



EXTENSION

Preparing For Extended Drought

Introduced Forages

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It's Not Just Drought We're Facing

- Drought might be the hardest thing we face as producers.
- Except for drought when input costs are high!
 - Fertilizer
 - Supplement
 - Hay?
 - Herbicide
- These inputs are all associated with cow nutrition (FEED\$).
- As costs rise, the **VALUE** of our forage increases.
- We must improve our forage management!

Forage Management In Drought

- Develop a plan
 - Baseline assessments
 - Optimize production within system constraints
 - Balanced forage systems
 - Capitalize on available moisture
 - Scrutinize expenditures based on potential savings/revenue
 - Exploit Efficiency Factors!
 - Be aware of drought induced livestock losses
 - Nitrates, prussic acid, poisonous plants, water quality

Soil Testing

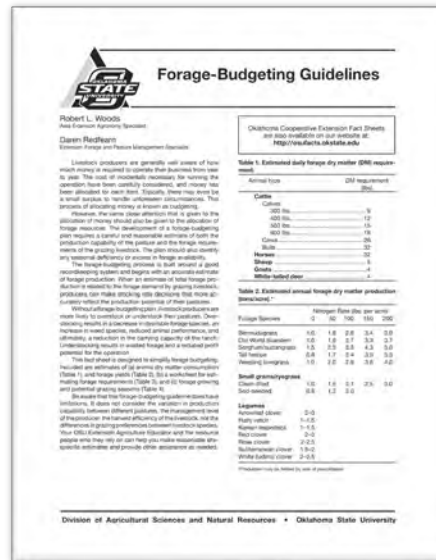
Test, Don't Guess

- **Sample same time of year (dormant season is best)**
- **Representative sample of area treated the same**
- **15-20 cores minimum**
- **Observe the correct depth for every core, 6"**
- **Best \$10 you will spend in 2022!**
- **Use the OSU recommendations to start your decision-making process**



Forage Budget

Keeping Track of Your Grass Account



- OSU Factsheet PSS-2584
 - How much do the cows need?
 - How much are we producing?



Forage Budget Rules of Thumb

Keeping Track of Your Grass Account

- **For E. OK, 1 acre will produce 1 ton of forage per year without fertility!**
- **It takes 50 lbs actual N to make 1 additional ton of warm season grass**
- **It takes 60 lbs actual N to make 1 additional ton of cool season grass**



Forage Budgeting.(F-2584)

- Livestock description 1200# cow
- Total number of days 210
- Dry matter consumption 43 lbs/day
- Lbs/animal 9030 x #animals 100 =
- Total # forage required 903,000 /2000 =
- **452** tons of forage required.

**15,695 lbs per year
7.8 tons/cow/year!**



At best only assume 70 % utilization of standing forage.

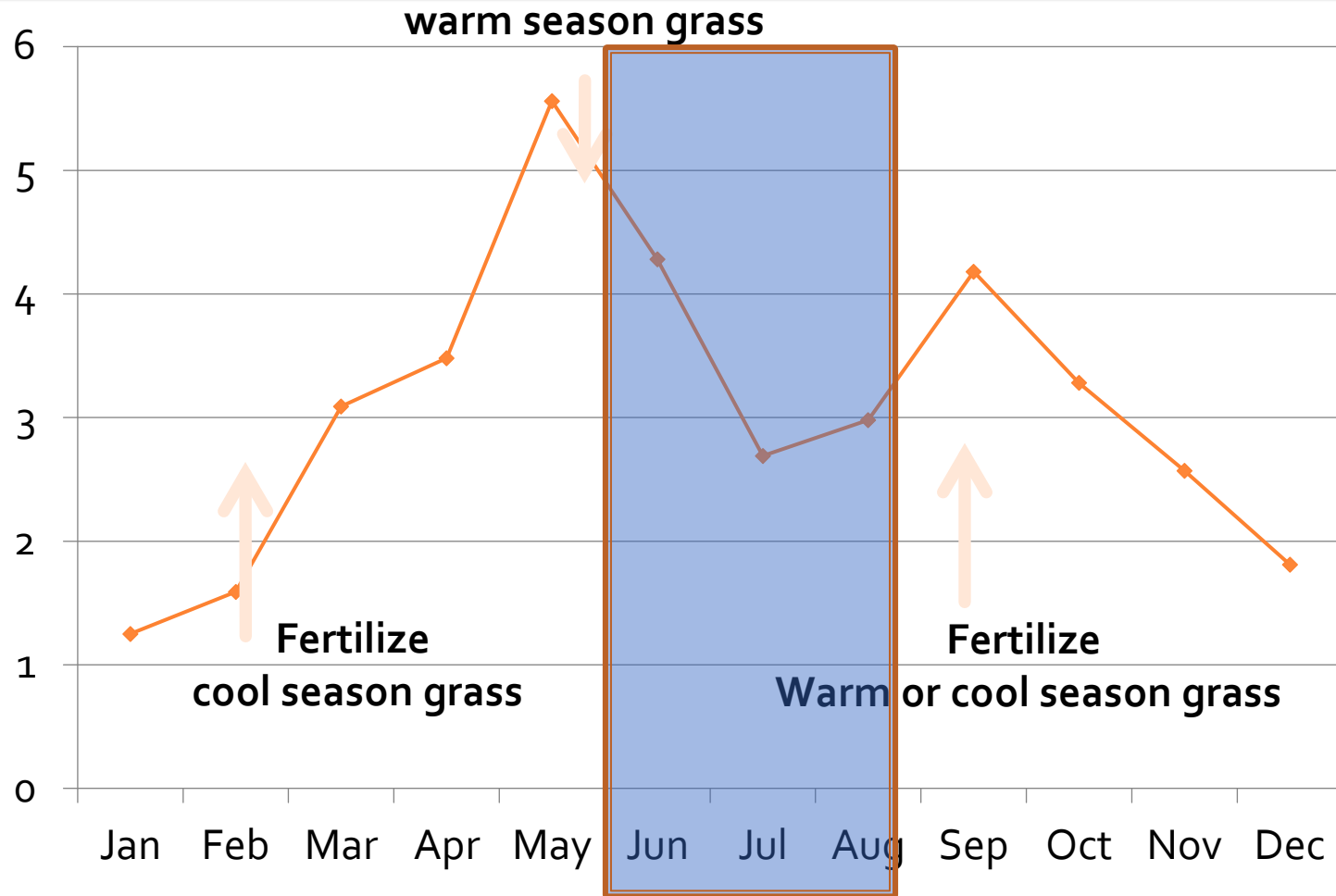
Many producers rely on 5 months of Bermuda production to supply the cow's needs for the whole year.



What happens if we don't get summer rains?

Rainfall for Payne County

(1981-2011)



Warm season forage systems capture late spring and summer rainfall.

Balanced forage systems capture annual rainfall!

36.75 inches average total rainfall



Spring Seeded Forages

Spring Seeded

March 14, 2013 planting (43° soil temp)

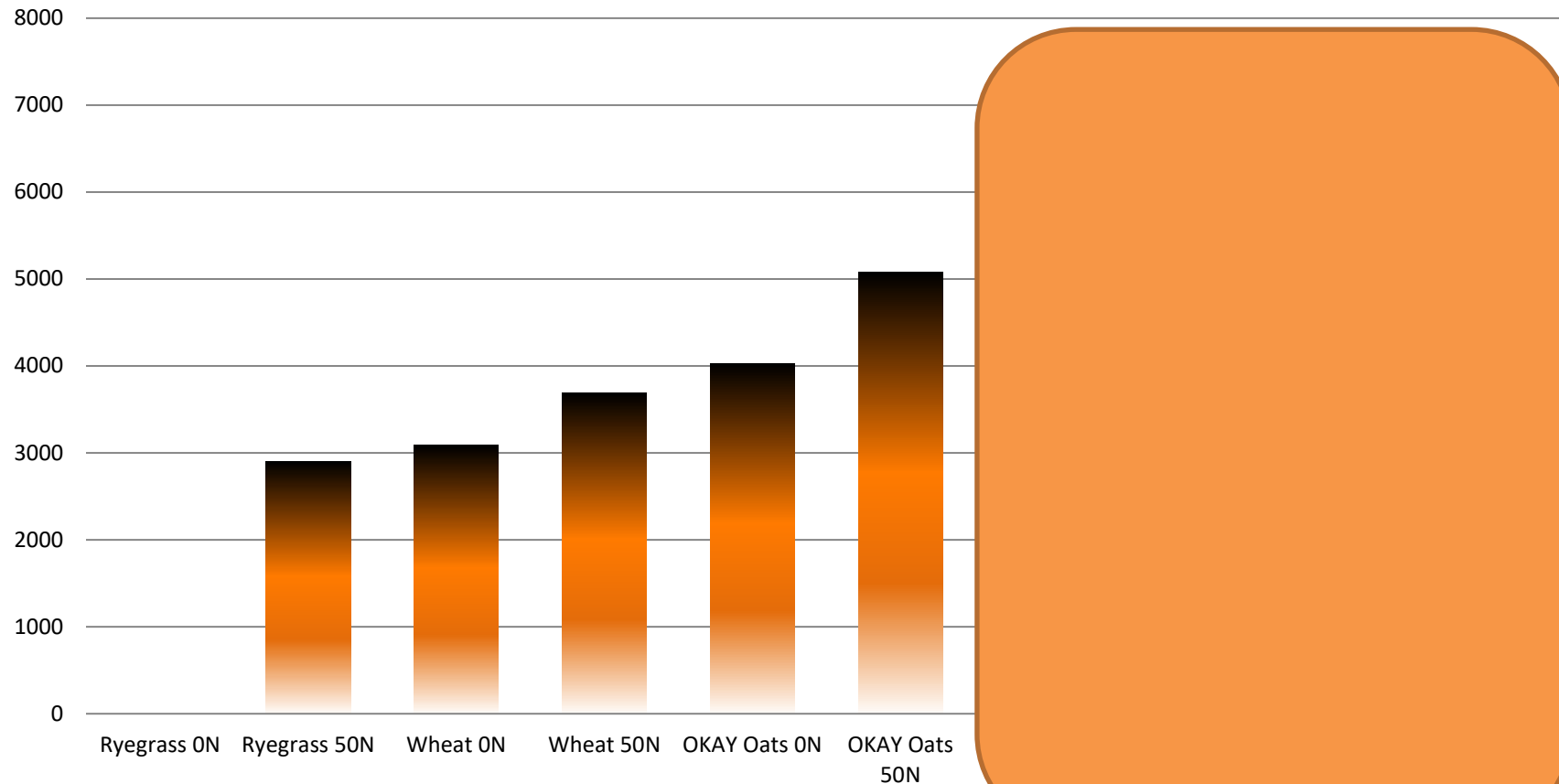
Tilled ground, drill seeded

0 or 50 lbs actual N as Urea @ planting (P&K adequate)

Harvested May 22, 2013

Significant growth following first of May!

Dry Matter Yield (lbs/A) of Spring Forages Planted March 14th -
Harvested May 10th



Spring Seeded Forages

- Oats are the best option for DM yield
- Effectively reducing winter feeding through grazing of small grain forages requires proper forage budgeting in conjunction with a fall-seeded stand.
- Shows a great opportunity for “last minute” hay crop



Summer Fertility In A Drought?

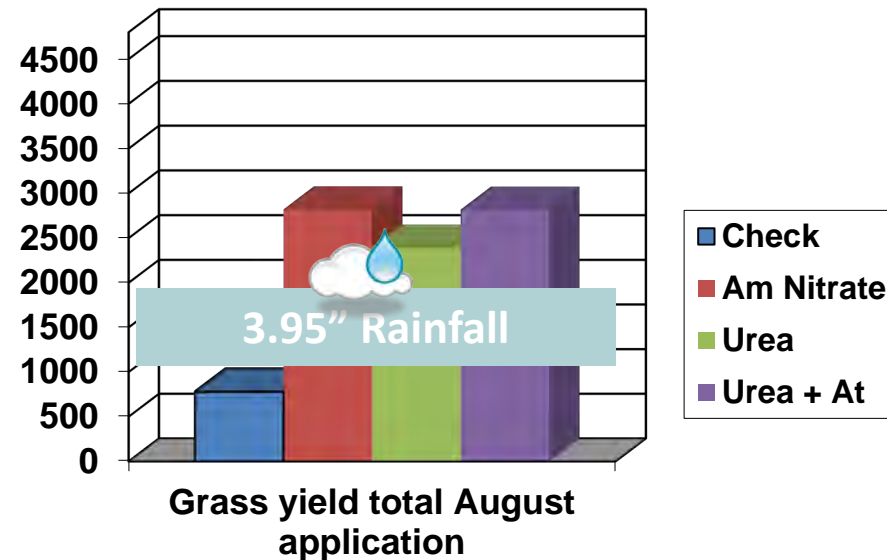
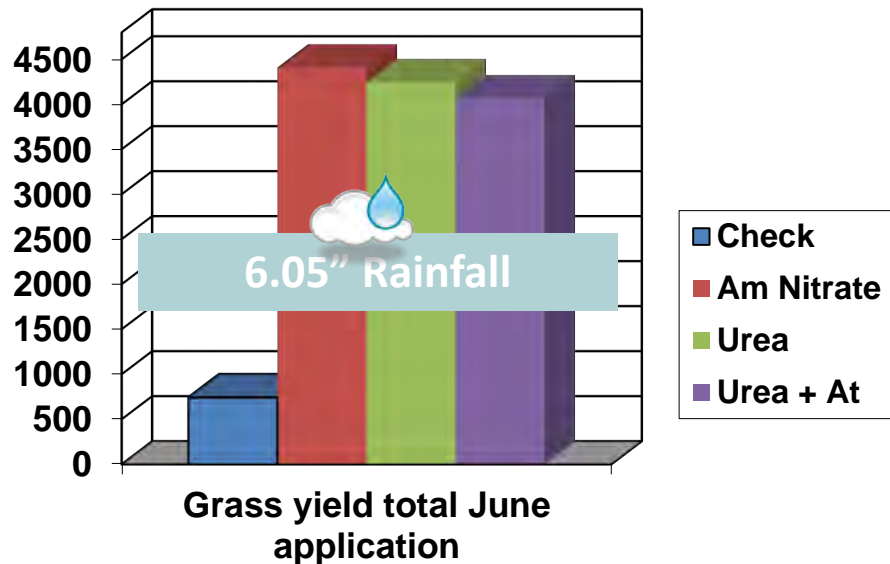
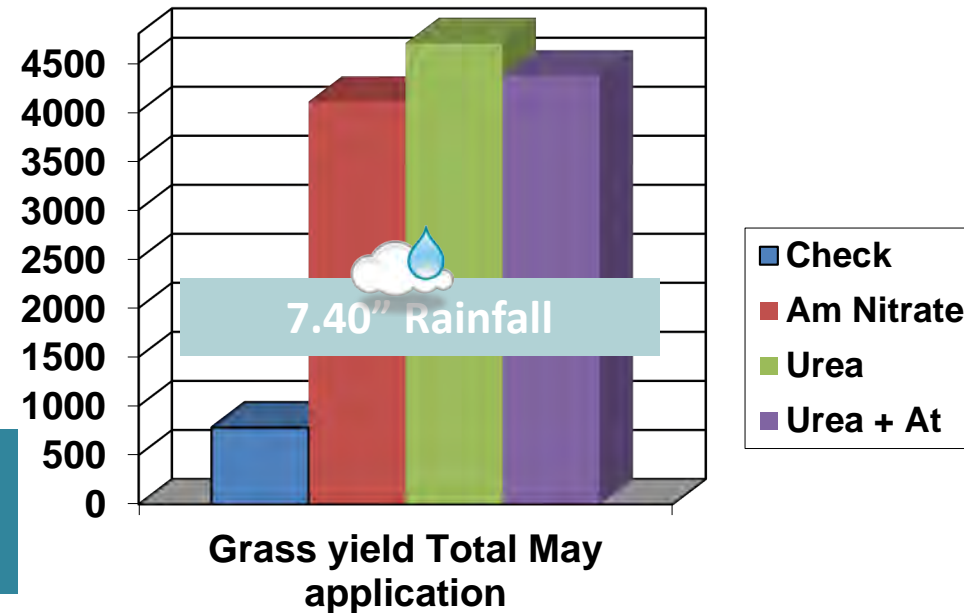
N Source Effects On Yield

Kinta, OK 2005

Brian Pugh & Chris Rice

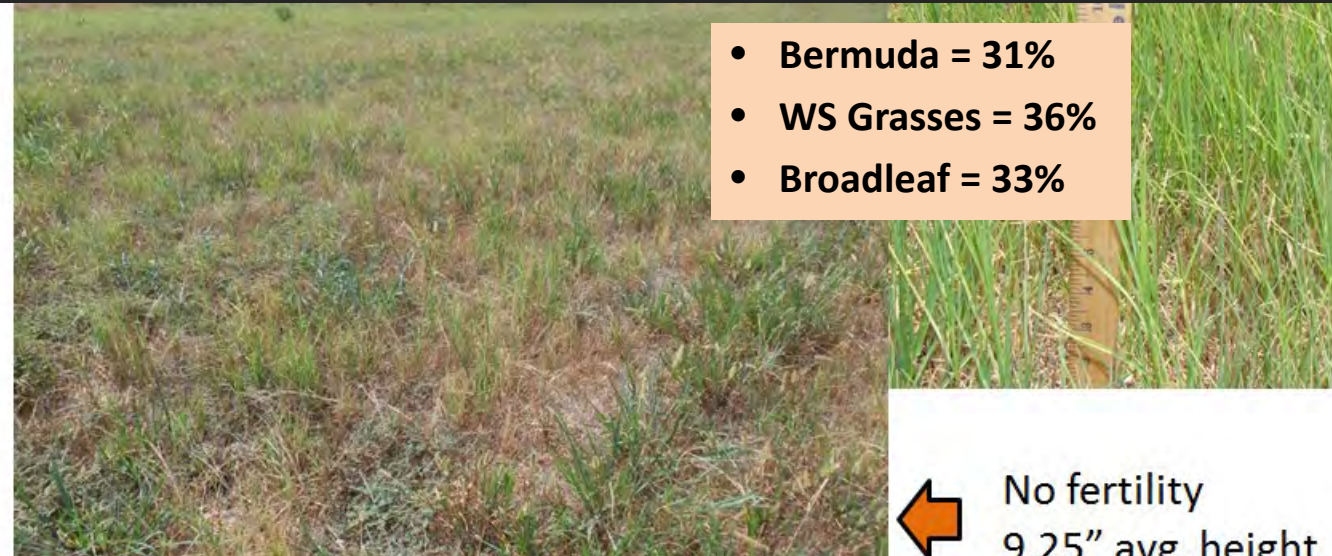
Statistically no significant differences

Plots last harvested on Oct 17th



Application of 100 units N – 294 lb/ac amm. nitrate, 217 #/ac urea, or 217 lb/ac of urea+Agrotain.

Effects of Fertility On Droughty Bermuda. Muskogee County, 2012.



This was with 2.97" of rainfall!!!



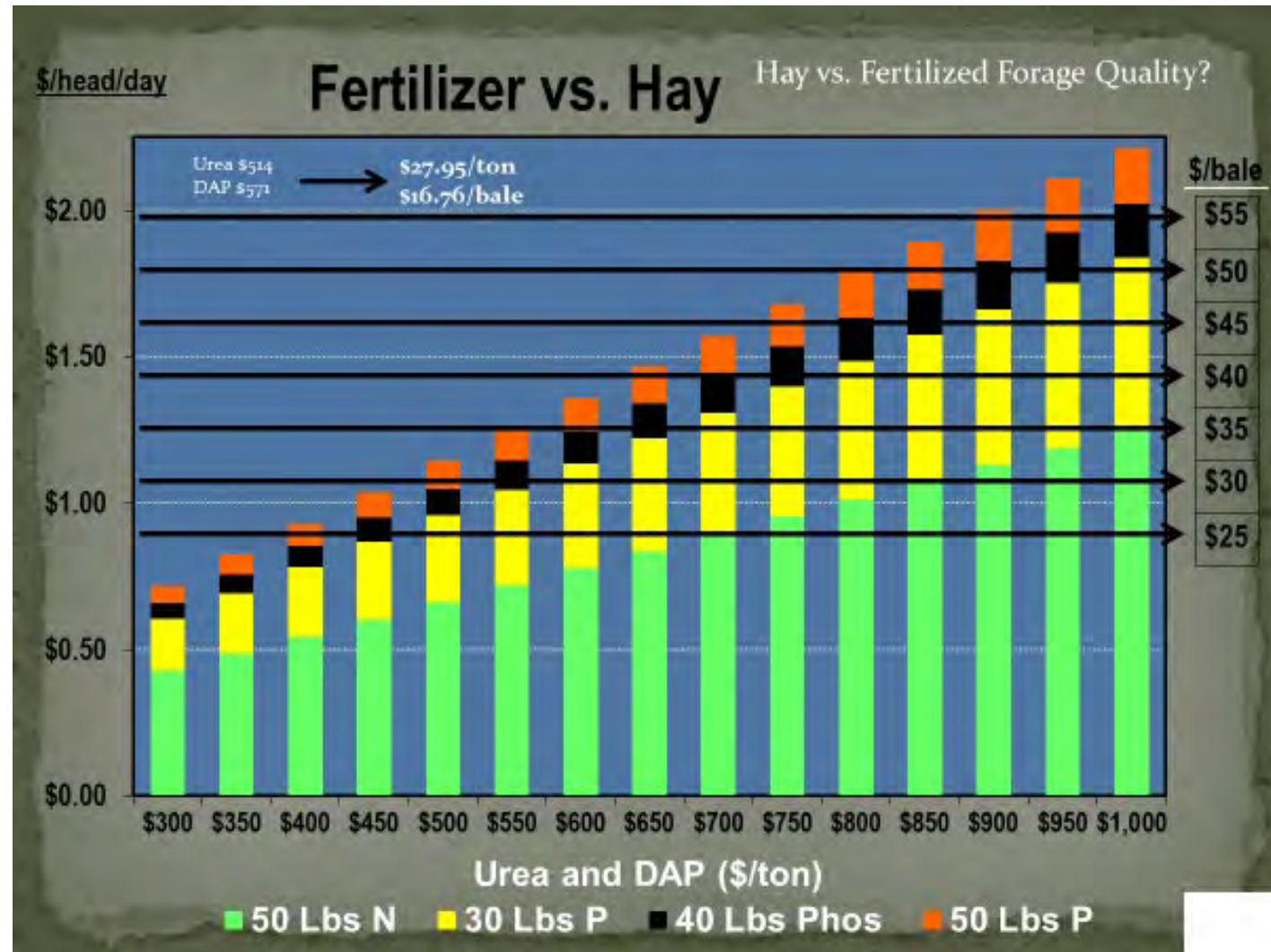
- A Texas study in 1958 found that it takes about 20 inches of water to produce one ton of un-fertilized Bermuda.
- Under high fertility it only took 4 inches per ton.

Effect of Nitrogen Fertilizer on Hay Production and Water Utilization by Midland 99 Bermudagrass - 2012

Nitrogen Lb./A	Tons/A	Inches of Water/ton
0	1.2	3.4
33	1.85	2.2
130	2.79	1.5
217	3.17	1.3
435	4.17	1.0

How Can I Afford Fertilizer?

- Assuming just N
- Assume utilization
 - Hay – 80%
 - Forage – 65%
- 30 lbs of consumed forage
- If I'm willing to pay \$35 for a 1100 lb bale of hay (1.193/c/d)
- Then \$945/ton urea will equal that forage value (\$1.186/c/d)



Converting from a continuous to a rotational stocking system.

Improve Forage Utilization

You already Grew It! Use it Wisely!

State Trials	% Increase StckRate
Arkansas	44
Georgia	37
Oklahoma	35
Virginia	61



Harvest Method	Low Efficiency	High Efficiency
Continuous Stocking	30	40
Slow Rotation (2-4 paddocks)	50	60
Moderate Rotation (4-8 paddocks)	60	70
Strip Grazing, MOB, Daily, etc.	70	80
Hay Harvest	30	75

Stockpile

Directly Reduces Winter Feeding

Stockpiling:

- Native or Introduced, Cool or Warm Season Forage
- Great way to shift N applications to season when:
 - Rainfall is more secure
 - N costs are usually lower
 - We need to lengthen the grazing season!



2018-2019	1 Day Strip	3-5 Day Strip	Continuous
	Valliant	Perkins	Perkins
# Head	248	42	42
Acres	131	17	12.3
Crude Protein	12.7	12.9	11.9
Energy (TDN)	59.3	62.2	58.5
Avg Yield	2249	4477	2934
Grazing Days	38	40	17
Cow Days/A	72	99	58
\$/C/D	\$0.38	\$0.29	\$0.50
Harvest Efficiency	83%	71%	57%
Weight Change	-9 lbs	+2 lbs	

Stockpiled Bermudagrass



Cool Season Forage



Strip Grazing Improves Utilization

Cool Season Forages (83% harvest efficiency above)

Stockpiled forages (71% utilization left)

Weed Control

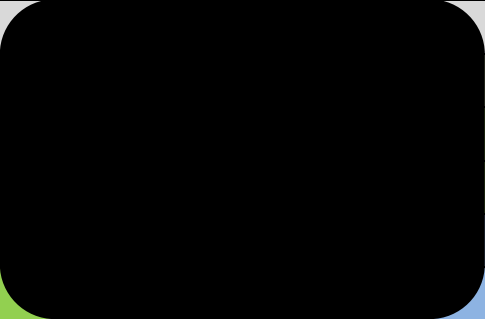
***Conserves water,
nutrients and sunlight***

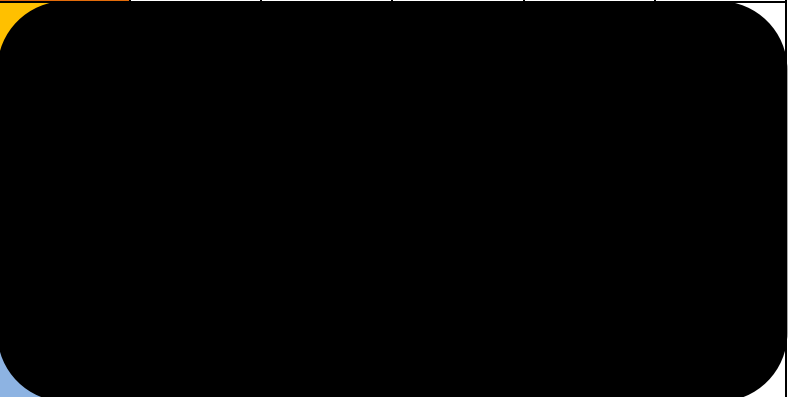
- Is there really enough weeds to justify the herbicide?
- Proper timing is usually worth a significant savings!
- **When the rain does fall, what will take it up?**
- Work with your County Educator to:
 - Properly ID the weed
 - Select the chemical
 - Develop a strategy



Thresholds

- Thresholds indicate the level at which a pest begins causing damage, either economic, production
- Ex. In pasture, a common threshold is 25-30% for most weeds.
- Rethinking Pasture Thresholds
 - Base decisions on weed density AND site productivity!

Forage Release Following Timely Weed Control		
Weed%	Total Site Yield	
	1ton	
20	0.2	
40	0.4	
60	0.6	
80	0.8	
100	1.0	

Cost Per Additional Ton of Production					
Add Prod	Application Cost Per Acre				
	\$8/A	\$12/A	\$16/A	\$20/A	\$24/A
0.2	\$40	\$60	\$80	\$100	\$120
					

Weed control in a drought?



July 30, 2012
60 DAT

Weed control alone?



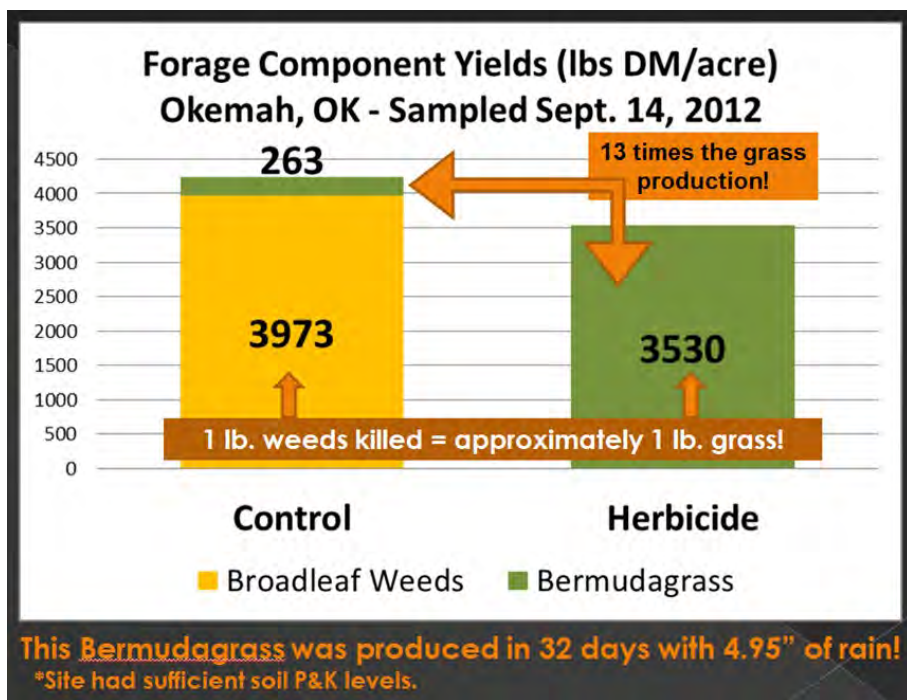
Sept 4th
94 DAT

Sept 14th 2012

105 DAT

Aug 14 – Sep 13

4.95" rainfall



Residual Leaf Area

Natures' Solar Panel

- If you remove all the solar panels, the plant must draw energy from the root to regrow
- If this is repeated frequently, stand health declines
- Leaving at least 1-2 leaves at harvest or grazing results in fast regrowth
- Have a sacrificial pasture!



Recovery Period and Grazing Height

Species	Initial Grazing Height	Minimum Grazing Height	Recovery Period in Rotation
Bermudagrass	4" - 5"	2"	2 - 3 weeks
O.W.B.	8" - 12"	3"	2 - 4 weeks
Tall Fescue	6" - 12"	4"	3 - 4 weeks
Small Grains	8" - 10"	4"	2 - 4 weeks
Ryegrass	6" - 10"	4"	2 - 4 weeks



Native WS Grass Establishment

The Survivor

Decreased

Drought Effects

Purchased Feed

Hay (stockpiling is common)

Late spring fescue slump

Increased

Calf/stocker gains

Heifer development opportunities

Rest for introduced pastures

Profitability!





It is a good idea to maintain at least 10% of your acreage in native forages!

Forage Efficiency Summary

- Drought is scary but can be managed
 - Baseline Data will help you plan
 - Don't overstock, more cows does not equal more profit!
 - Don't eliminate, but minimize inputs based on economic returns
 - Optimize yields with smart fertility and improved utilization
 - Producers who have balanced forage systems have proven to be less affected by drought in 04-05 and 11-13.
 - Stockpile Something! – This directly reduces winter feed needs
 - Drought and High Input Costs?
 - It's time to rely on your forage base to see you through!



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Ag\$ense 2022

Strategies to Mitigate Rising Input Costs



EXTENSION

Ag Economics
Agronomy
Animal Health
Livestock

NE County Educators & Area Specialist

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