

Management of Pastures During and Following Drought

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Texas AgriLife Extension Service







U.S. Drought Monitor

Texas

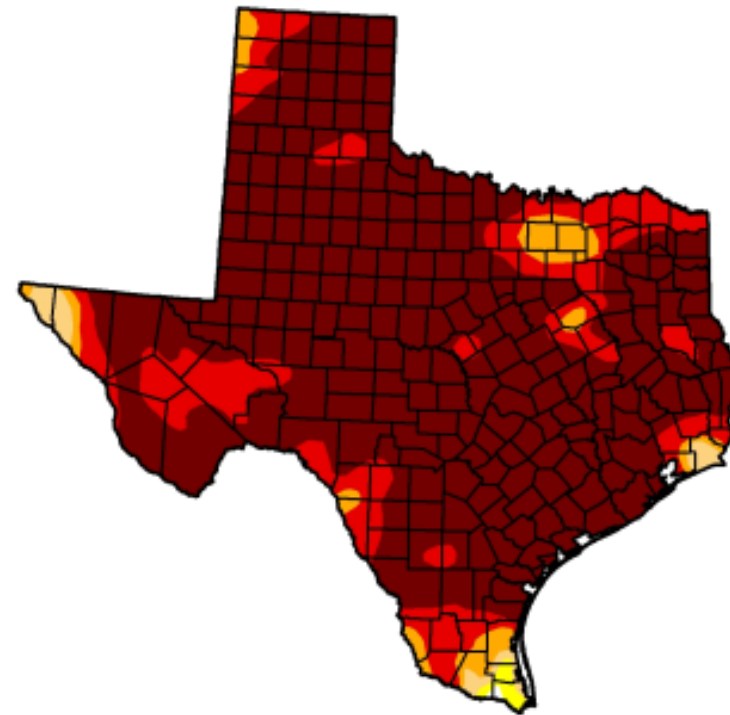
August 9, 2011

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.07	99.93	99.48	97.99	94.27	78.26
Last Week (08/02/2011 map)	0.07	99.93	99.48	98.67	91.73	73.49
3 Months Ago (05/10/2011 map)	0.00	100.00	97.78	93.89	82.06	47.55
Start of Calendar Year (12/28/2010 map)	7.89	92.11	69.43	37.46	9.59	0.00
Start of Water Year (09/28/2010 map)	75.57	24.43	2.43	0.99	0.00	0.00
One Year Ago (08/03/2010 map)	89.46	10.54	2.45	0.22	0.00	0.00

Intensity:

 D0 Abnormally Dry	 D3 Drought - Extreme
 D1 Drought - Moderate	 D4 Drought - Exceptional
 D2 Drought - Severe	



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, August 11, 2011
Laura Edwards, Western Regional Climate Center

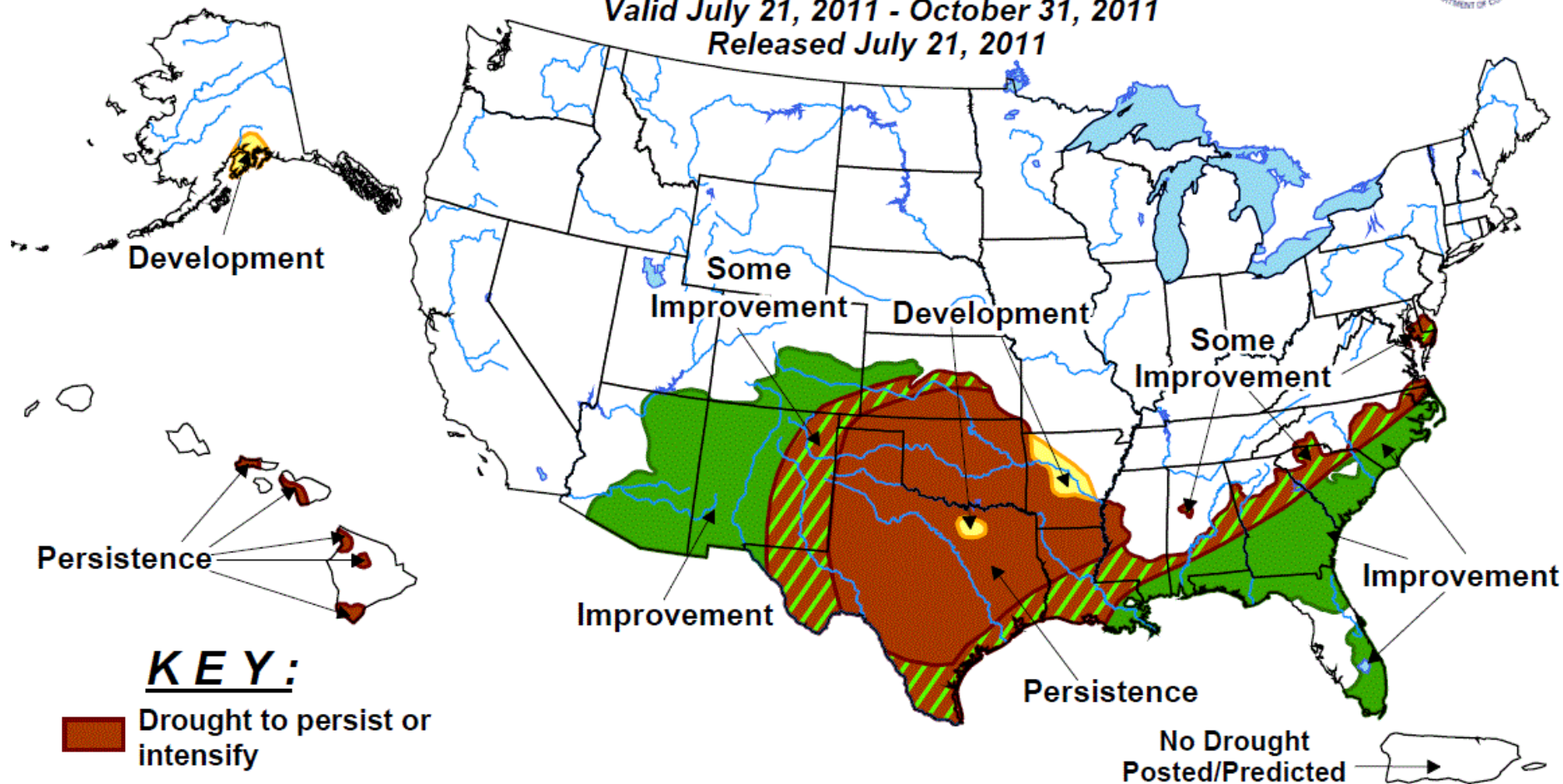


U.S. Seasonal Drought Outlook





Drought Tendency During the Valid Period

Valid July 21, 2011 - October 31, 2011

Released July 21, 2011

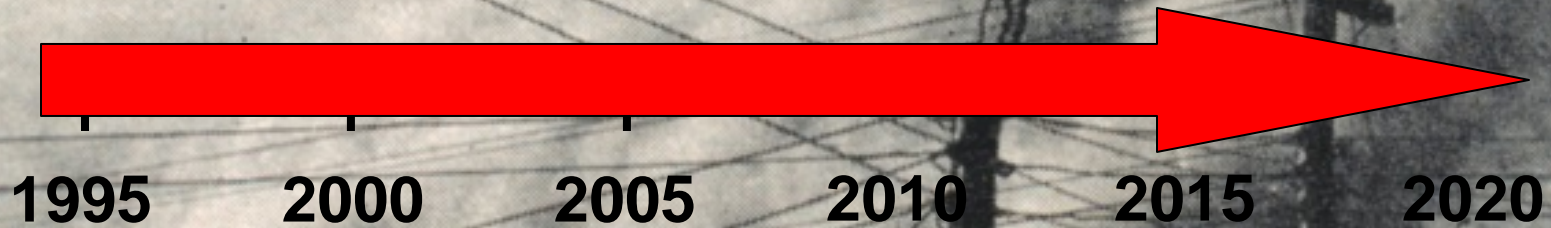


KEY:

-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

Present Drought Timeline



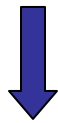
DUST STORM APPROACHING SPEARMAN, TEXAS.
APRIL 14, 1935

What is drought?

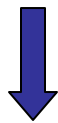
- Meteorological, **agricultural**, hydrologic, and socioeconomic droughts.
- Agricultural drought occurs when there is **inadequate soil moisture** for the needs of a particular crop at a particular time.
- Generally, when precipitation is **< 75% of the average amount** (SRM, 1989).

What are the effects of drought on forages?

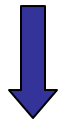
**Reduced
aboveground growth**



**Reduced root
development**



**Reduced
aboveground growth**



Dormancy/death



NOTE:

- Well-managed forages recover **more rapidly** and **more completely** than those that are not well managed.
- Well-managed means:
 - **Fertilized** appropriately
 - **Stocked** appropriately
 - Not grazed/hayed **too short** beyond Sept.

Which species are the most effected by drought?

- Shallow-rooted **annuals**
 - Grasses = crabgrass, small grain/ryegrass seedlings
 - Legumes = clover, burr medics, cowpeas
- Relatively **shallow-rooted perennials**
 - Common bermudagrass, bahiagrass, dallisgrass
- **Deep-rooted perennials**
 - Hybrid bermudagrass, kleingrass, Old World bluestems, weeping lovegrass, many rangeland species

NOTE: The first species to show up after rain begins will be the annuals!



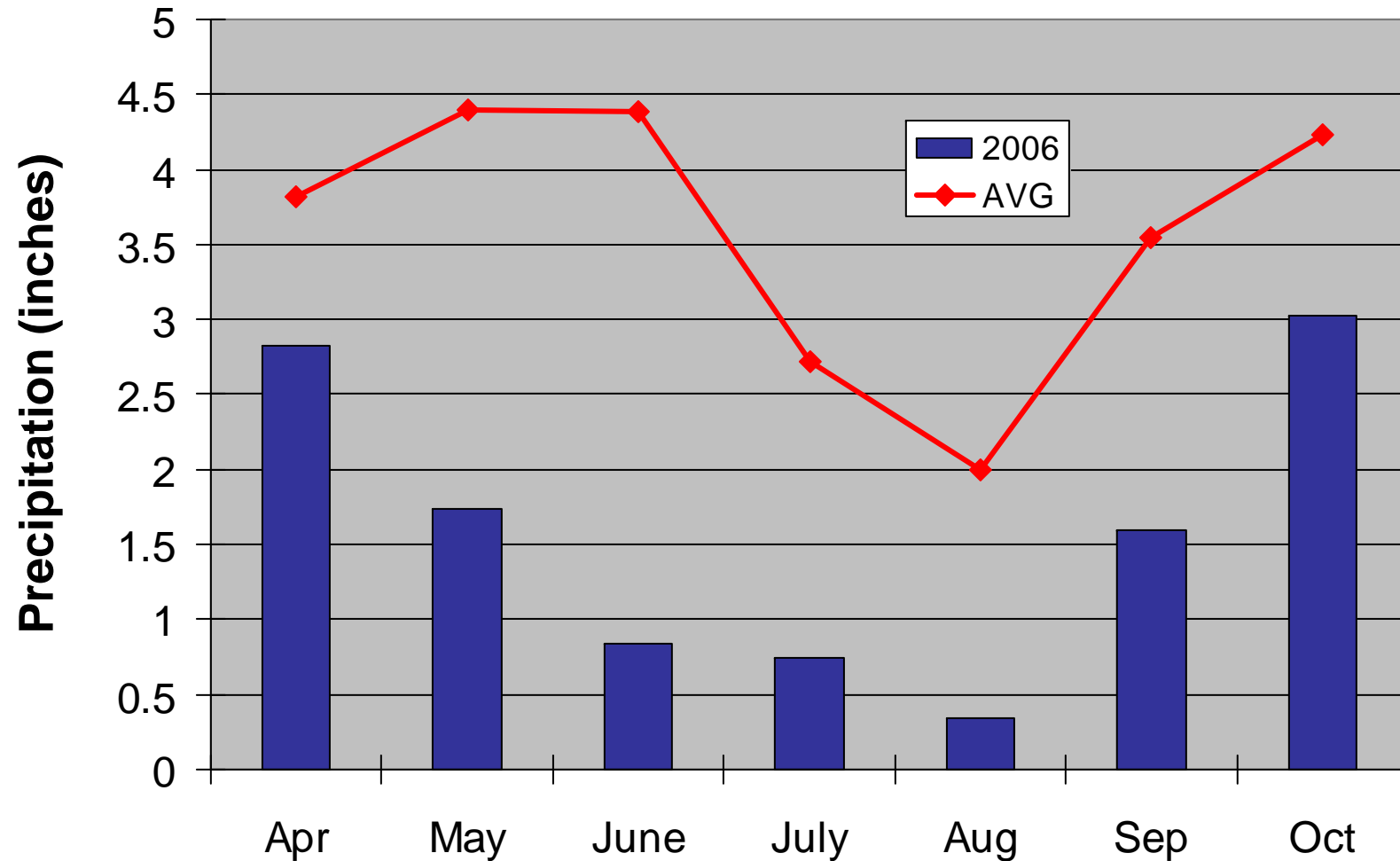
Drought & Forage Nutritive Value

- If drought **is not severe**, forage nutritive value may actually be enhanced.
 - Slower development **may** actually **improve forage nutritive value**.
 - Drought has **little effect on digestibility** as long as leaves are intact.
 - Higher DM, less moisture content)
- **Severe drought** = reduced tillering, more rapid death of established tillers.
 - Perennial species may go **dormant**.
 - Nutrients (N & CHOs) are **translocated** from leaf to roots.
 - **Leaf loss** due to senescence.

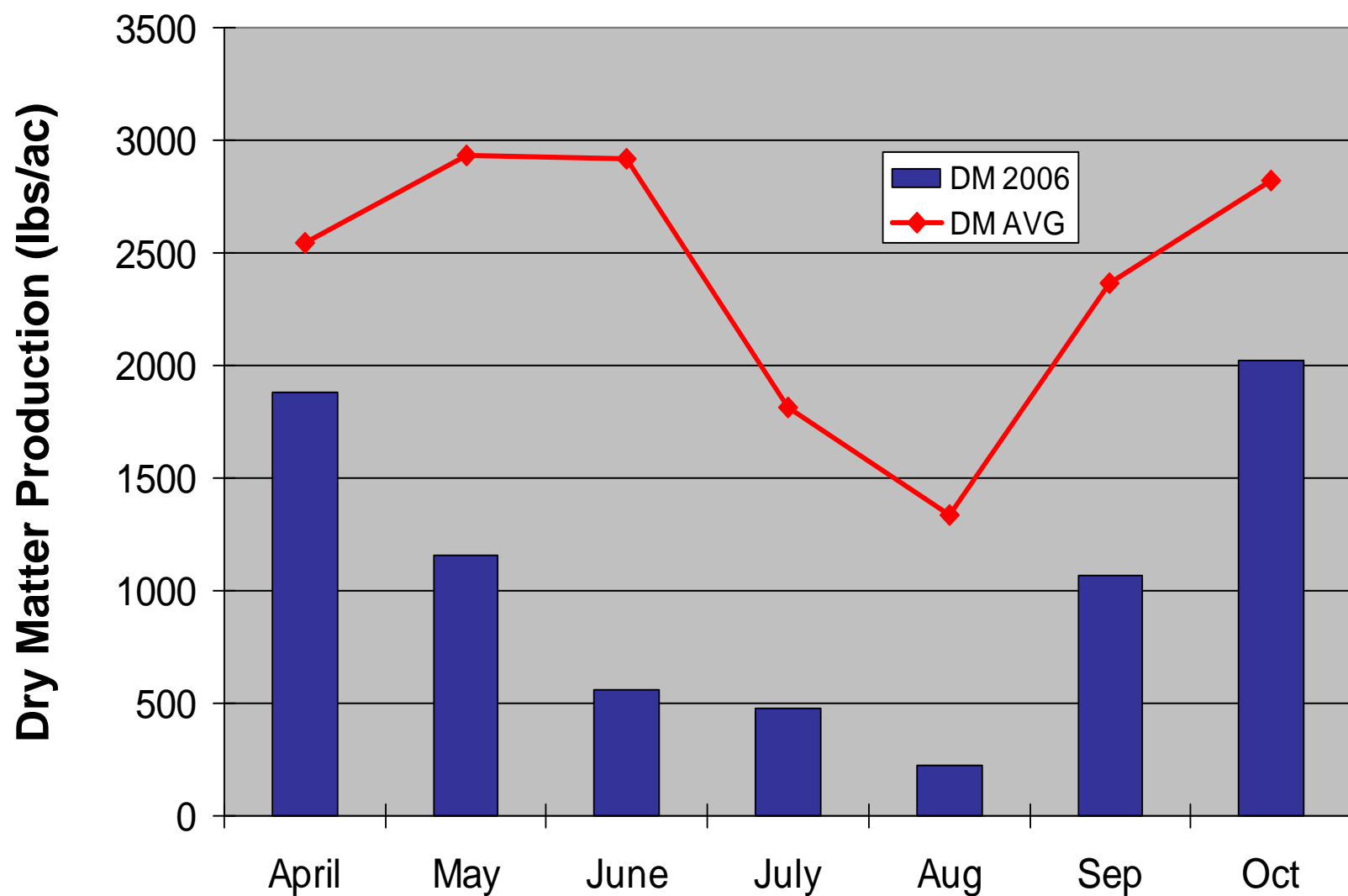
During the Drought

- Landowners will be tempted to keep all of their cattle...**DON'T!**

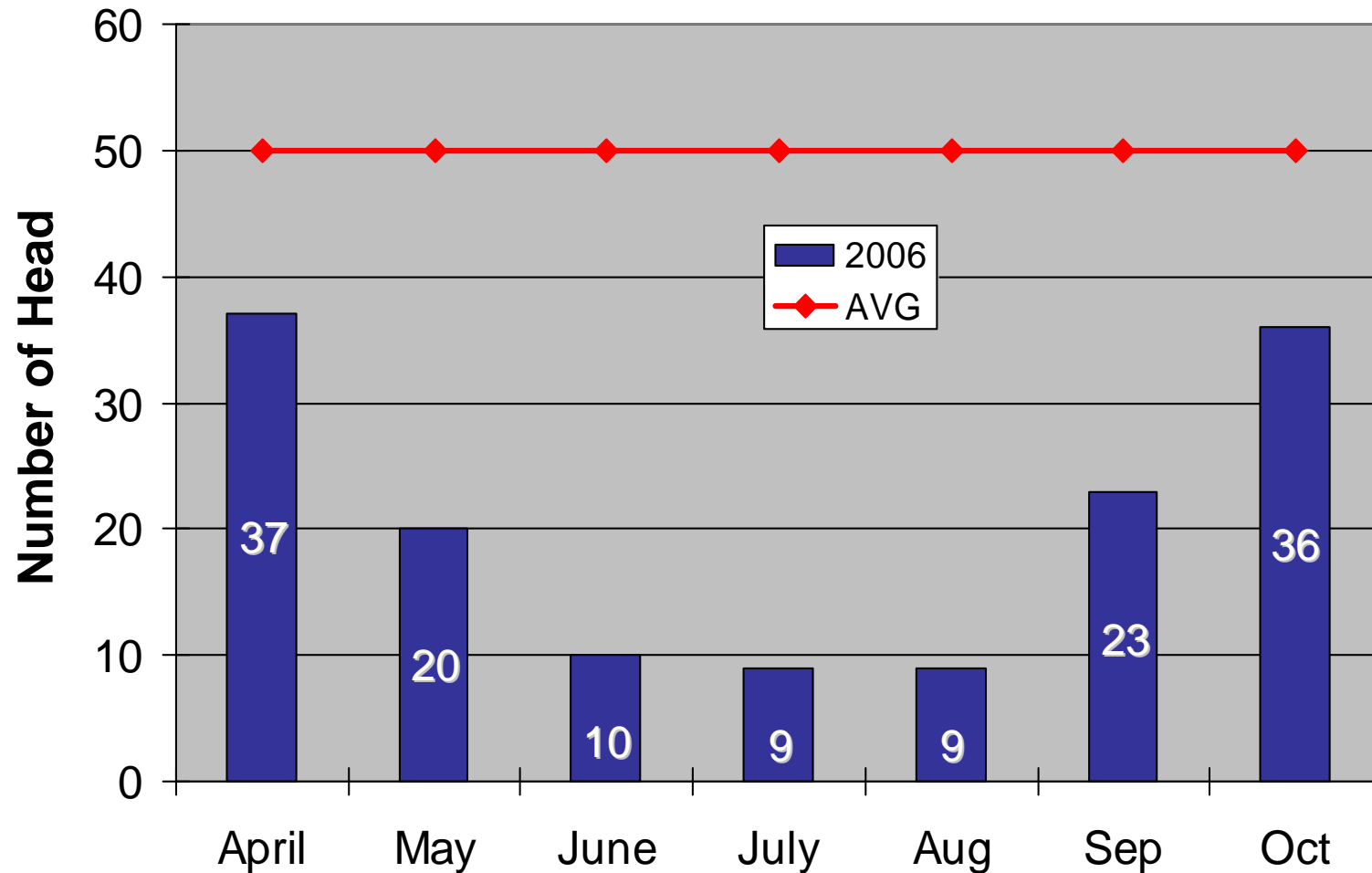
Current Year and Long-term Historical Precipitation at Overton, TX



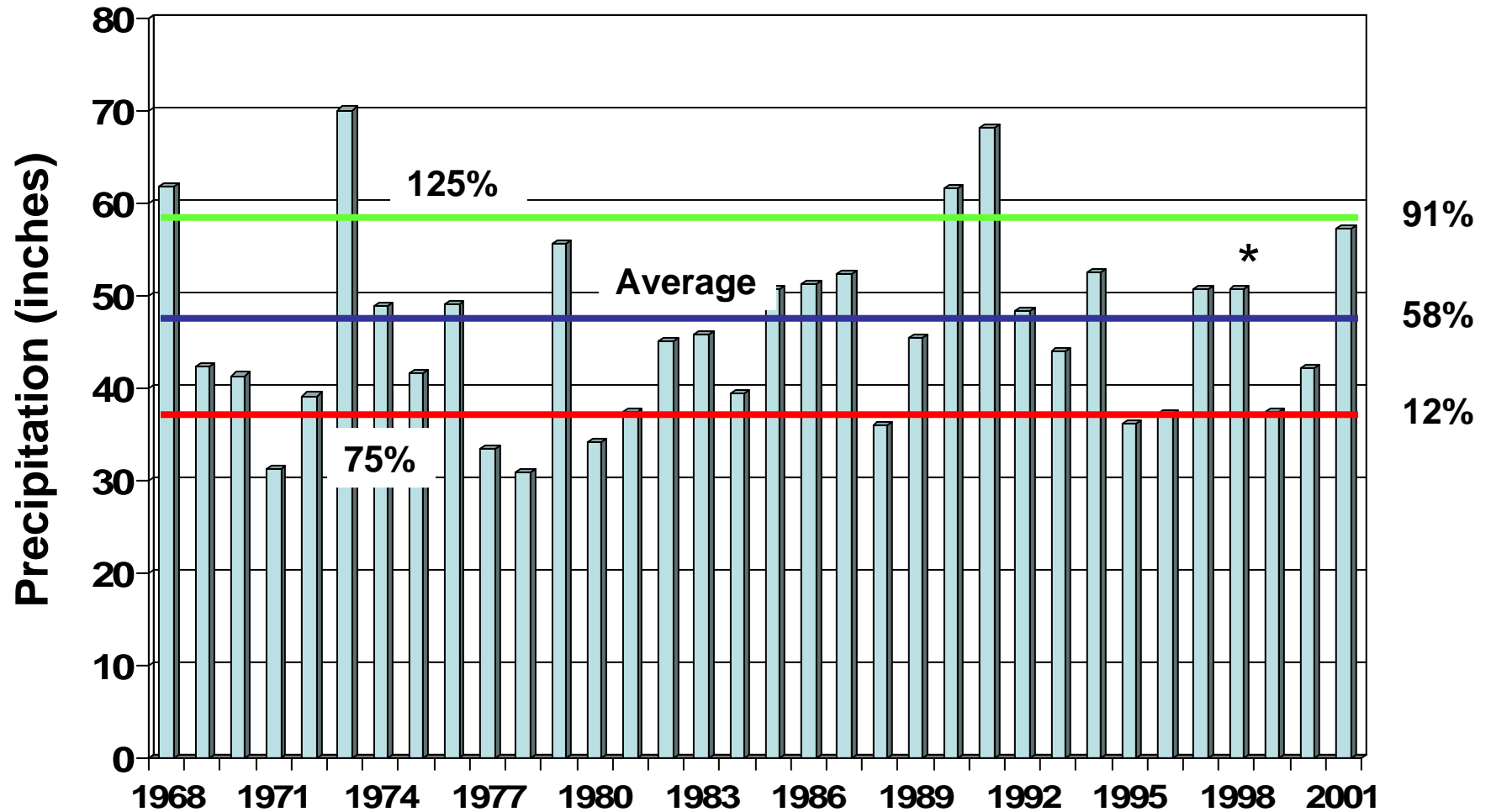
Drought Effect on Forage Dry Matter Production as Influenced by Precipitation. 2006



Drought Effect on Stocking Rate as Influenced by Precipitation. 2006

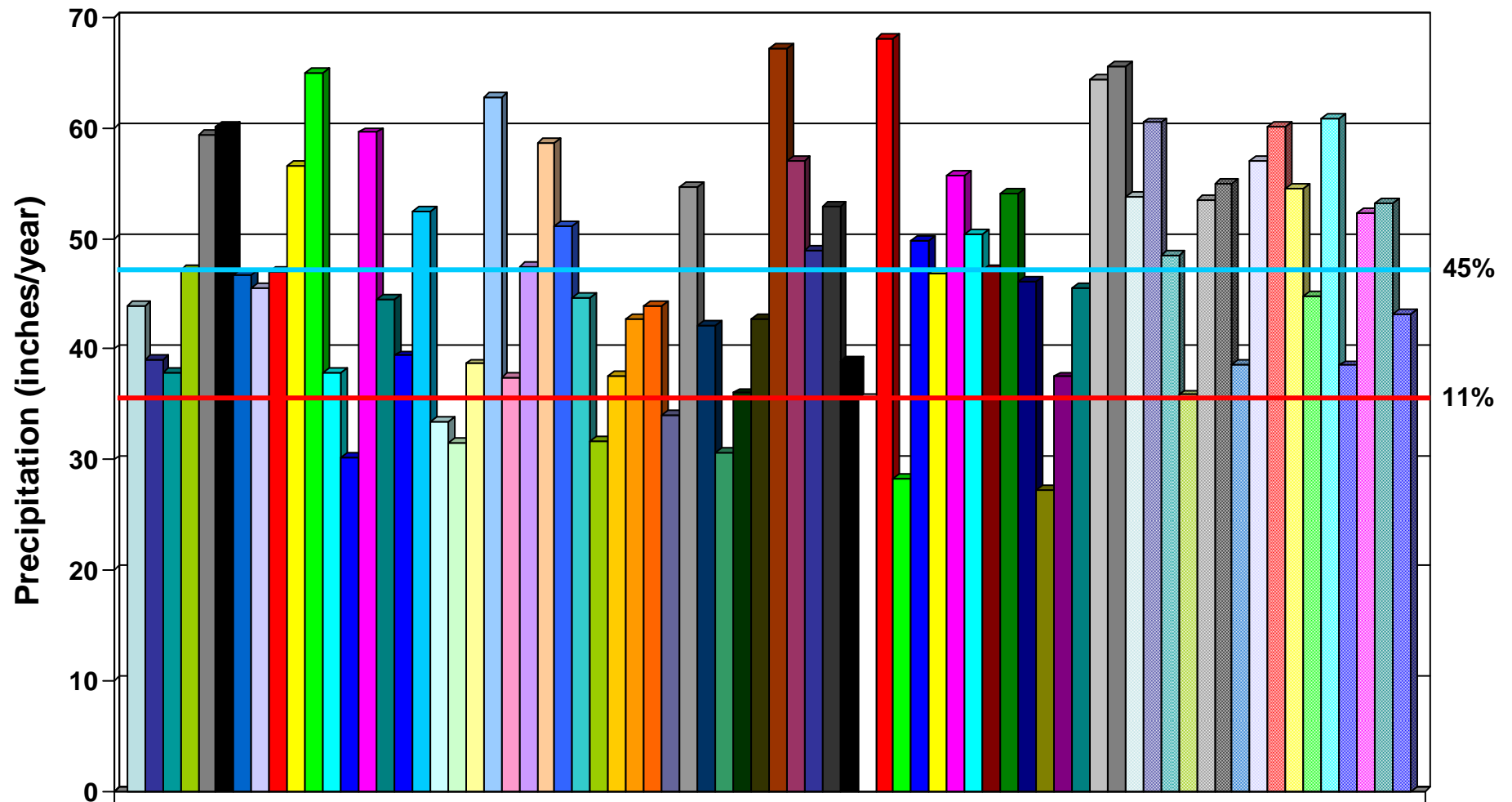


Long-term annual precipitation at Overton, TX. 1968 - 2001

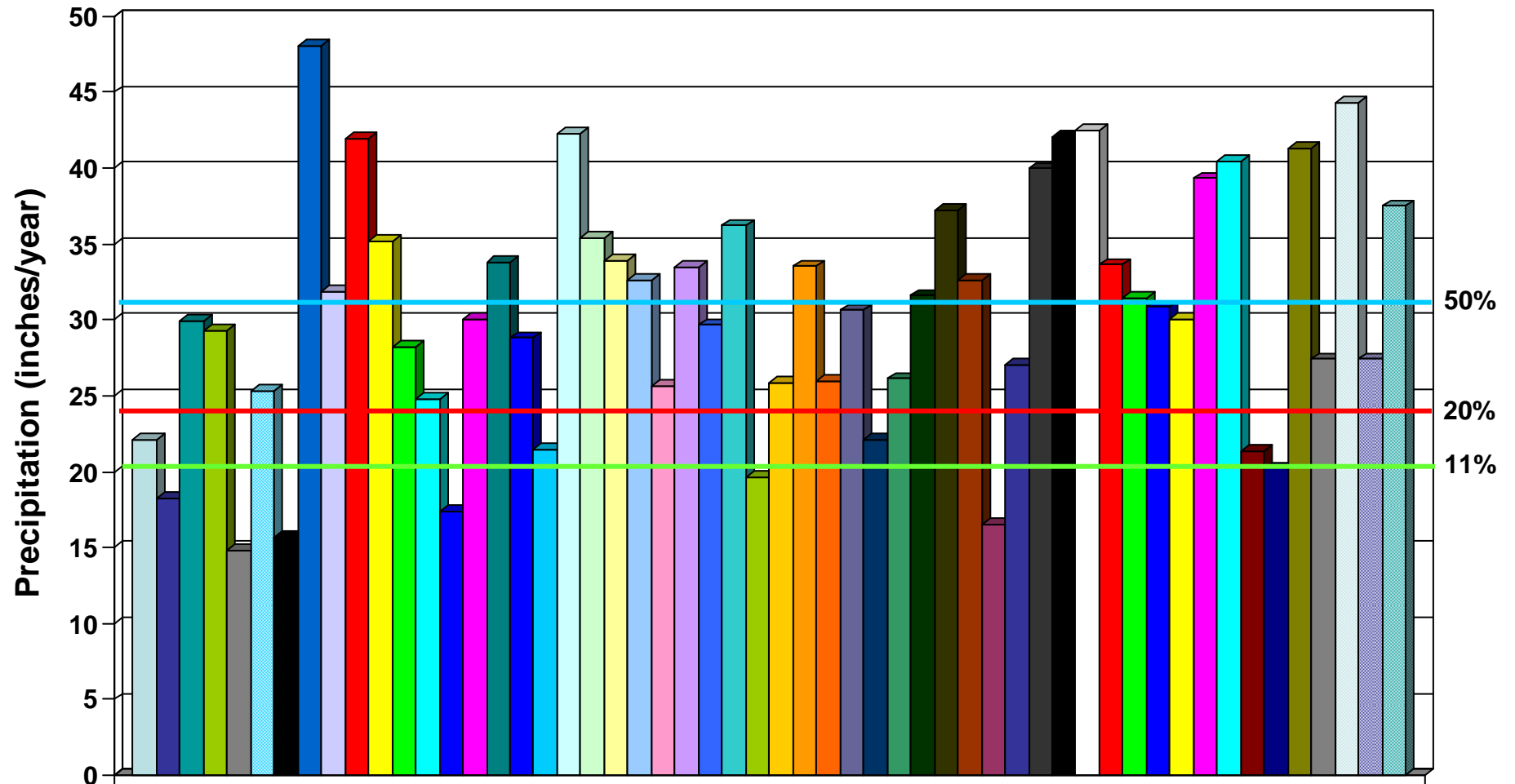


* Incomplete data

Long-term precipitation data for Walker Co., TX 1936 - 2008



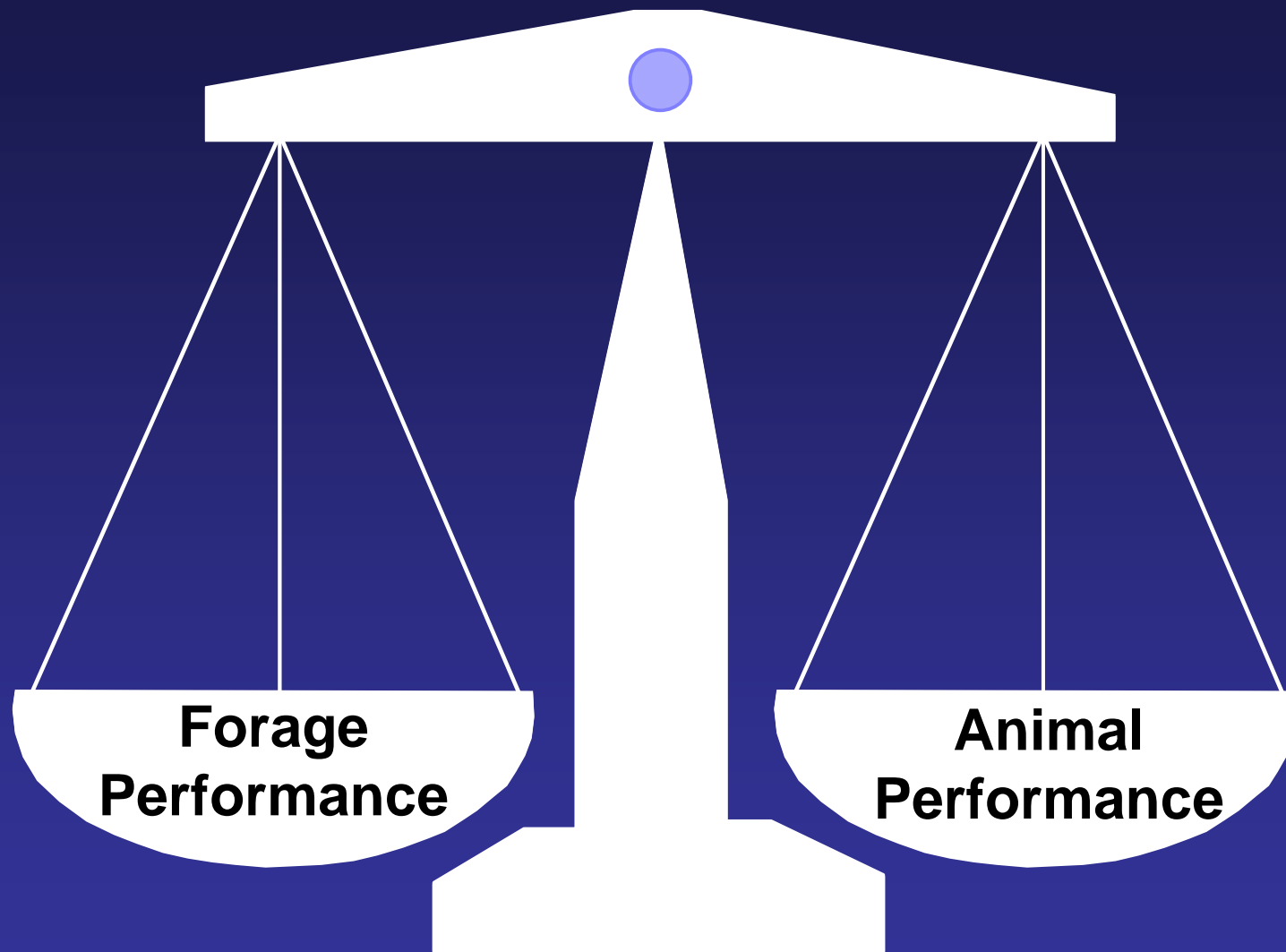
Precipitation data for Lampasas Co., TX 1950- 2009



During the Drought

- Landowners will be tempted to keep all of their cattle...**DON'T!**
- Landowners will be tempted to graze pastures down to the soil surface...**DON'T!**





During the Drought

- Landowners will be tempted to keep all of their cattle...**DON'T!**
- Landowners will be tempted to graze pastures down to the soil surface...**DON'T!**
- Landowners will likely have to purchase hay to feed...**GET A FORAGE ANALYSIS!**



Table 1. Crude protein (CP) and total digestible nutrients (TDN) levels required in diets of different kinds and classes of grazing livestock.¹

Animal kind/class	CP (%)	TDN (%)	NEm (Mcal/day)	NEg (Mcal/day)	NEI (Mcal/day)
Growing beef steer					
450 lbs (1.7 lb/day gain)	11-13	65		2.0	
650 lbs (1.7 lb/day gain)	10-11	68		2.7	
Beef cow					
Lactating	10-12	60		n/a	4.2
Dry, pregnant	8-10	50	8.54	n/a	
Sheep					
Lamb (finishing)	12	70			
Ewe (lactating)	13	65			
Ewe (maintenance)	9	55			
Fallow deer					
Doe (lactating)	14-6	66			
Growing buck	12-14	60-64			
Meat-type goat					
Doe (lactating)	12	62			
Growing buck	12-13	62-66			
Horse (maintenance)	10-11	70			

¹ Adapted from *Southern Forages*, 2nd ed., 1998.

FORAGE/FEED ANALYSIS REPORT

Page 2

TEXAS COOPERATIVE EXTENSION -- THE TEXAS A & M UNIVERSITY SYSTEM
SOIL, WATER AND FORAGE TESTING LABORATORY
COLLEGE STATION, TX 77843-2474

Submitted
By: REDMON
349C
TX

Lab Phone Number
(979) 845-4816

Date Received: 2/15/06
Date Reported: 2/22/06
County: WOOD

For: (Optional)

Forage/Feed Analysis*

Lab Number	Sample ID Crop	Livestock Feed	% Crude Protein	Dry Crude Protein %	ADF %	TDN %	Dig Energy MCal/Lb	P %	K %	Ca %	Mg %	K PPM	Zn PPM	Fe PPM	Cu PPM	Mn PPM	S PPM	B PPM	NO3 %	H2O %
62200	H5		8.9	5.6	42.1	51.4	1.03	.10	.25	.36	.11	539	12	122	4	117				
62201	H6		10.0	6.6	39.0	54.9	1.1	.08	.18	.34	.10	642	20	112	4	197				

*Results Reported on 100% Dry Matter Basis
For more information visit: <http://soiltesting.tamu.edu>
<http://forage.tamu.edu>
<http://foragesoftexas.tamu.edu>

-Our website
-Forageval program for estimates of rates of gain for beef cattle
-Website with a collection of information on forages grown in Texas

Warm-season Annual Grass

- Consider all warm-season annual grasses high in nitrates until tested.
- Nitrate levels in hay will not diminish with time.
- Try to determine nitrate levels prior to purchase.
- When obtaining forage analysis for nitrates, specifically ask for NITRATE analysis.
- Members of the genus *Sorghum* can cause prussic acid poisoning.



During the Drought

- Landowners will be tempted to keep all of their cattle...**DON'T!**
- Landowners will be tempted to graze pastures down to the soil surface...**DON'T!**
- Landowners will likely have to purchase hay to feed...**GET A FORAGE ANALYSIS!**
- When it finally rains again, **managers** will tend to forget what just happened...**DON'T!**

During the Drought

- Pay attention to weeds.
 - Can **place undue pressure on forages** due to competition for moisture, sunlight, nutrients...
- Pay attention to **insects...**
 - Grasshoppers
 - Fall armyworms



321 Fall armyworm,
Spodoptera frugiperda, caterpillar

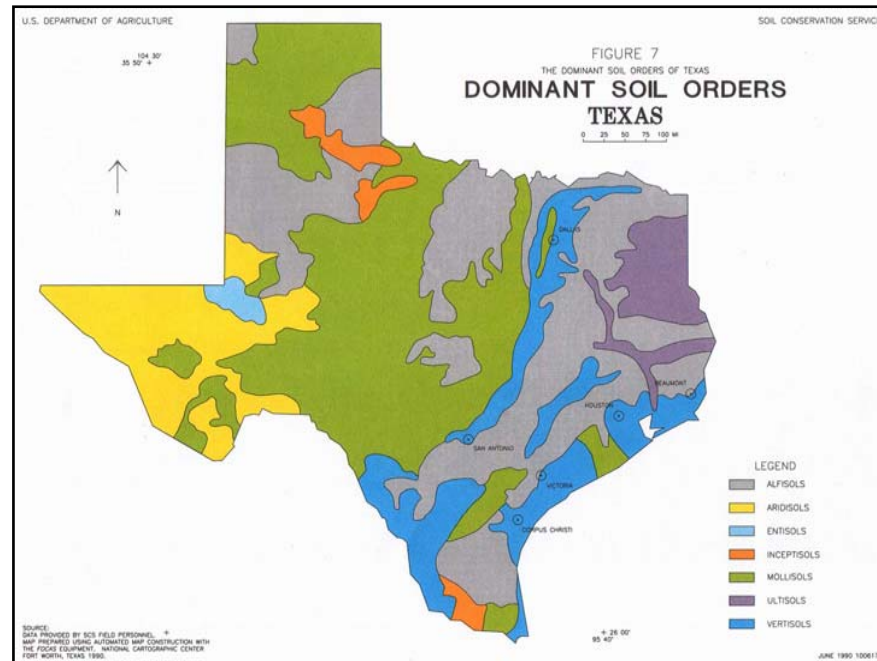
After the Drought

- Soil Test!
 - Fertilizer needs to be out before the rain...



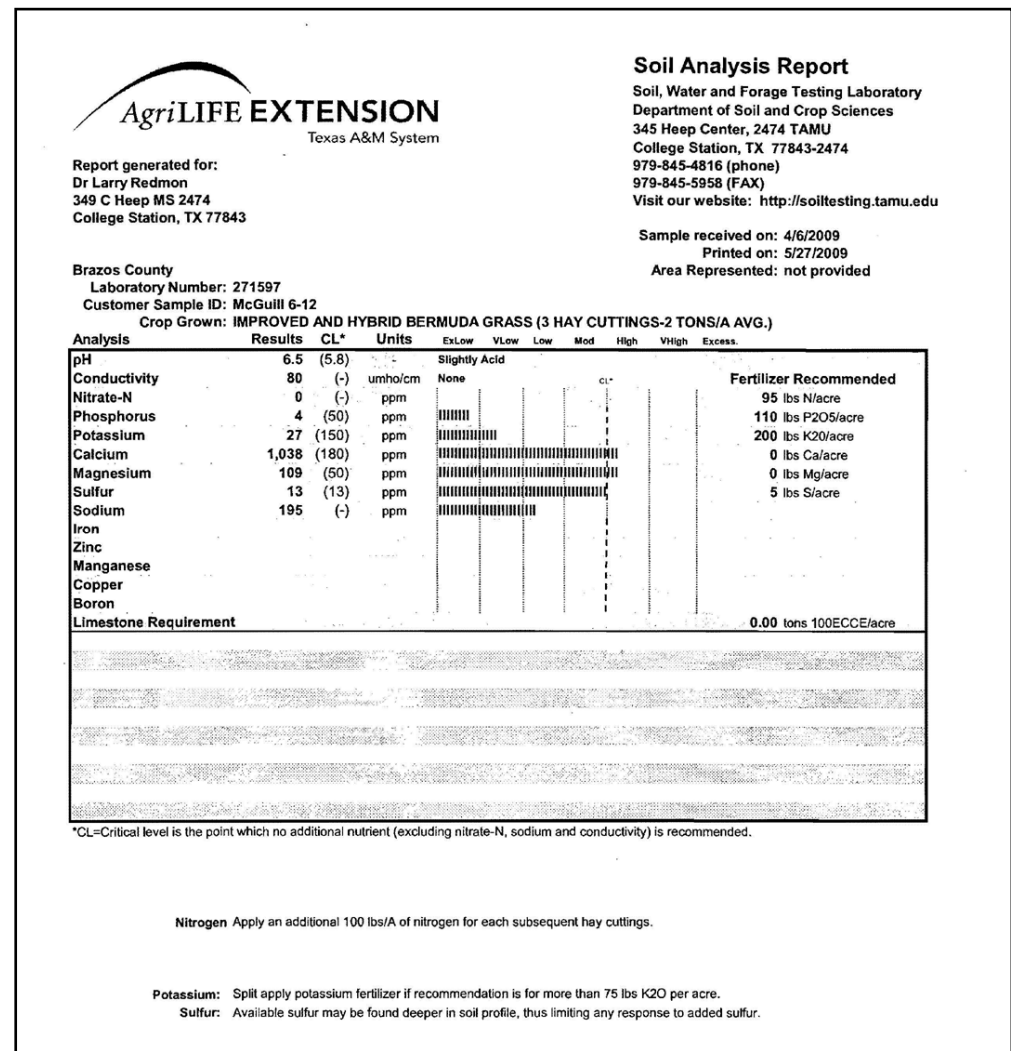
Soil Test

- Without soil testing you:
 - Over-apply expensive nutrients
 - Under-apply needed nutrients
 - Never apply the correct level of nutrients

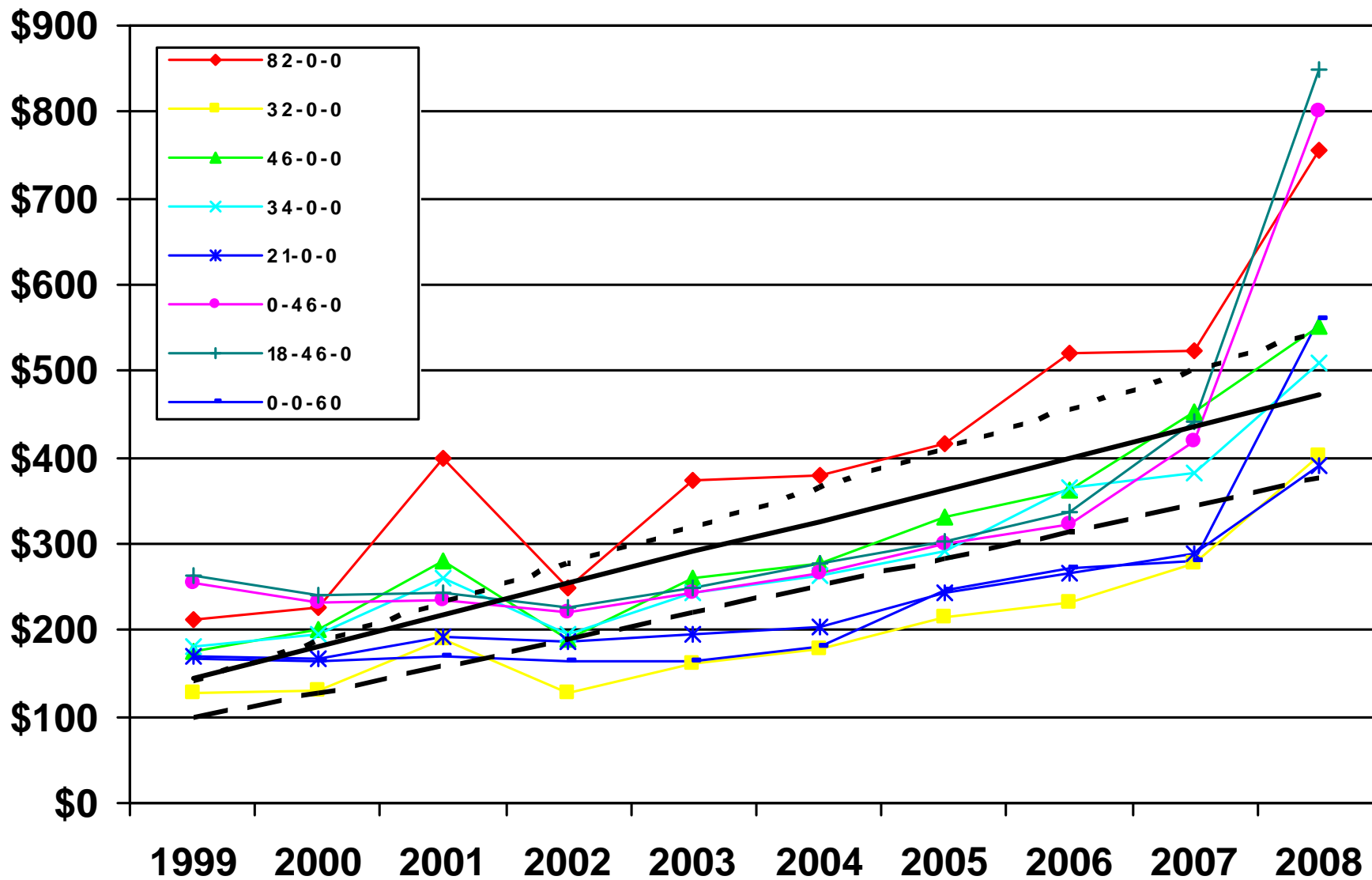


After the Drought

- Soil Test!
- Apply fertilizer based on soil test recommendations for **“Minimum Recommendation”**.
 - Drought-stressed forage should be treated as newly established until recovery is complete.
 - P = Root growth & development
 - K = Drought tolerance



Fertilizer Prices and Trends (\$ Per Ton)



Consider your forage base

- Bahiagrass, kleingrass, WW-Dahl OWB, others where adapted
 - Persistent under low-input management
- Transition to native forages
 - Reduced stocking rate...but
 - Enhanced profit?
 - Maintain **ag exemption**
 - Maintain **Schedule F**
 - Maintain **lifestyle**
 - Improve **wildlife** habitat
 - **Reduced** inputs



After the Drought

- Apply fertilizer based on soil test recommendations for “**Minimum Recommendation**”.
 - Drought-stressed forage should be treated as newly established until recovery is complete.
 - P = Root growth & development
 - K = Drought tolerance
- **Remove** winter pasture from warm-season perennial grass before greenup!



After the Drought

- Apply fertilizer based on soil test recommendations for “**Minimum Recommendation**”.
 - Drought-stressed forage should be treated as newly established until recovery is complete.
 - P = Root growth & development
 - K = Drought tolerance
- **Remove** winter pasture from warm-season perennial grass before greenup!
- **Maintain the reduced stocking rate.**
 - Consider drought management as part of the overall strategy.



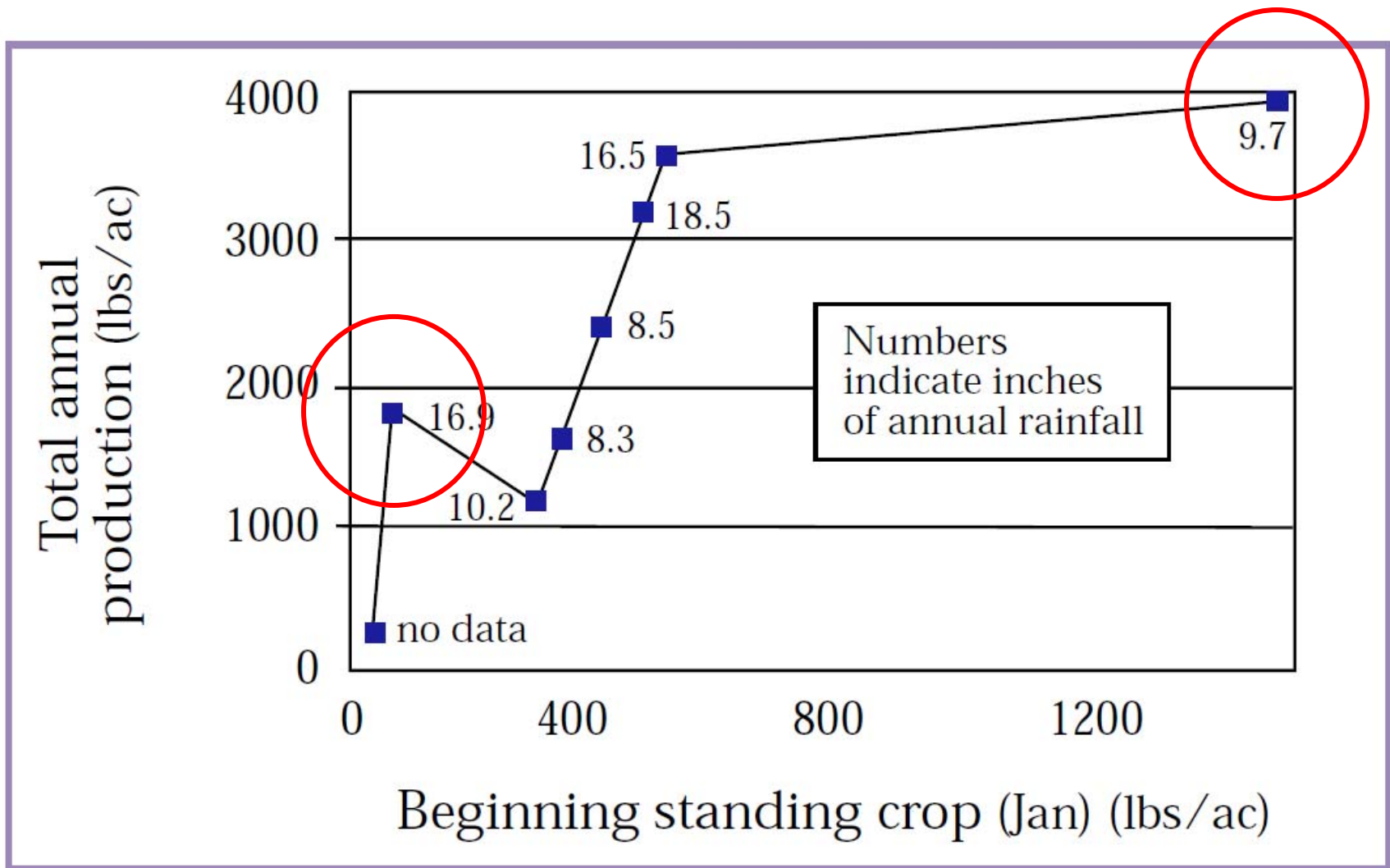


Figure 2. The amount of forage left ungrazed determines next year's forage production. The most important thing is not how much rain you get, but how much soil moisture you trap for future plant growth. (No rainfall data were available for one location.) White, Larry D., Barron S. Rector, and K. Brian Hays. 2000

After the Drought

- Pay attention to weeds.
 - Can **inhibit recovery** due to competition for moisture, sunlight, nutrients...
- Pay attention to **insects**...
 - Grasshoppers
 - Fall armyworms



321 Fall armyworm,
Spodoptera frugiperda, caterpillar

Cost to Control Grasshoppers

- Dimilin @ 2 oz/acre= **~\$4.46/ac**
 - Must be applied to young hoppers
 - Has ~30-day residual
 - 1 day haying restriction, no grazing restriction
- Malathion + Sevin XLR = **~\$2.50/ac**
 - 4 oz of each product/ac
 - **14-day** grazing or haying restriction
 - Only apply **2X** per year
- Mustang @ 3 – 4.3 oz/ac
 - No grazing or haying restriction
- Tombstone @ 2 oz/ac = **~\$4.50/ac**
 - No grazing or haying restriction
 - Pyrethroid



Costs to Control Fall Armyworms

- Grizzly @ 2 – 3 oz/acre = **~\$3.13 - \$4.70/ac**
 - Pyrethroid
 - No grazing restriction, 7-day haying restriction
- Intrepid @ 4 – 8 oz/ac = **~\$7 - \$14/acre**
- Malathion + Sevin XLR = **~\$2.50/acre**
 - 4 oz of each product/ac
 - **14-day** grazing or haying restriction
 - Only apply **2X** per year
- Mustang @ 3 – 4.3 oz/ac
 - No grazing or haying restriction
- Tombstone @ 2.5 oz/ac = **~\$5.50/acre**
 - No grazing or haying restriction
 - Pyrethroid product



The Three Options

- Keep cows and try to feed your way out of the drought.
 - Devastating to forage base, animal performance, economy of the operation, and the environment.
 - Lack of water capture, loss of topsoil, nutrients, bacteria
- Move cows to a location where there is adequate forage.
- Sell out and come back into the business when conditions are more favorable.
 - Cows will cost more, but will be less than trying to feed during the drought.

One More Issue – Blue-Green Algae

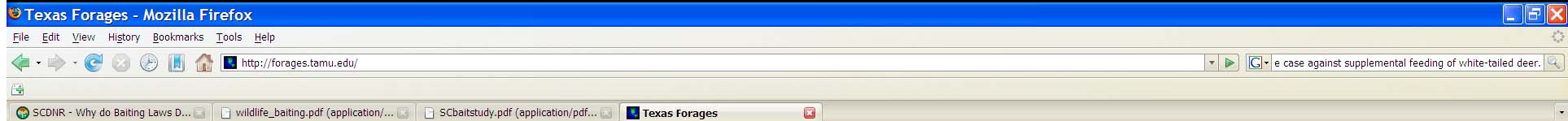


Blue-Green Algae

- Algae is not the concern; actual problem is related to cyanobacteria
- Associated with warm water temperatures and high levels of N and P.
 - Cattle spend increased amounts of time in ponds due to summer heat.
 - Increased urine and feces deposited in water leads to “bloom.”
 - Winds may concentrate bacteria on one side of the pond.
 - Fence off affected area?
 - Dead mice, rabbits, etc. around pond may be an indication.

Blue-Green Algae

- Cyanobacteria produce two toxins.
 - Neurotoxin = rapid death
 - Hepatotoxin = liver damage, slower death
- No treatment once toxic water is consumed.
- Bacterial “bloom” may occur rapidly, thus giving little or no warning of threat.
- Alternative water source provides best protection.
- Best preventative is to reduce nutrient levels in ponds.
 - Buffer strips around ponds
- Copper Sulfate?
 - Toxic to plants and animals...
- Aeration?

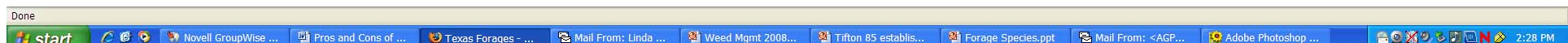


HOWDY, and WELCOME to the Texas A&M University Agriculture Program **FORAGES** web site! At this site you will be able to read or download forage-related publications that will help with forage species selection, establishment, management, and utilization. There is information on soil fertility, grazing management, incorporating legumes into your forage system, and minimizing winter feeding costs. You will also find information about our Pasture & Livestock Management Workshop for Novices, how to manage forage pests, information about upcoming events, and a new feature, *The Pasture Gazette*.

This site is under construction. Please check back periodically for updates. For questions or comments, please contact [Dr. Larry Redmon](#) @ 979-845-4826 .

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<http://forages.tamu.edu>



Ranch Management University
Oct 10-14, 2011
College Station, TX

For New Landowners/Managers

Soils and Soil Fertility
Forage Species
Forage Establishment
Forage Management
Weed/Brush Management

Cattle Breed Selection
Cattle Nutrition/Supplementation
Body Condition Scoring
Chute-side Talk (Vaccinations, etc.)

Horses
Sheep and goats

White-tailed Deer Management
Turkey Management
Feral Hog Management
Pond Management

Ecotourism

<https://agriliferegister.tamu.edu>
Key Words "ranch management"



Think forage...



Improving Lives. Improving Texas.

Questions?