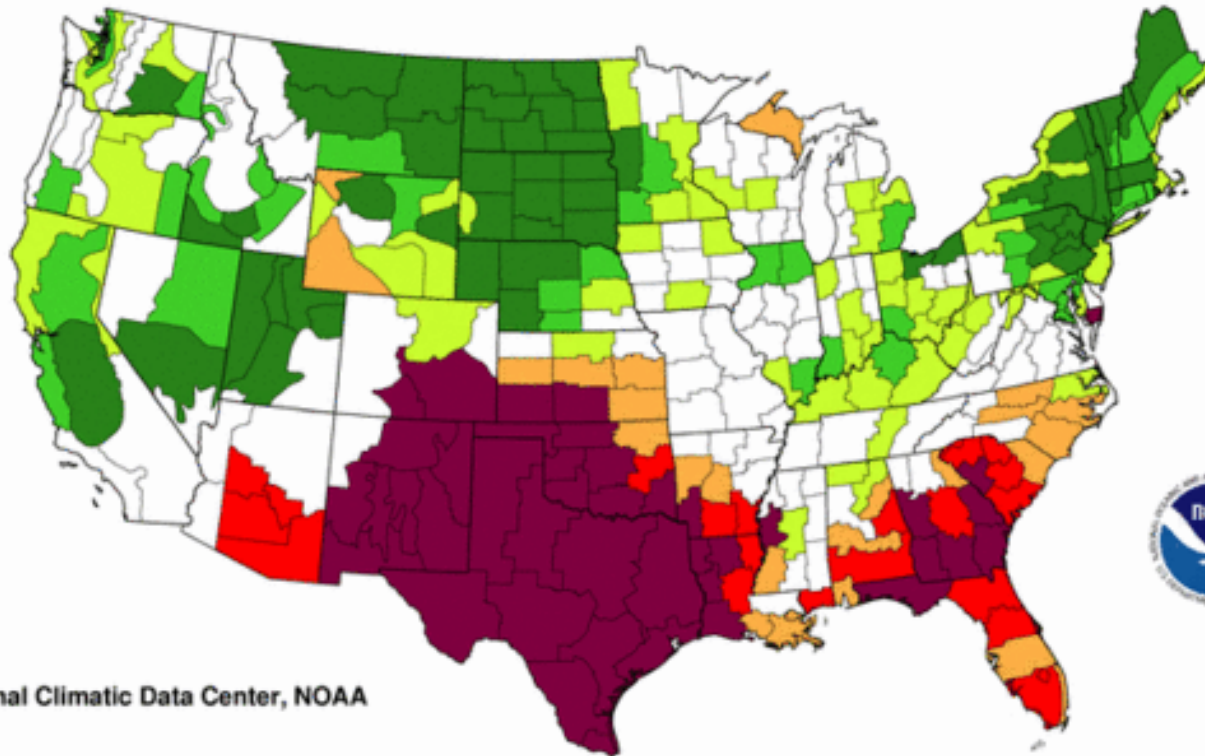


1954

1956

2011

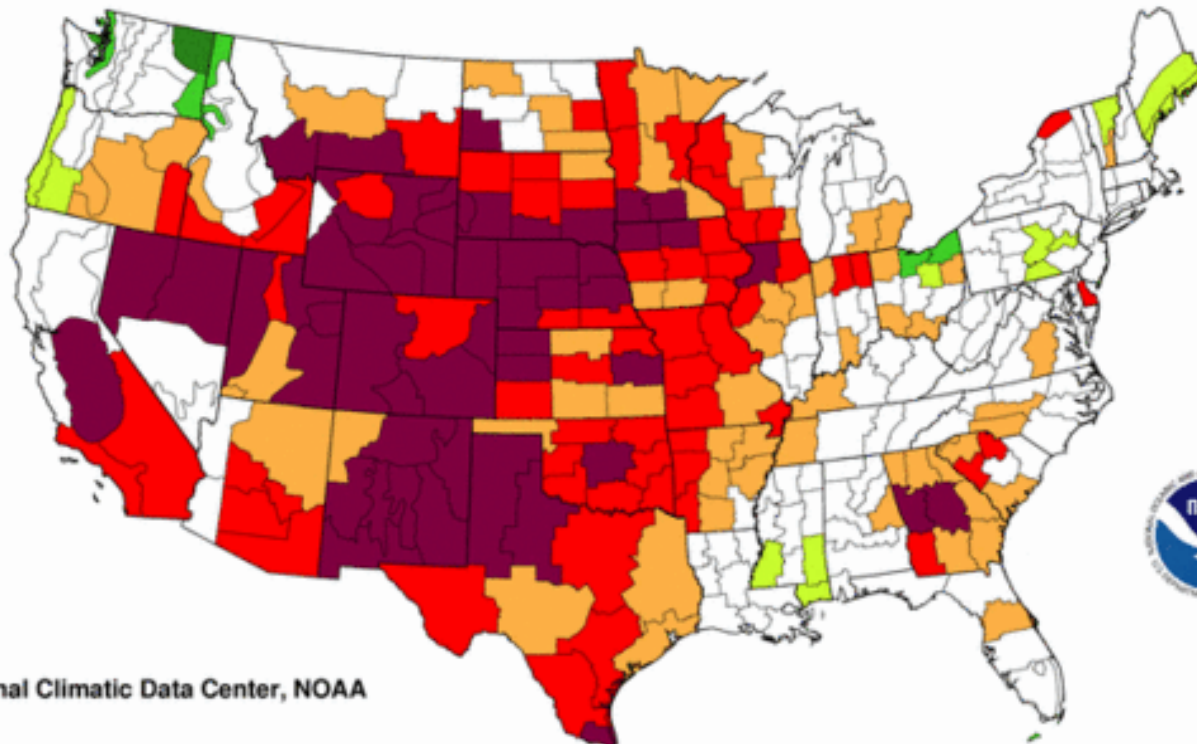
Palmer Drought Severity Index September, 2011



National Climatic Data Center, NOAA

2012

Palmer Drought Severity Index November, 2012

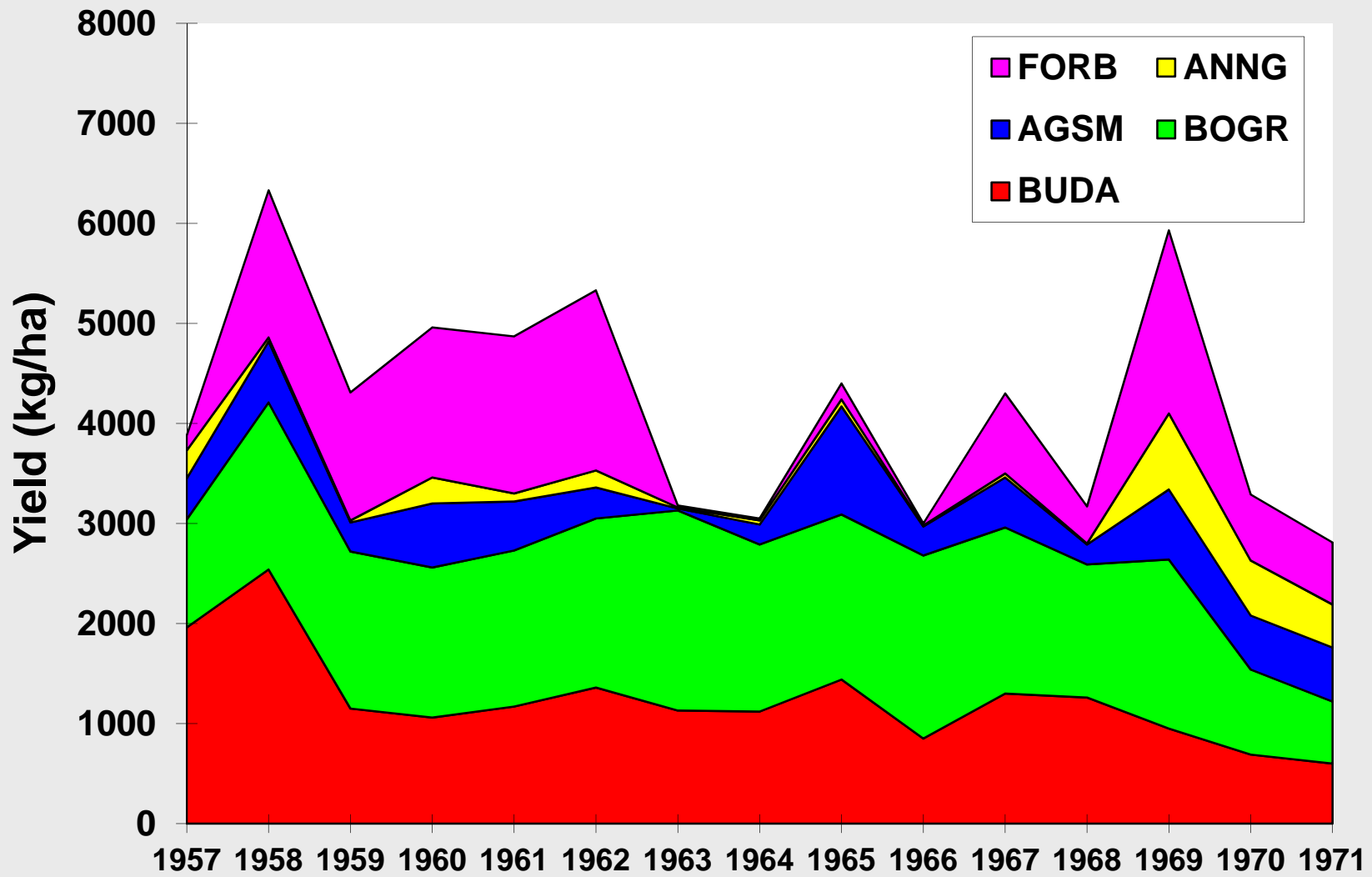


National Climatic Data Center, NOAA

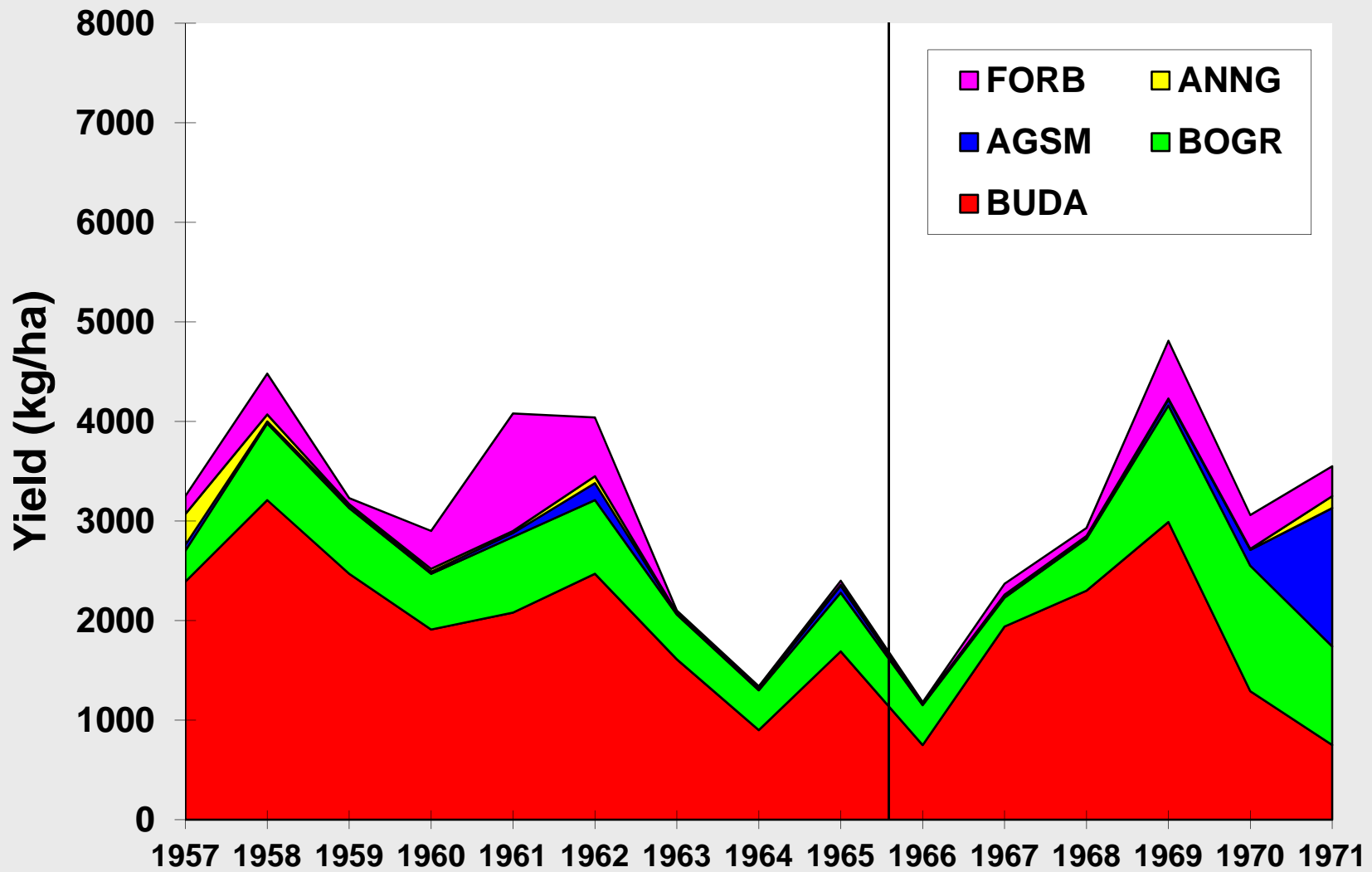
How long will it take rangelands to recover from stress, overuse, or heavy stocking rates?



Moderate Stocking Rate



Heavy Stocking to Light Stocking





**Four basic things can help pastures
recover from stress or overuse:**

- 1. Reduce stocking rates**
- 2. Provide a rest period during the
growing season**
- 3. Combination of 1 & 2**
- 4. More Rain!**

Some grazing systems that allow for extended rest:

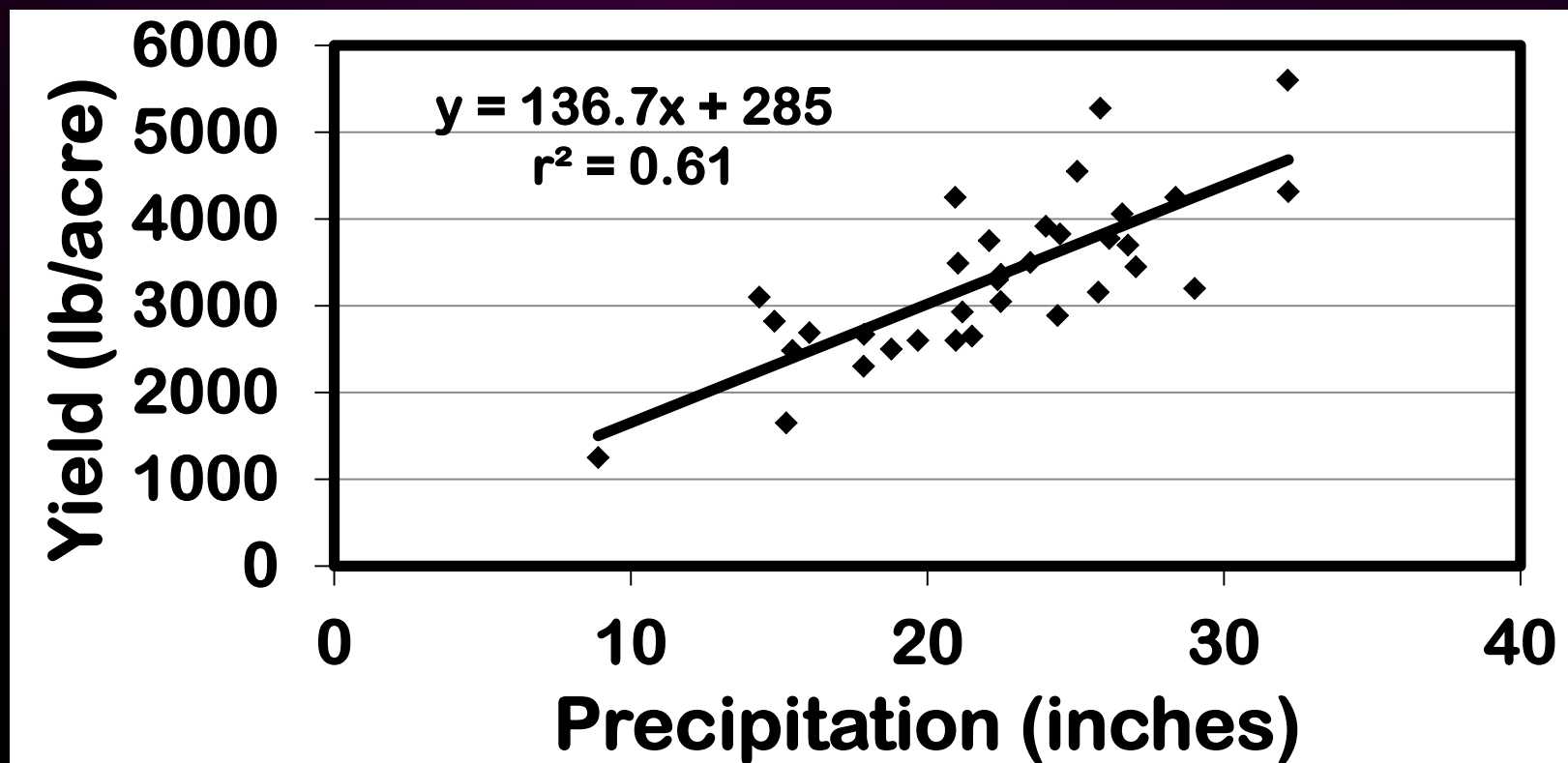
- 1. Rest rotation – one pasture rested all season**
- 2. Deferred rotation – all pastures grazed, some allowed rest over half the season**
- 3. Intensive early stocking – grazed first half of season then rested**
- 4. Other systems with only one occupancy period**

Can we predict season pasture yield?



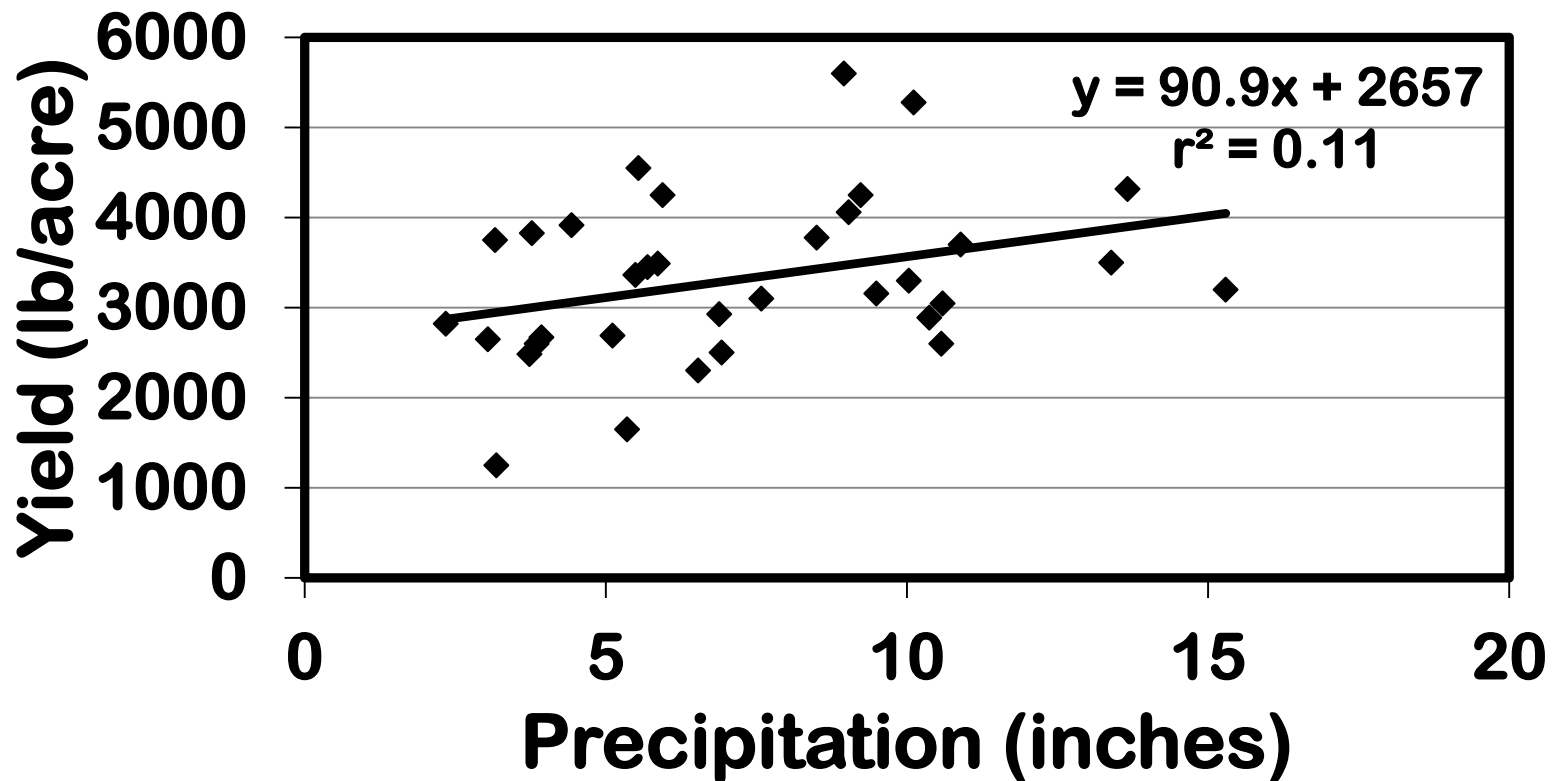
Predictability of End of Year Yield from Precipitation Intervals - 35 Years

Total Year	OctPY-Sep	OctPY-Apr	Mar-May	May-Jun	Jun-Jul	May-Jul	Apr-Sept	Prior 2 yrs	AprPY-Apr
0.59	0.61	0.11	0.30	0.56	0.25	0.46	0.52	0.00	0.07



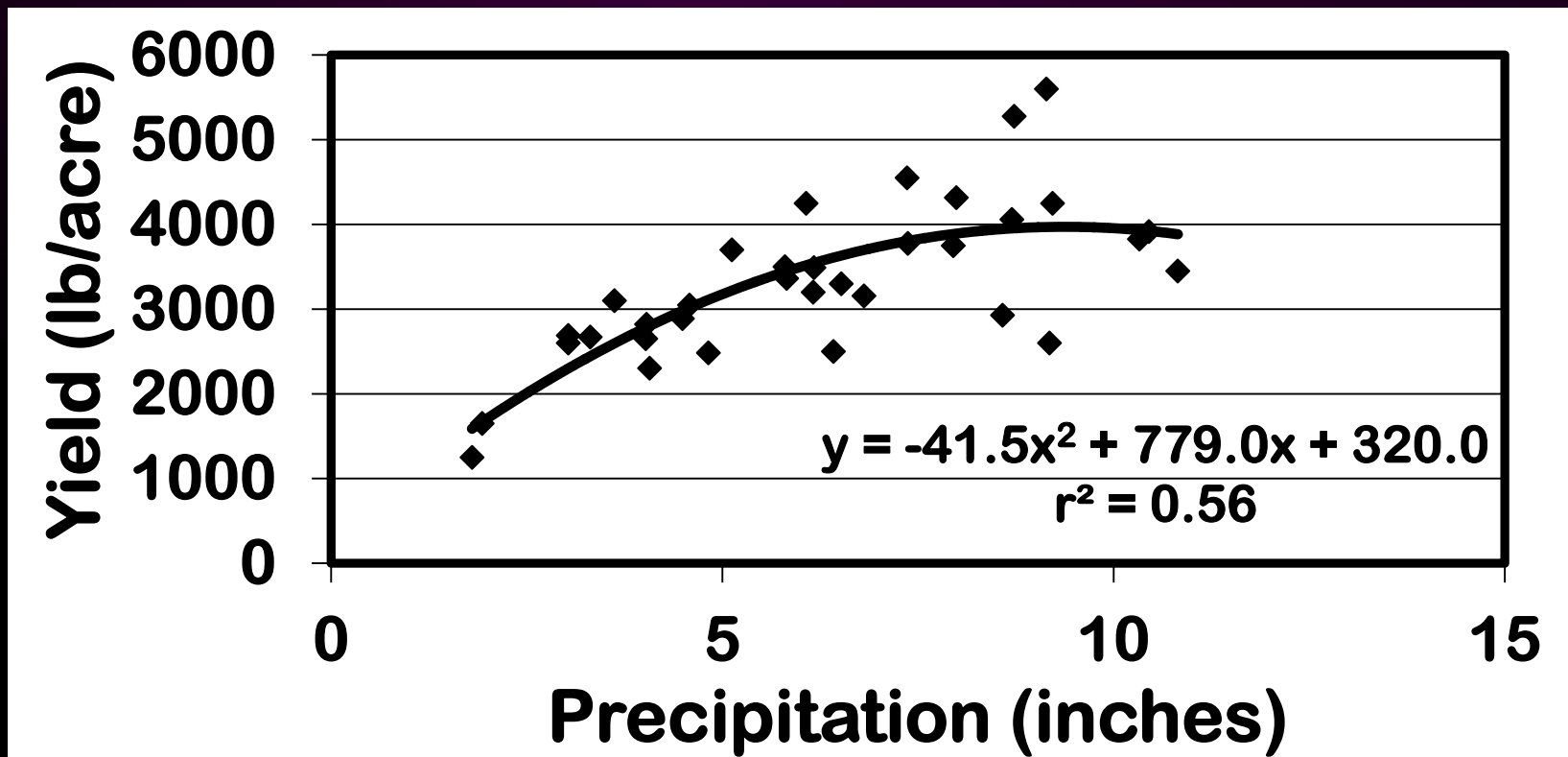
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Can You Prepare for Drought?

**Make a drought plan and plan for
stocking adjustments**



How Do You Prepare for Drought?

Establish moderate recommended stocking rates as a baseline

Manage for greater plant vigor and soil cover

Diversify with stocker cattle

Set critical dates for destocking

Monitor rainfall

Monitor range production & utilization

Early weaning

Early culling

**Diversify with stocker cattle...
25-35% of acres...**

**110 cow/calf pairs for 6 months, 1920 acres
Shift to...**

**72 cow/calf pairs, 1260 acres
72 stocker animals, 660 acres**



Can destock yearlings, and replace with cow/calf pairs on those acres during drought

Fewer animals to graze or feed in winter, less overall hay or stockpile forage requirement



Set critical dates for destocking

Monitor rainfall

Monitor range production & utilization

Early weaning

Early culling

Nov. 1- Drought and grass overutilized

-reduce stocking rate by 10-15%

May. 30- low May precipitation

-plan for early stocker removal

June 30- May and June precipitation < 80%

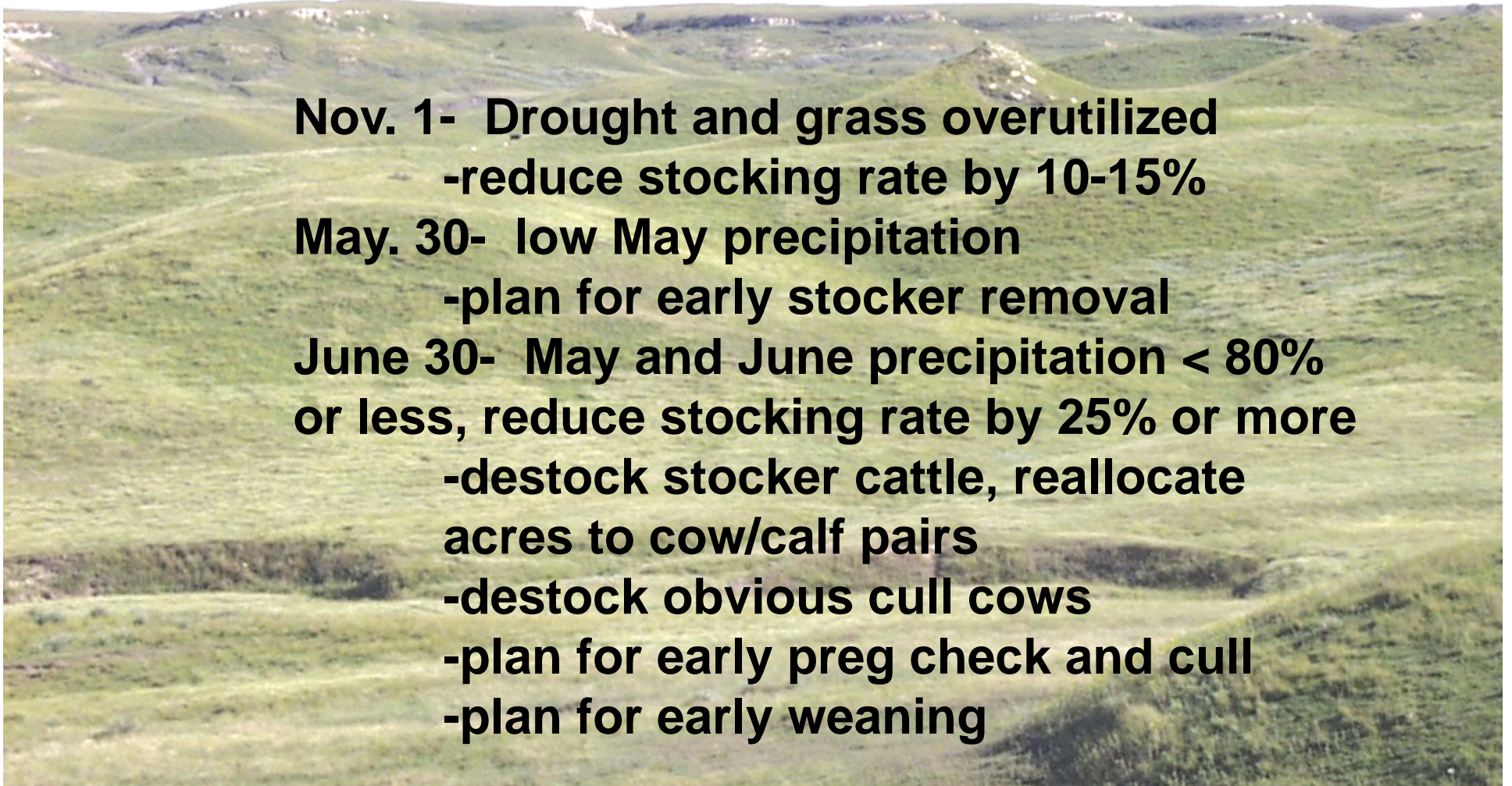
or less, reduce stocking rate by 25% or more

**-destock stocker cattle, reallocate
acres to cow/calf pairs**

-destock obvious cull cows

-plan for early preg check and cull

-plan for early weaning



What We Did In 2012

Nov. 1, 2011- Drought and grass stressed

-reduced cow number from 275 to 235

May 30- low May precipitation, planned for early wean

**June 30- May and June precipitation 40% of average,
set date to wean, and reduced cow number to 200,
planned for further stocking reduction at early preg
check**

July 10- early weaned, destocked obvious cull cows

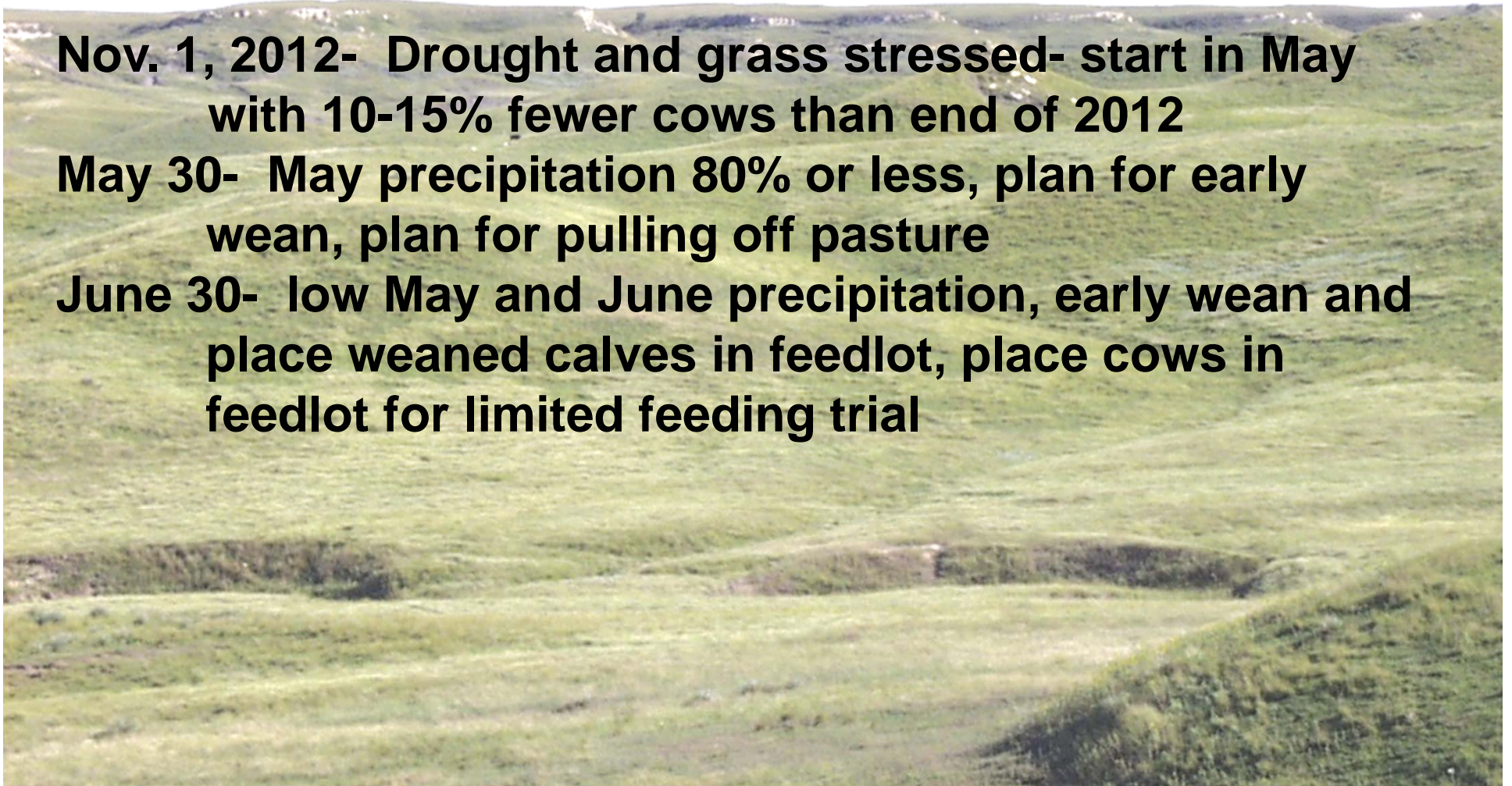
**Aug 10- early final preg check, culled opens, culled large
cows and from clean-up bred cows to 150 head, fed
all replacements as fat cattle (no replacements
grazing in 2013)**

What We Will Do In 2013

Nov. 1, 2012- Drought and grass stressed- start in May with 10-15% fewer cows than end of 2012

May 30- May precipitation 80% or less, plan for early wean, plan for pulling off pasture

June 30- low May and June precipitation, early wean and place weaned calves in feedlot, place cows in feedlot for limited feeding trial



www.drought.unl.edu/ranchplan