

AFRI Grazing CAP video series: Enhancing Enterprise Flexibility of Beef Cattle Operations in
Response to Climate

Stocking Rate & Pasture Management Considerations



**GREAT PLAINS
GRAZING**
CATTLE, CLIMATE, CULTURE & CHANGE

Hugh Aljoe
The Samuel Roberts Noble Foundation

THE SAMUEL ROBERTS
NOBLE
FOUNDATION

The Top 3 Grazing Management Issues

1. Stocking rate
2. Stocking rate
3. Stocking rate

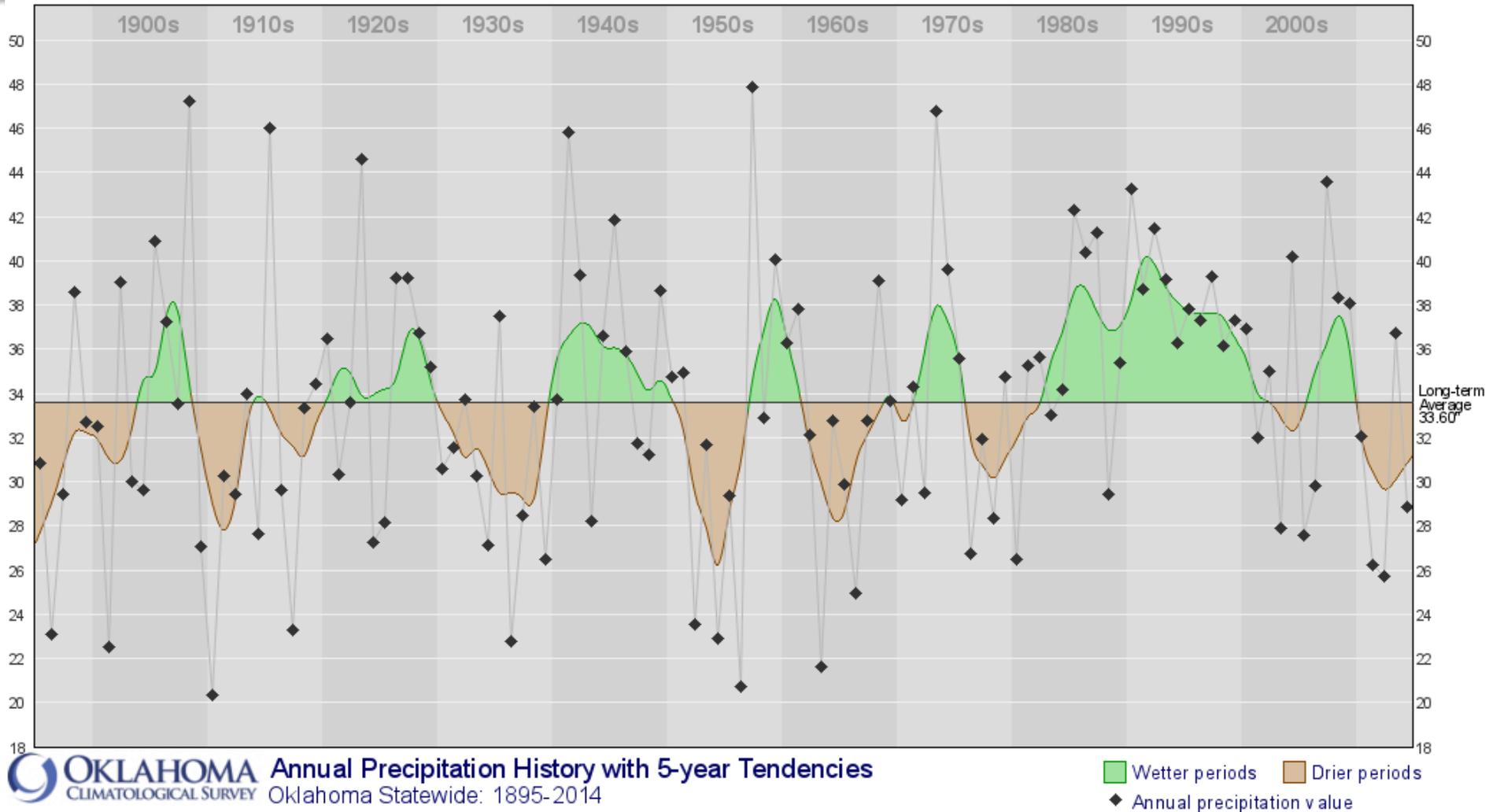
Stocking Rate

Is Forage DEMAND

Carrying Capacity

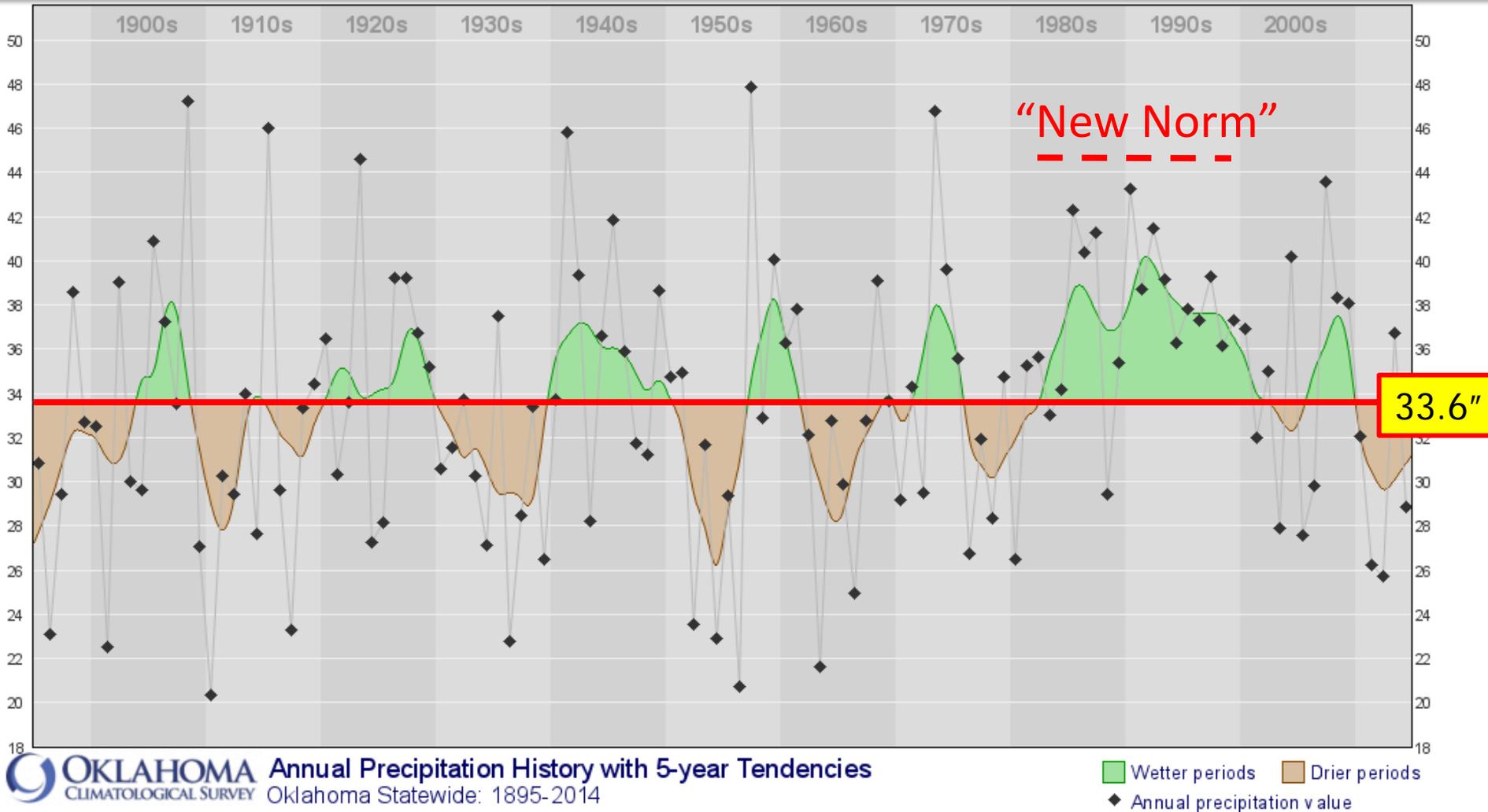
is Forage SUPPLY

120 Years of Rainfall Data



Oklahoma

120 Years of Rainfall Data



Oklahoma

Simple assessment

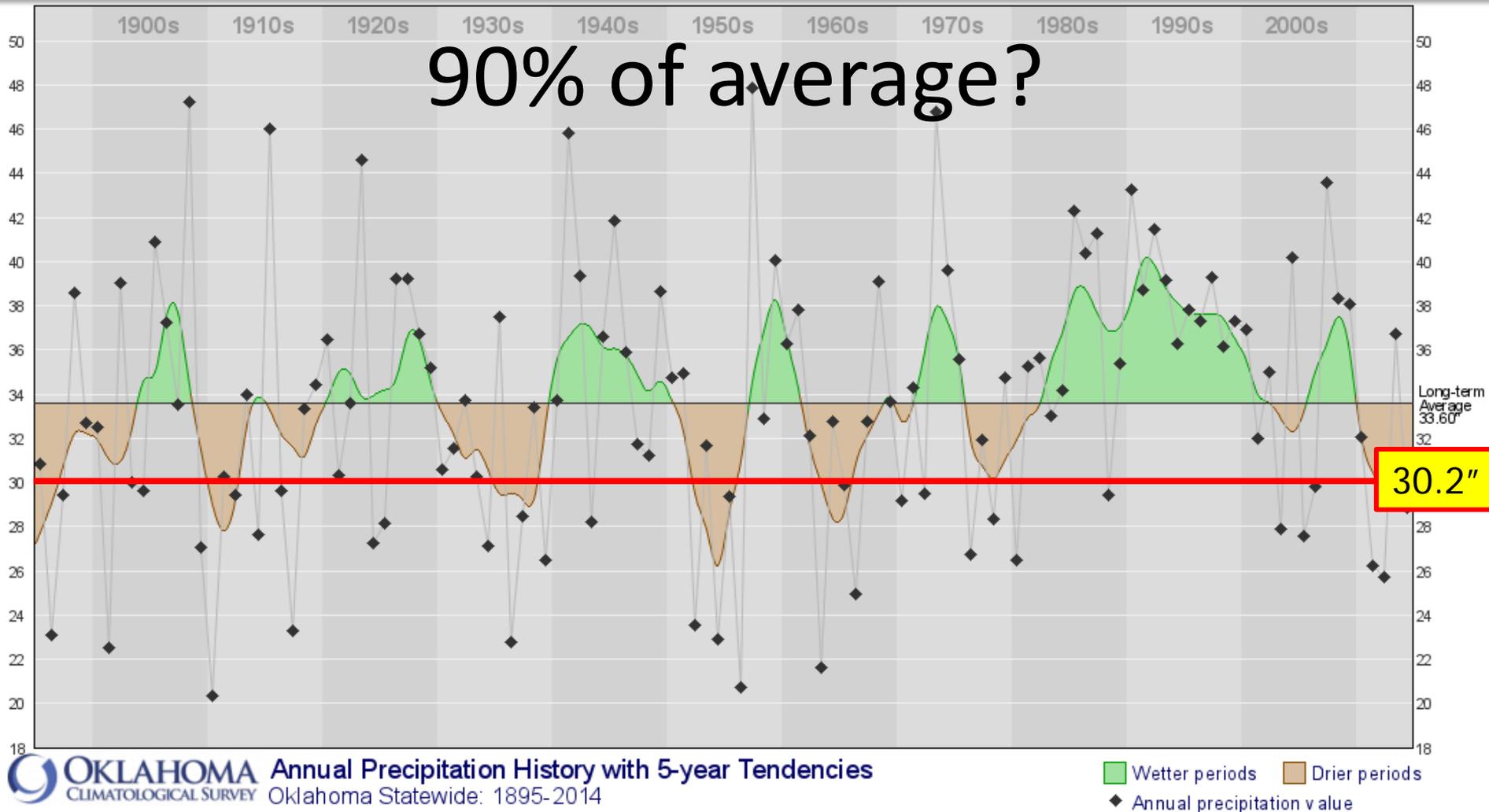
For every
month of hay
feeding over
planned . . .

Overstocked by 8.3%

Over-stocking is a result of ...

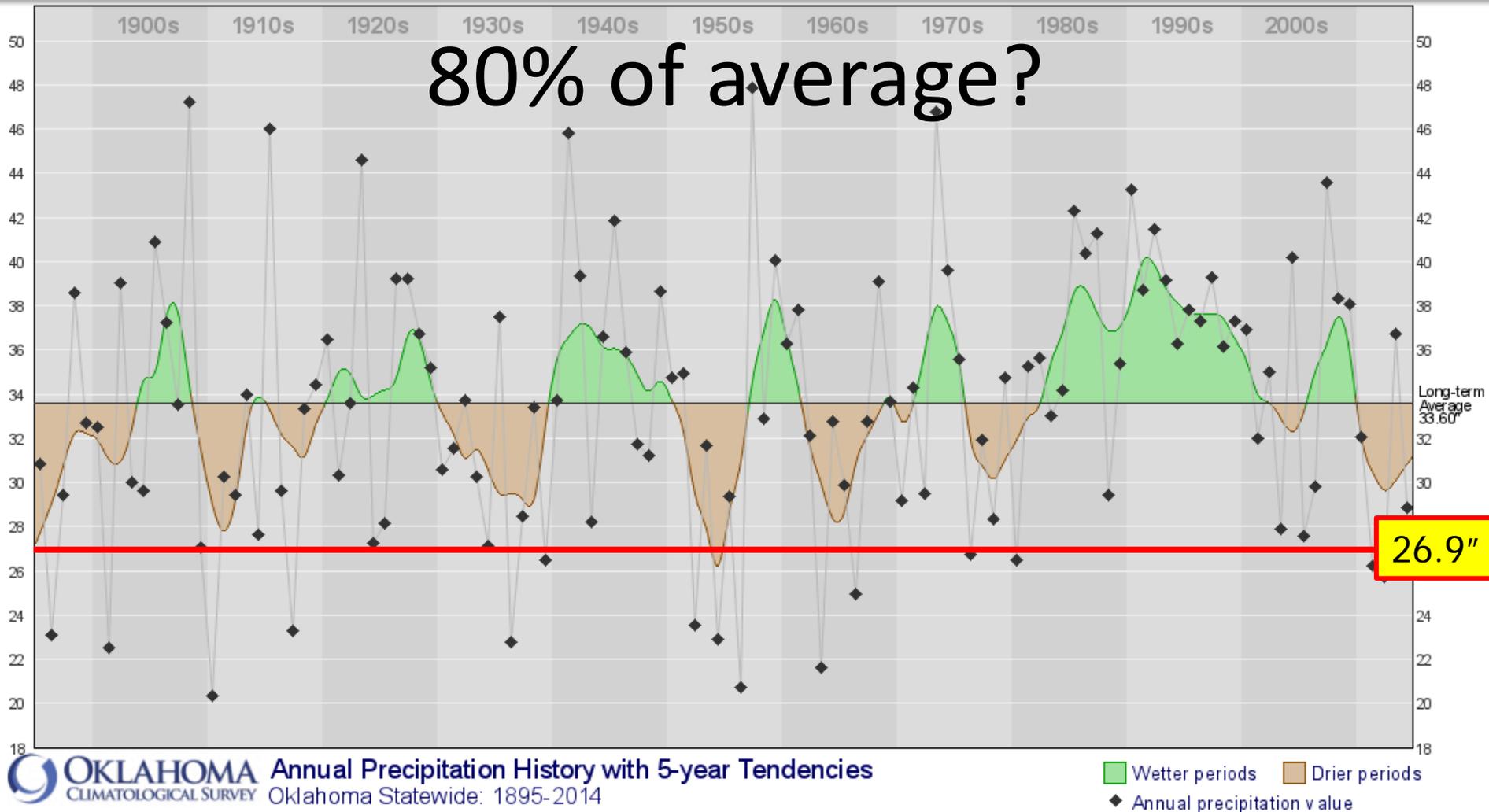
- Too many cattle
- Less than optimum use of forage resources
- or BOTH

120 Years of Rainfall Data



Overstocked 1 in 3 years

120 Years of Rainfall Data

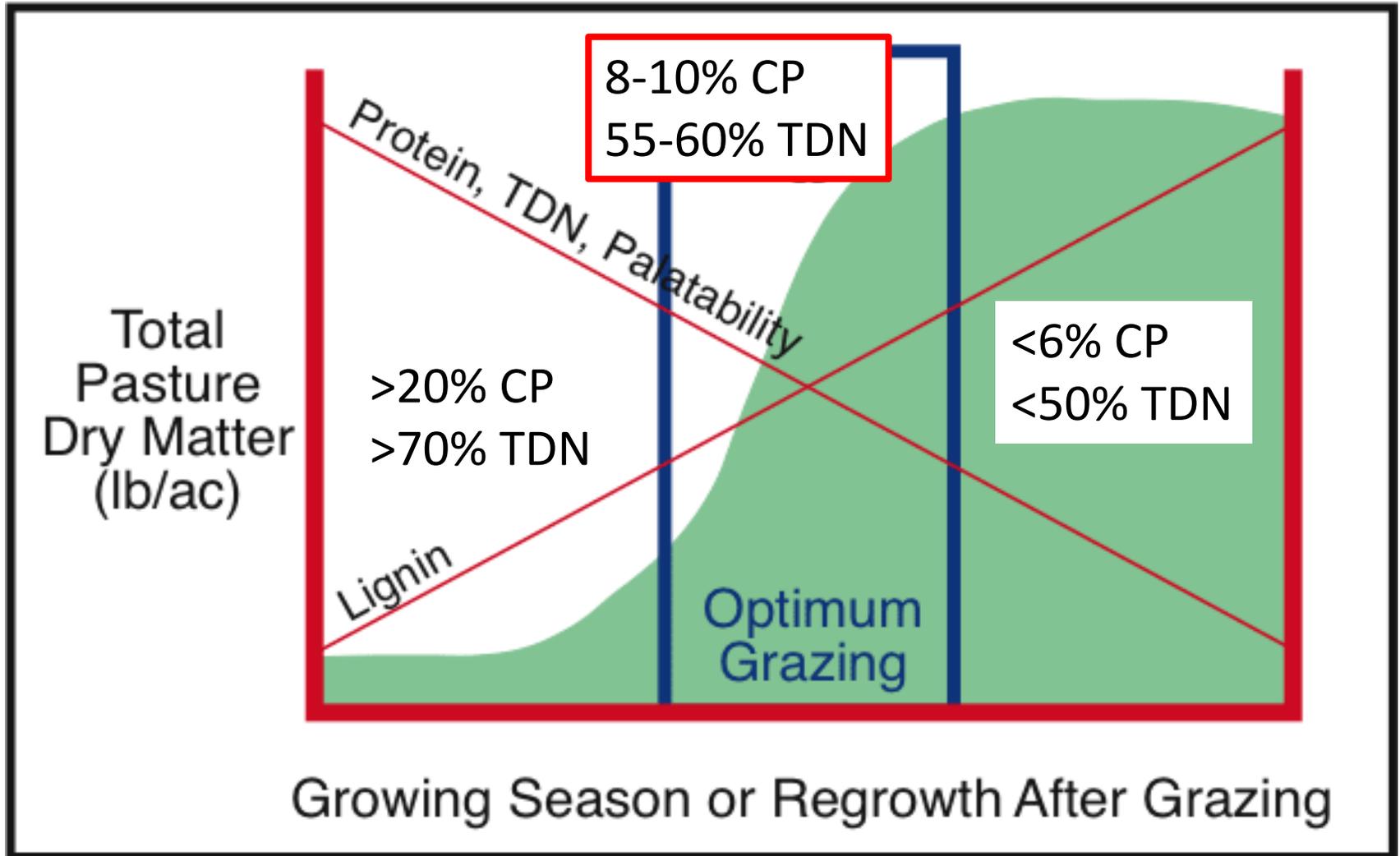


Overstocked 1 in 8 years

Hay production



PHASES OF PLANT MATURITY



Manage fertility



Basic Principles

of

Grazing Management

Basic Principles

Rule #1

Keep the ground
covered

E.J. Dyksterhuis, 1950's

A photograph showing a field of very short, sparse, and dry-looking grass. The ground is visible through the thin layer of vegetation.

A man whose
pastures are short
needs rain the
MOST

A photograph showing a field of tall, dense, and healthy-looking grass. The grass is a mix of green and brown, indicating it is well-maintained and has more biomass.

A man whose
pastures are in
good shape makes
the **MOST** of the
rain he gets

Manage for residuals



Manage residuals



“It takes grass to grow grass”

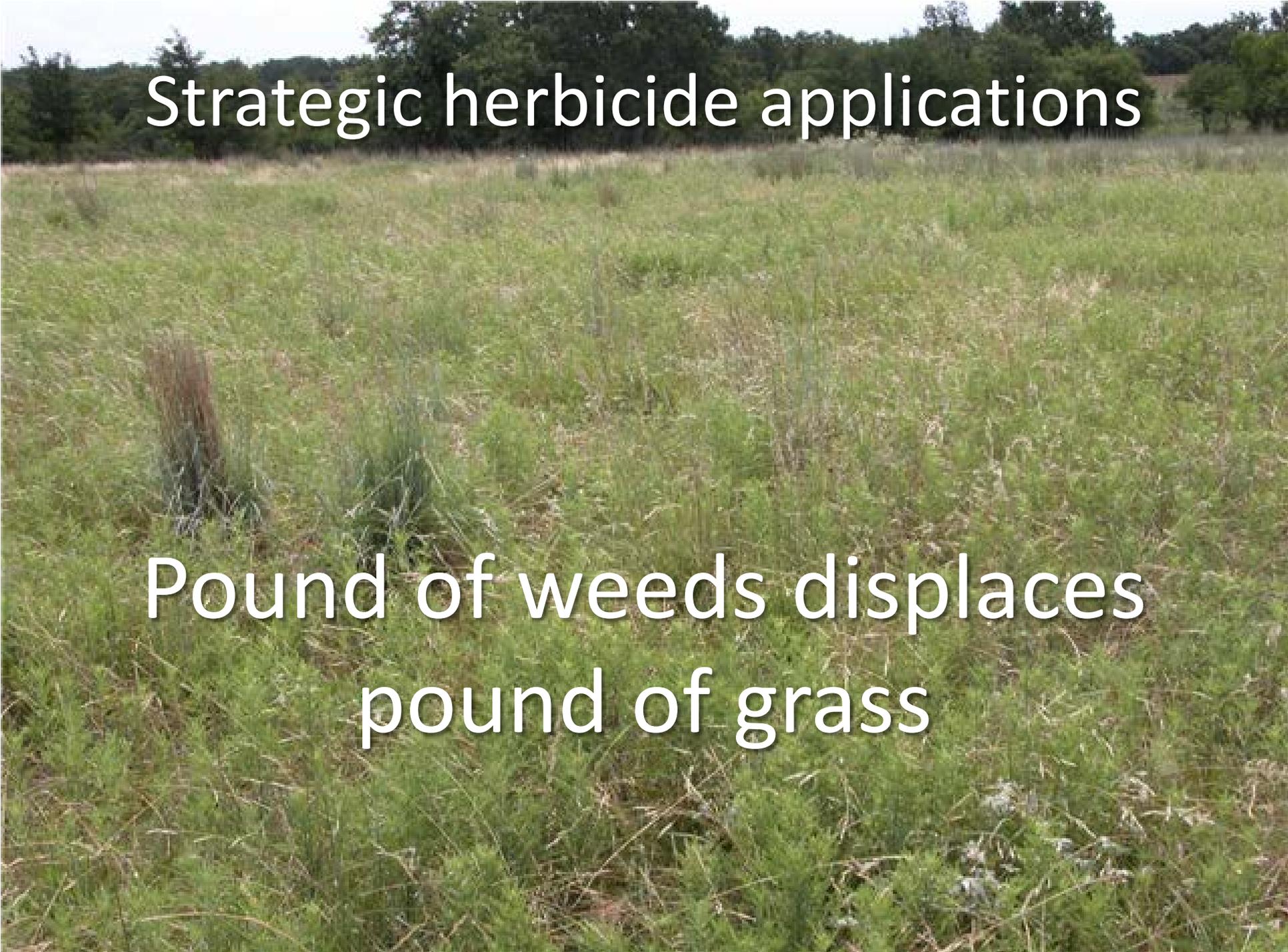
Introduced pastures

A wide, flat field of lush green grass under a cloudy sky. In the distance, there is a treeline and some buildings. The grass is dense and vibrant green, covering the entire foreground and middle ground.

Manage fertility and weeds



Strategic herbicide applications



Pound of weeds displaces
pound of grass

Basic Principles

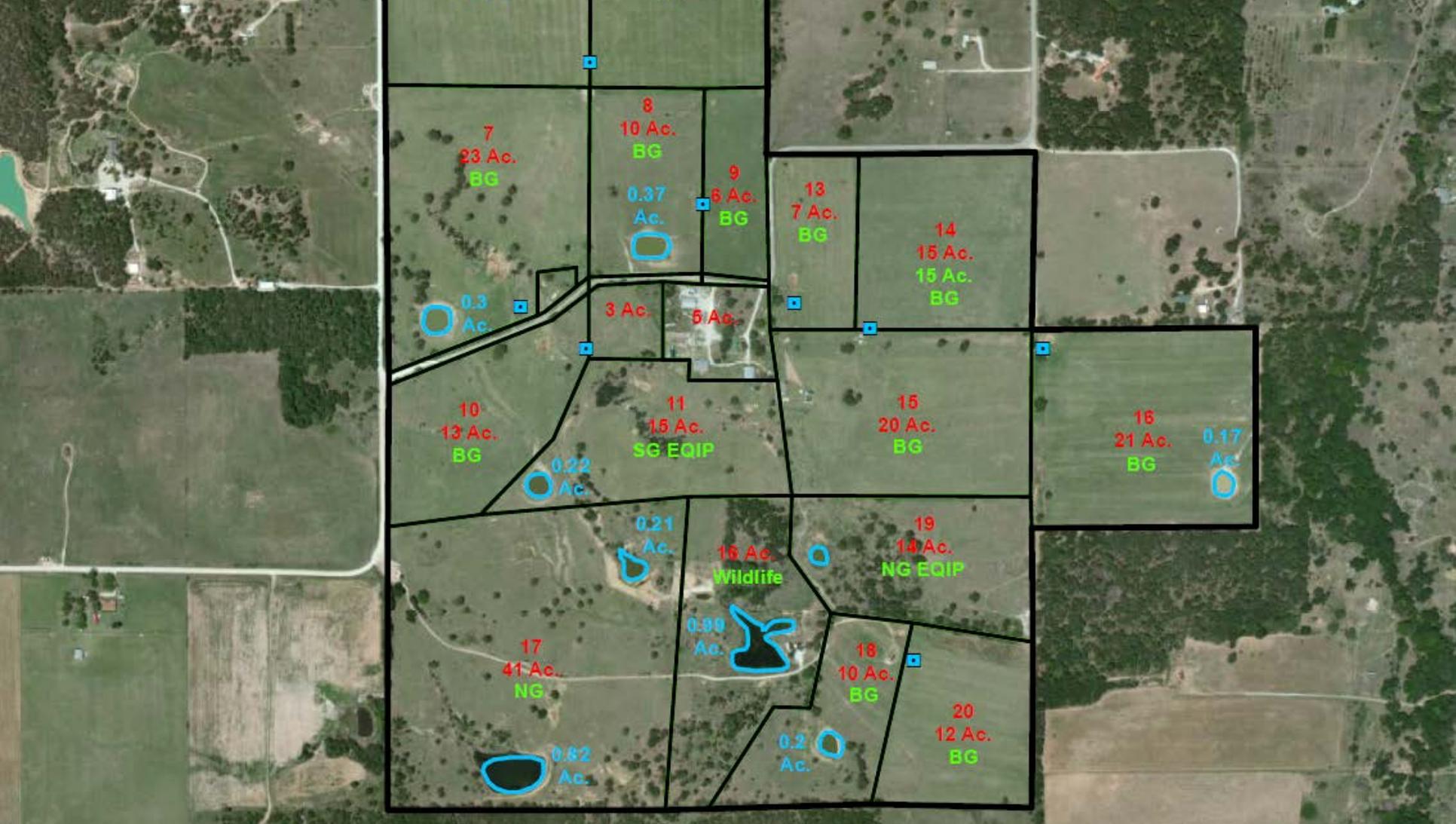
Rule #2

Prioritize most
productive sites



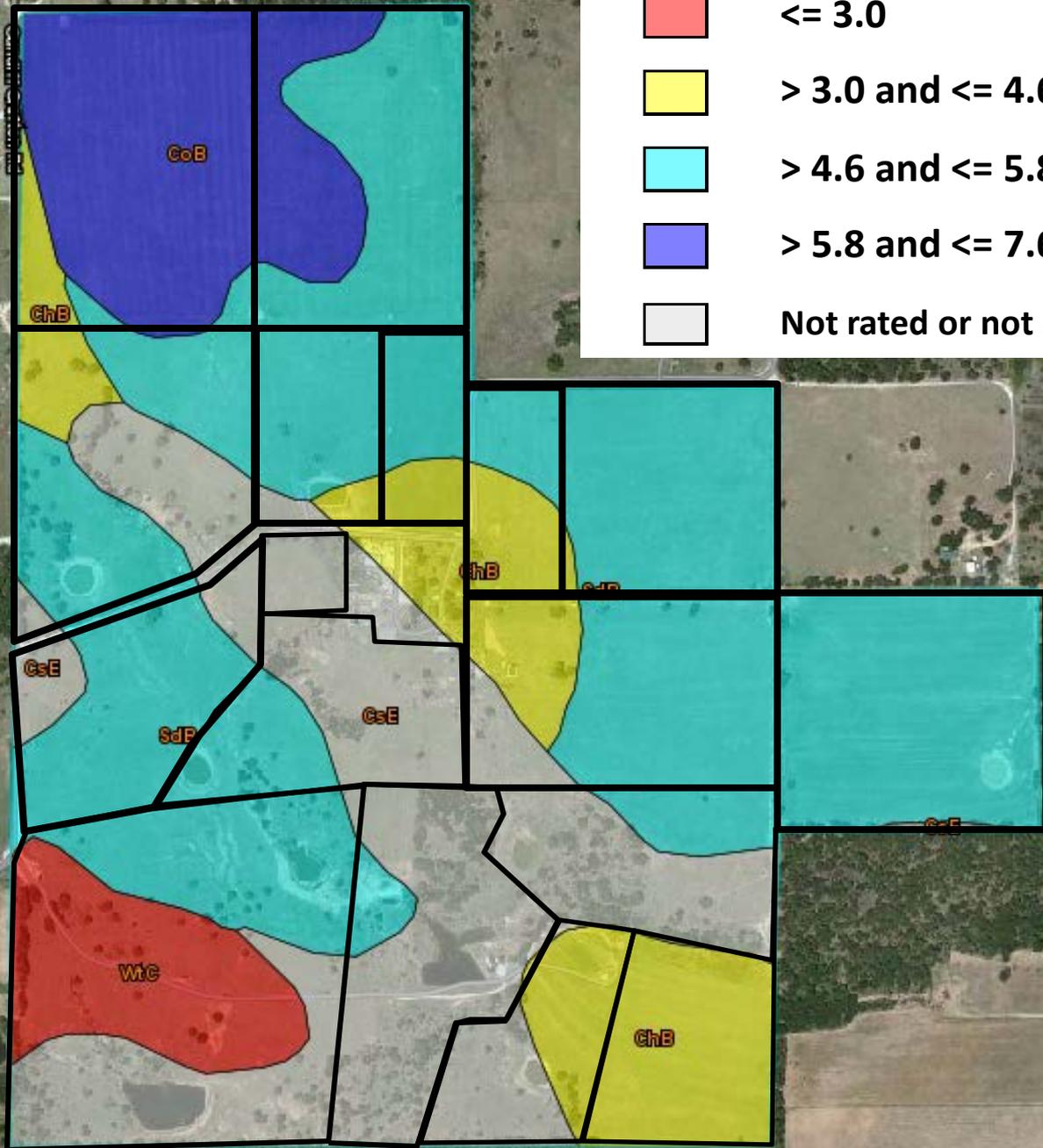
United States Department of Agriculture
Natural Resources Conservation Service

Web Soil Survey



Soil Rating Polygons

-  ≤ 3.0
-  > 3.0 and ≤ 4.6
-  > 4.6 and ≤ 5.8
-  > 5.8 and ≤ 7.6
-  Not rated or not available



Importance of Range/Pasture Condition

Range Condition	Soil Type		
	Pulaski fsl	Dougherty lfs	Darsel-S'ville cx
		Lb/Acre	
Excellent	8500	5000	3500
Good	6500	4000	2750
Fair	4500	3000	1750
Poor	3000	2000	1250
Bermudagrass (AUM)	7.1	3.4	2.6

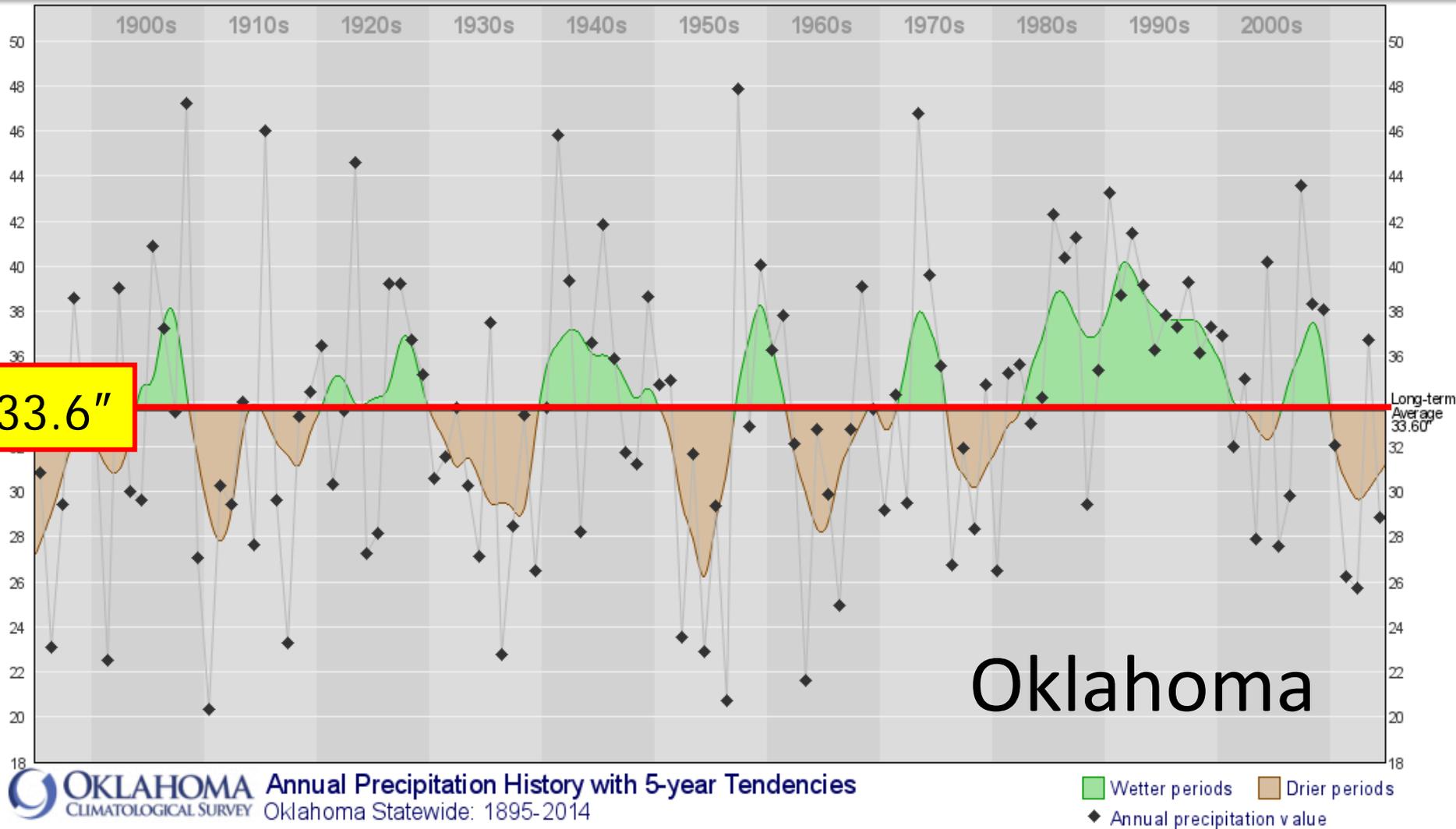
Importance of Range Condition

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Fair	4500	3000	1750
Poor	3000	2000	1250
Bermudagrass (AUM)	7.1	3.4	2.6

Stocking Rate Dougherty Ifs Site

Range Condition	Soil Type	Acres/Cow	
	Dougherty Ifs	1300 lb	1100 lb
	Lb/Acre		
Excellent	5000	10	8
Good	4000	12	10
Fair	3000	16	19
Poor	2000	25	21
Bermudagrass (AUM)	3.4	4.6	3.9

120 Years of Rainfall Data



Rainfall & Stocking Rate

Rainfall	Native Range Acres/Cow		
	Dougherty	1300 lb	1100 lb
15% above	4600	10	8.5
Average*	4000	12	10
15% below	3400	14	11.5

Good condition, favorable rainfall

Rainfall & Stocking Rate

Rainfall	<u>Bermudagrass</u>	Acres/Cow	
	Dougherty	1300 lb	1100 lb
15% above	3.9	3.9	3.3
Average*	3.4	4.6	3.9
15% below	2.9	5.3	4.5

Proper fertility, favorable rainfall

Basic Principles

Rule #3

Plan management
& grazing activities

Home Place Carrying Capacity

Grazing Plan

Pasture	Forage Type	January		February		March		April		May		June		July		August		September		October		November		December	
		1-15	16-31	1-15	16-28	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	1-30	1-15	16-31	1-15	16-30	1-15	16-31
1	NG																								
2	BG								Fertilize																
3	BG								Fertilize																
4	BG								Fertilize							Fertilize									
5	RG/BG			Fertilize						Fertilize															
6	RG/BG			Fertilize						Fertilize															
7	BG								Fertilize							Fertilize									
8	RG/BG			Fertilize						Fertilize															
9	RG/BG			Fertilize						Fertilize															
10	BG								Fertilize							Fertilize									
11	BG								Fertilize																
12	BG								Fertilize																
13	BG								Fertilize																
14	BG								Fertilize							Fertilize									
15	RG/BG			Fertilize						Fertilize															
16	RG/BG			Fertilize						Fertilize															
trap	BG								Fertilize																
Feed - cows																									
Feed - heifers																									
Precond'n calves																									

Weed spray

Spring working--

Bulls in cows

Bull in heifers

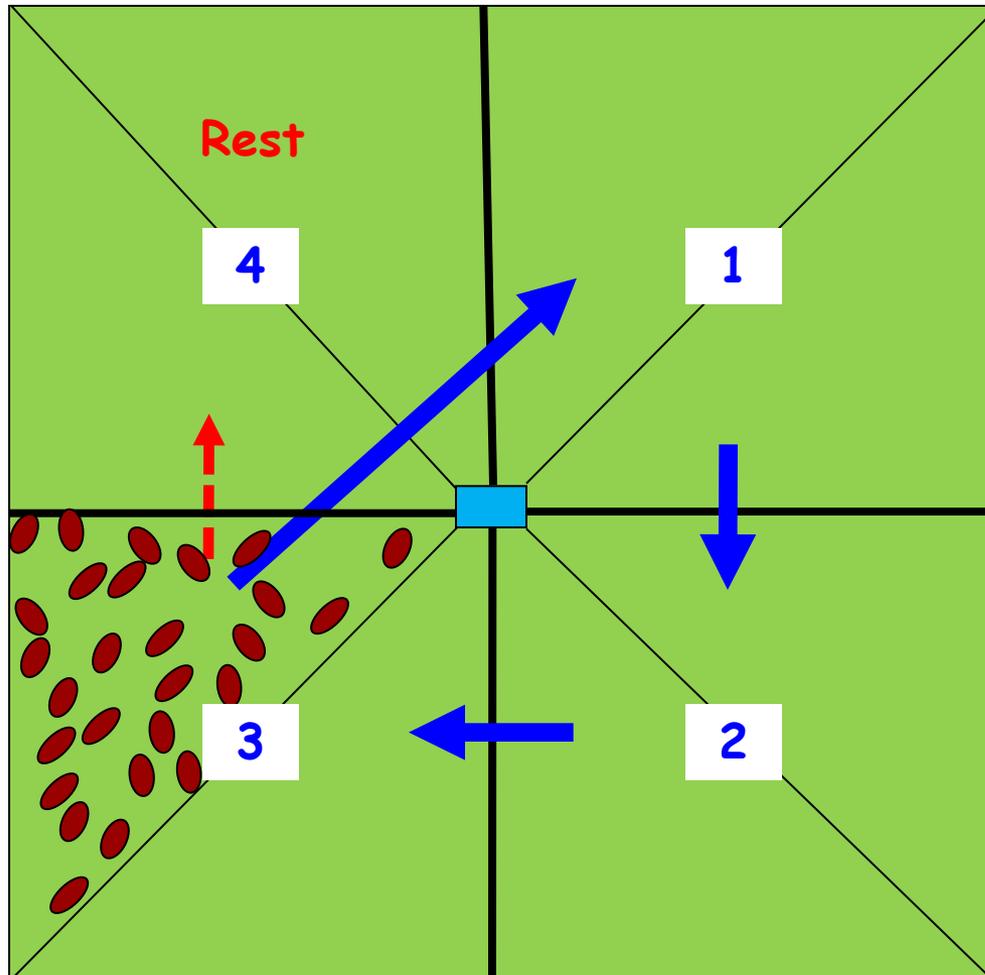
Weaning

Preg test; fall working

Fertility test bulls

- Graze
- Defer from Grazing
- Stockpile
- Feeding Hay
- supplementation

Multi-pasture managed grazing



1. 1ST PRIORITY GRAZING
2. 2ND PRIORITY GRAZING
3. 3RD PRIORITY GRAZING

REST (← - - -)

= *Emergency grazing*

Where to start?

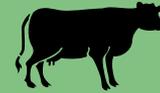


Close the gates!



Grazing 101

Start rotational grazing
through existing pastures

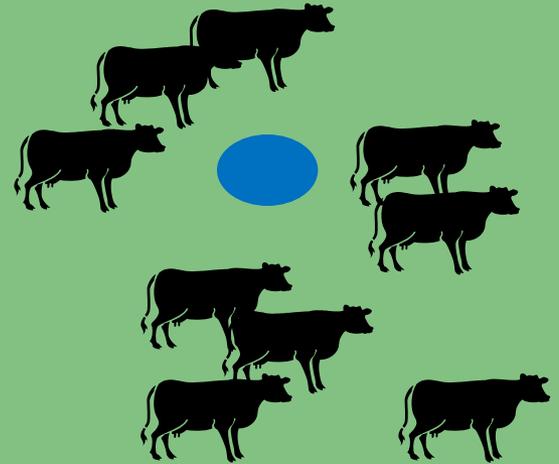


Grazing 101

Start rotational grazing
through existing pastures



Create 1 herd

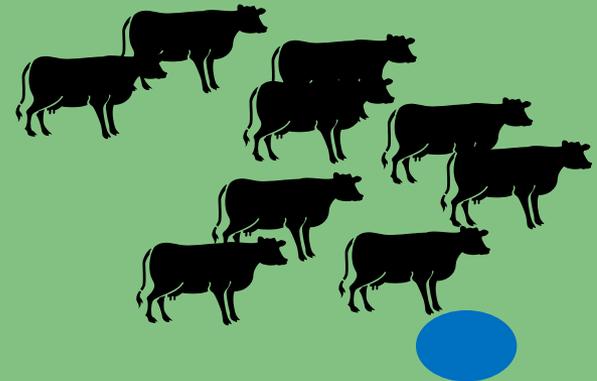


Grazing 101

Introduced pastures



Rotate herd every
7-10 days

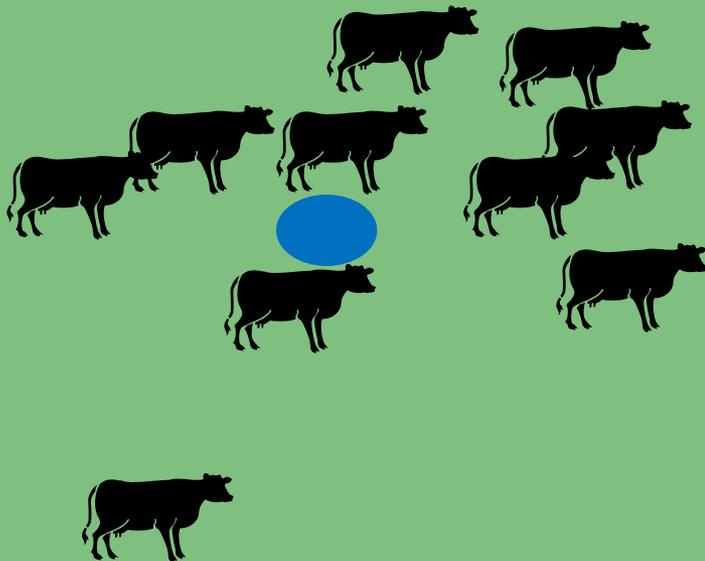


Grazing 101

Introduced pastures



Pastures rest 21-30 days
between grazing events

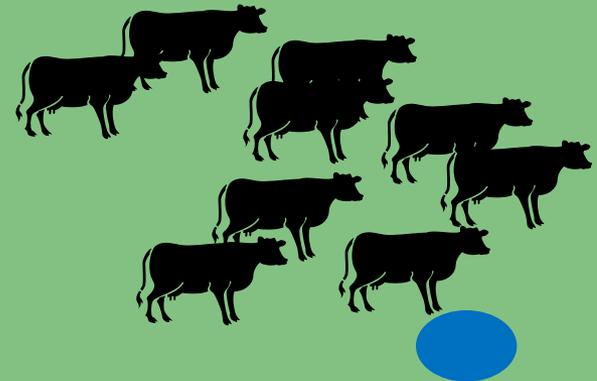


Grazing 101

Native grass pastures



Rotate herd every
10-25 days

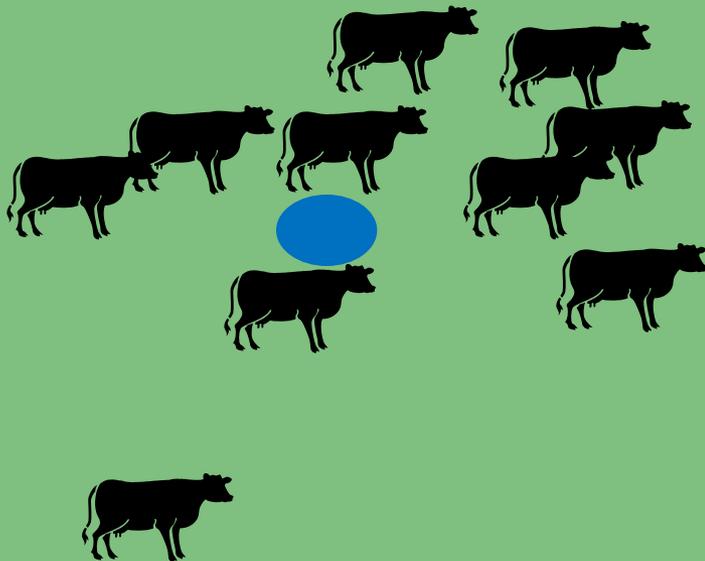


Grazing 101

Native grass pastures



Pastures rest 30-75 days
between grazing events



Recovery Periods

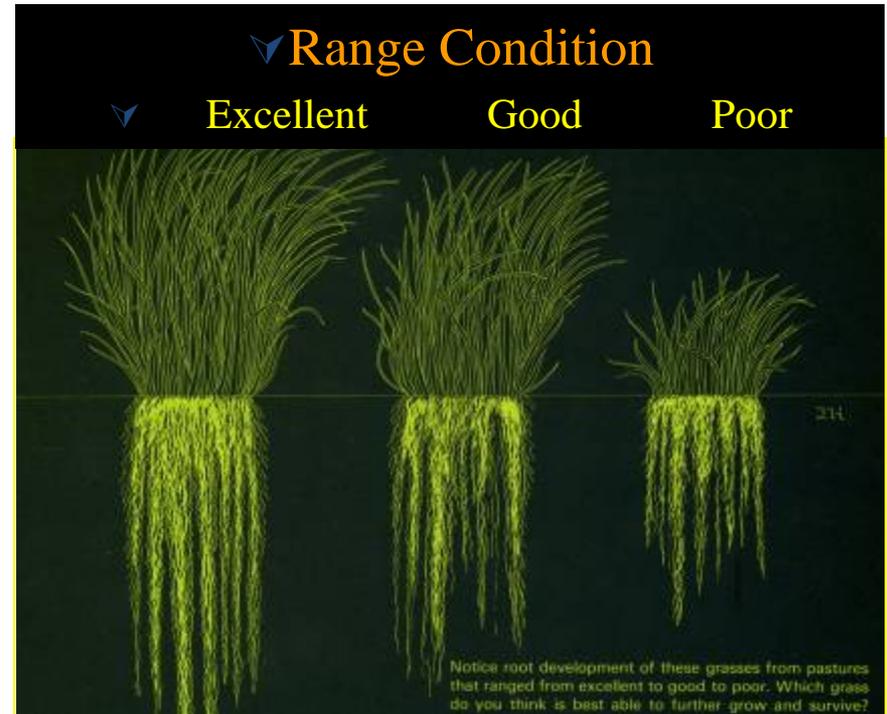
Forage Type	Active Growth	Moderate Growth	Slow Growth
Bermudagrass	20 days	30 days	45 days
Nativegrass	30 days	60 days	90+ days

Apply “take half, leave half” rule

High stock density – take 1/3 only!

Defoliation affects root systems

% Leaf Volume Removed	% Root Growth Stoppage
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%



Number of grazing paddocks*

<u># paddocks</u>	<u>Days Graze</u>	<u>Days Rested</u>	<u>% of time rested</u>
1	365	0	0
2	183	182	50
4	91	275	75
8	45	320	88
16	23	342	94
32	11	354	97

**Assuming all paddocks are of equal grazing capacity*

Intensive Grazing



Water developments

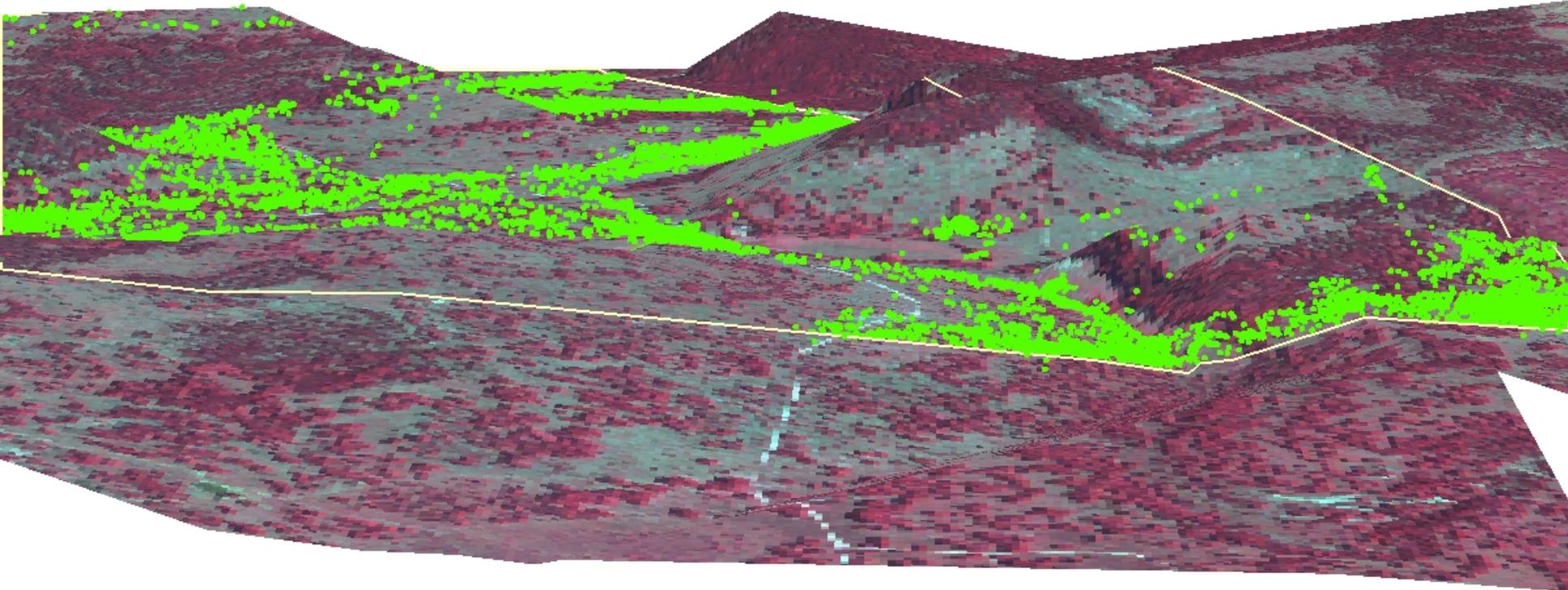


Edwards Plateau Ranch 3-D View w/ GPS Locations

39% area used (41% GPS points on 9% area)

SR: 21 ac/cow

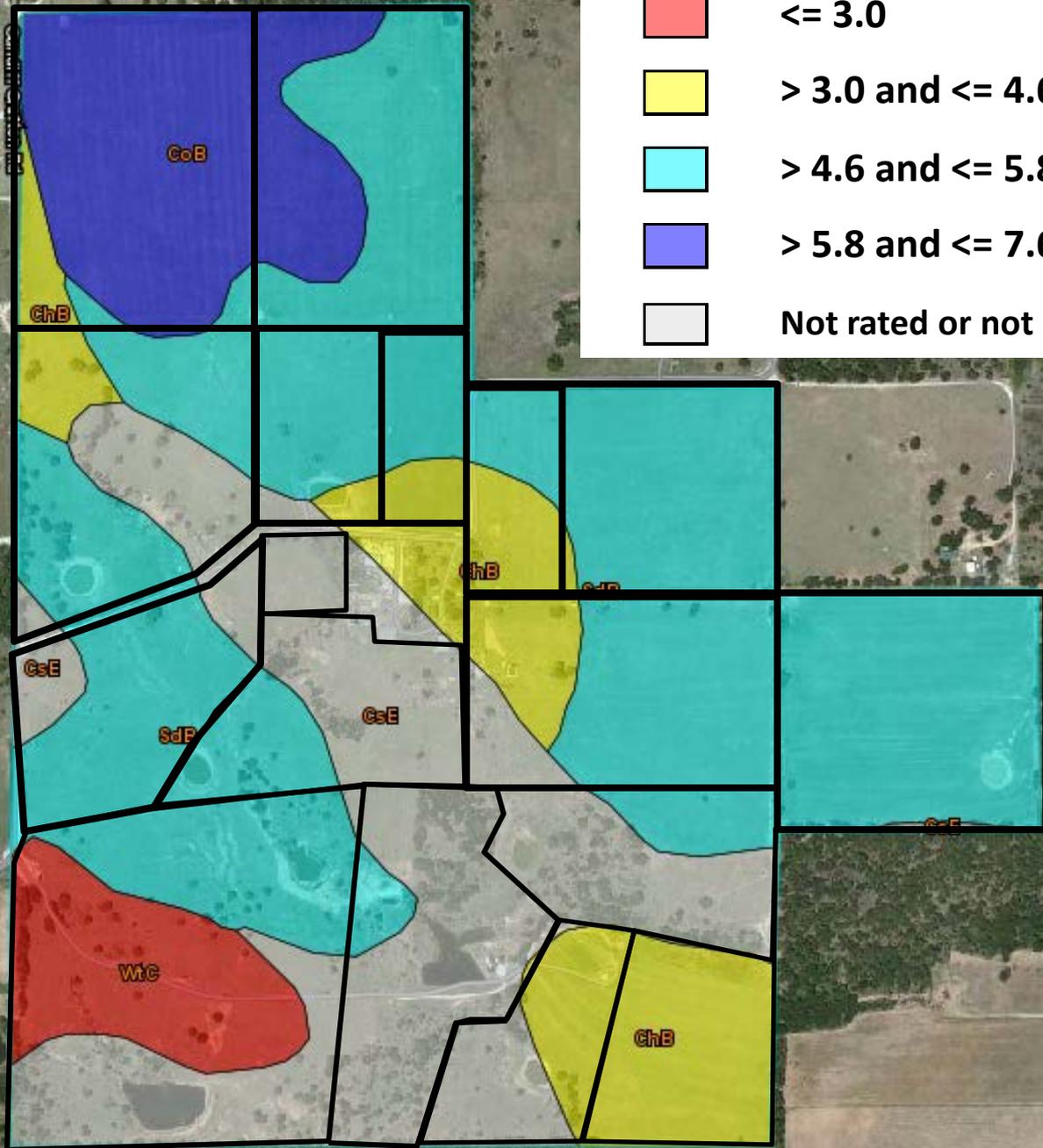
Effective SR: 9 ac/cow



Courtesy of **Richard Teague, PhD**
Texas AgriLife Research, Vernon

Soil Rating Polygons

-  ≤ 3.0
-  > 3.0 and ≤ 4.6
-  > 4.6 and ≤ 5.8
-  > 5.8 and ≤ 7.6
-  Not rated or not available



Record Actual Events

Pasture	Forage Type	January		February		March		April		May		June		July		August		September		October		November		December		
		1-15	16-31	1-15	16-28	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	
1	NG	16d C	15d C	15d C	13d C									bulls	bulls	bulls	bulls	bulls	bulls	bulls	bulls			16d C	15d C	
2	BG					15d hfr	16d hfr					4d C	3d C		5d C		7d C		5d C			bulls	bulls	bulls		
3	BG					15d C						4d C	3d C			4d C	4d C		5d C							
4	BG							15d hfr			8d hfr	3d C	8d hfr	8d hfr		7d hfr	6d C					5d Hfr	15d Hfr	15d Hfr		
5	RG/BG								15d hfr	15d hfr		7d hfr	7d hfr		8d hfr	8d hfr	7d hfr		4d C		6d C					
6	RG/BG							8d C		8d C	7d hfr	8d hfr		7d hfr	8d hfr		8d hfr	4d C	7d C		5d C					
7	BG					15d Hfr	16d Hfr					8d Hfr		8d Hfr		7d Hfr					8d Hfr	10d Hfr			16d Hfr	
8	RG/BG							15d Hfr		15d Hfr			8d Hfr		8d Hfr		8d Hfr		10d Hfr							
9	RG/BG								15d Hfr		16d Hfr		7d Hfr		8d Hfr		8d Hfr			7d Hfr						
10	BG	15d Hfr	16d Hfr									7d Hfr		7d Hfr		8d Hfr									15d hfr	15d hfr
11	BG			15d Hfr	14d Hfr							4d C		3d C					10d Hfr		8d Hfr					
12	BG						16d C	7d C				3d C			3d C				5d Hfr	5d Hfr		7d Hfr				
13	BG	15d hfr	16d hfr									4d C		4d C					15d wc	15d wc	16d wc					
14	BG			15d hfr	16d hfr							4d C		3d C	3d C	6d C						15d C	15d C			
15	RG/BG						bulls		8d C		8d C		3d C		3d C	4d C			4d C				15d wc	16d wc		
16	RG/BG						bulls		7d C	7d C	7d C		4d C		3d C	3d C					5d C	5d C				
trap	BG	bulls	bulls	bulls	bulls														11d wc							
Feed - cows		52 Cow	52 Cow	52 Cow	52 Cow	52 Cow	52 Cow	52 Cow	52 Cow	48 Cow	48 Cow	48 Cow	48 Cow	48 Cow	48 Cow	48 Cow	48 Cow	53 Cow	53 Cow	53 Cow	53 Cow	53 Cow	53 Cow	53 Cow	53 Cow	
Feed - heifers		8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	8 Hfr	10 Hfr	10 Hfr	10 Hfr	10 Hfr	10 Hfr	10 Hfr	10 Hfr	10 Hfr	
Precond'n calves		12 hfr	12 hfr	12 hfr	12 hfr	12 hfr	12 hfr	12 hfr	12 hfr	10 hfr	10 hfr	10 hfr	10 hfr	10 hfr	10 hfr	10 hfr	10 hfr	56 hd	56 hd	56 hd	56 hd	56 hd	56 hd	56 hd	12 hfr	12 hfr

Grazed
Defer from Grazing
Stockpiled
Feeding Hay
supplementation

Feb 5: fert: 5,6,8,9,15,16 w/ 46 N	Apr 30: spring working	Sep 4: preg test; fall working
	Apr 24: fert 2,3,11,12,13 w/ 46 N	Aug 30: fert 4,7,10,14 w/ 46 N
	Apr 24: fert 4,7,10,14 w/ 92 N	Sep 4: wean calves/precondition
Feb 11: fertility test bulls	May 8: fert 5,6,8,9,15,16 w/ 46 N	Dec 3: sold calves
	Apr 1: bulls in heifers	Jun 1: bulls out heifers
	May 1: bulls in cows	Jul 15: bulls out cows
Jan 10: 1st calf born in heifers		
Feb 2: 1st calf born in cows	May 2: sold 4 cows pairs, 2 hfr pairs	Sept 5: sold 3 cows

Forage Assessment

Forage Assessment Form Using Reserve Herd Days (RHDs)

Assessment Date **1-Sep-13**

ANNUAL ESTIMATE of LIVESTOCK DEMAND

Cattle	Qty	Weight	Annual Livestock Demand		
			per Day	Days/Year	per Year
Cows	60	1,200	1,872	365	683,280
2-year old cows	10	1,000	260	365	94,900
Yearling heifers	20	800	416	365	151,840
Bull	4	1,600	166	365	60,736
Weaned steers	34	650	575	90	51,714
Weaned heifers	34	600	530	90	47,736
			3,819		1,090,206

GRAZING DEMAND to DATE

Cattle	Qty	Weight	Livestock Demand		Months Grazed	Total Grazing Demand
			per Day	per Month		
Cows	60	1,200	1,872	56,160	5	280,800
2-year old cows	10	1,100	286	8,580	5	42,900
Yearling heifers	20	800	416	12,480	5	62,400
Bulls	4	1,600	166	4,992	5	24,960
Weaned steers	34	800	707	21,216		#VALUE!
Weaned heifers	34	600	530	15,912		-
			2,740	82,212		411,060

Forage year begins April 1

FORAGE INVENTORY TO DATE (GRAZED + RHDs)

Grazing RHDs					Estimate Forage Reserve
Pasture	Forage	Total Acres	Reserve Days	Cattle	
2	Bg	40	12	Cows/2yr	25,584
3	Bg	40	3	Cows/2yr	2,028
4	Bg/Rg	20	14	Cows/2yr	8,154
5	Bg/Rg	20	7	YrHfr/bull	8,099
6	Bg/Rg	20	21	YrHfr/bull	26,699
7	cropland	40	14	YrHfr/bull	68,942
barn traps	Bg/Rg	10	5	YrHfr/bull	21,749
LBS forage grazing					161,255
Reserve grazing days					59
Reserve grazing months					2.0

Hay	(acres)	(qty/ac)	Bales	Weight	Reserve
Hayfield, P1	40	2	80	1,200	96,000
Hay			215	1,200	258,000
LBS hay					354,000
Reserve hay days					129
Reserve hay months					4.3

Forage Production to Date

Graze+RHD's	% Annual
Grazed	411,060
RHDs	161,255
Hay	354,000
Total	926,315

% of Annual = 85

Critical Dates & Expected Production

Date	% Annual	Total lbs
1-Jun	30	327,062
1-Jul	65	708,634
1-Sep	90	981,185
1-Nov	100	1,090,206

“The time to start planning for a rain is while we’re in a drought ...”

Quote from Wayne Hamilton, 1982

“... and the time to start planning for a drought is while it’s raining.”



Summary

- Grazing management starts with evaluating stocking rate
- Rule #1: Keep ground covered
- Rule #2: Prioritize most productive soils
- Rule #3: Plan pasture management & grazing activities

Summary

- Grazing 101: Shut gates and use existing pasture
- Graze half or less with each grazing event
- Plan for adequate recovery
- More intensive grazing requires more planning & management

Questions?



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