

IMPROVING THE EFFICIENCY OF YOUR PASTURES



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NW FL Beef Conference and Trade Show 2015

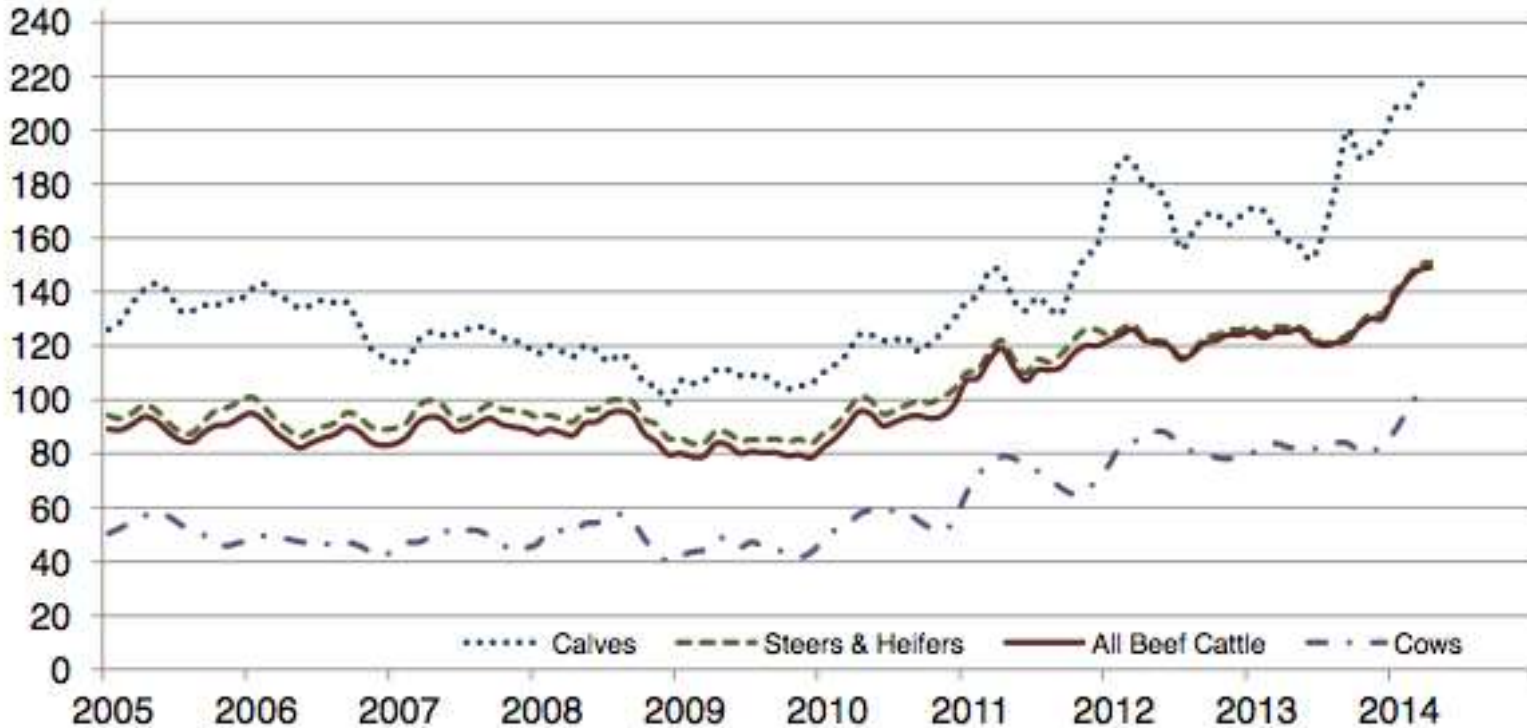
Outline

1. Introduction
2. Forage management priorities
3. How/Where should I start?
4. Harvesting the benefits
5. Take Home Messages

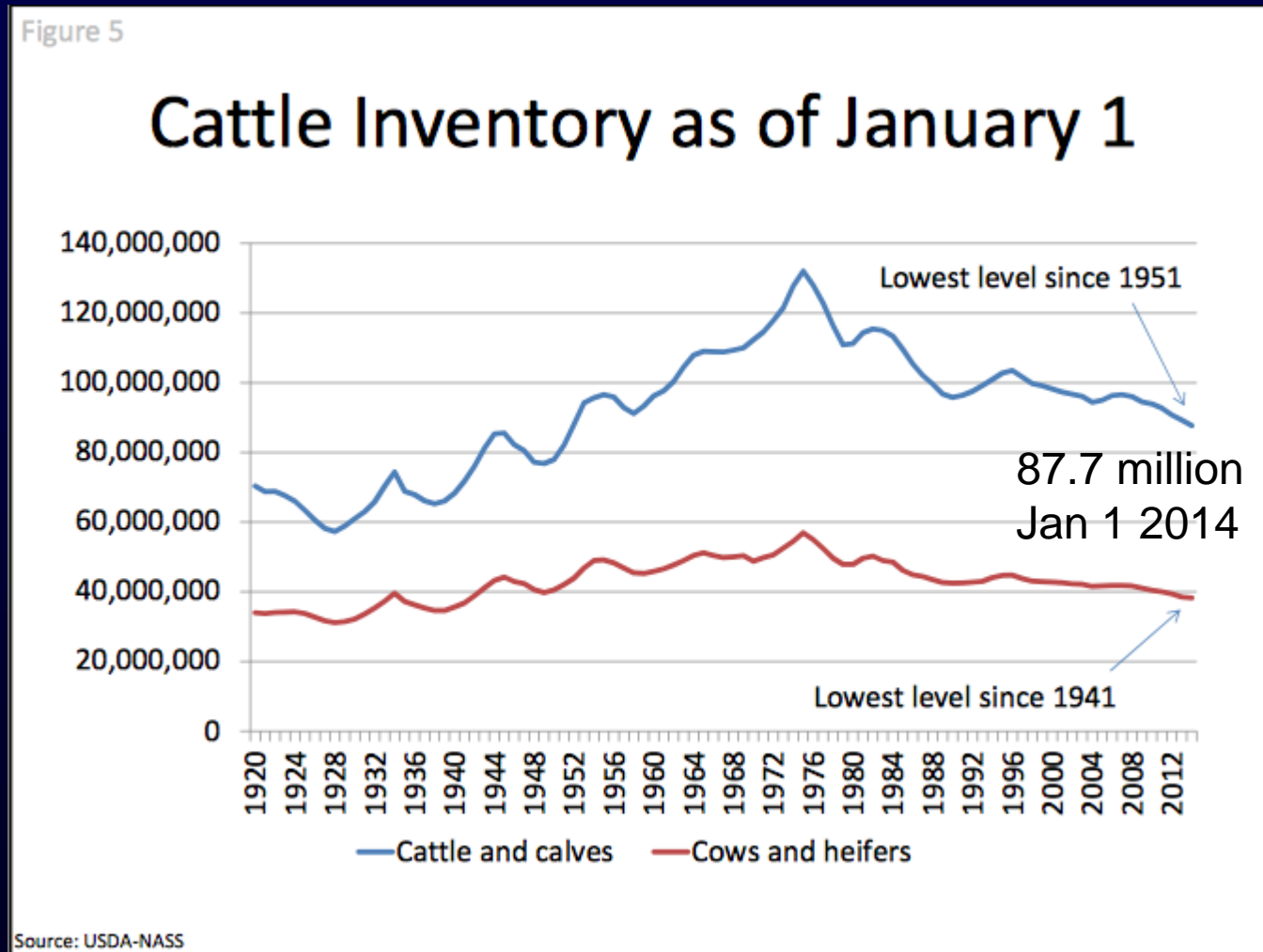
Livestock prices are peaking high...

Prices Received for Cattle by Month – United States

Dollars per cwt



And they will continue to look good for a while...



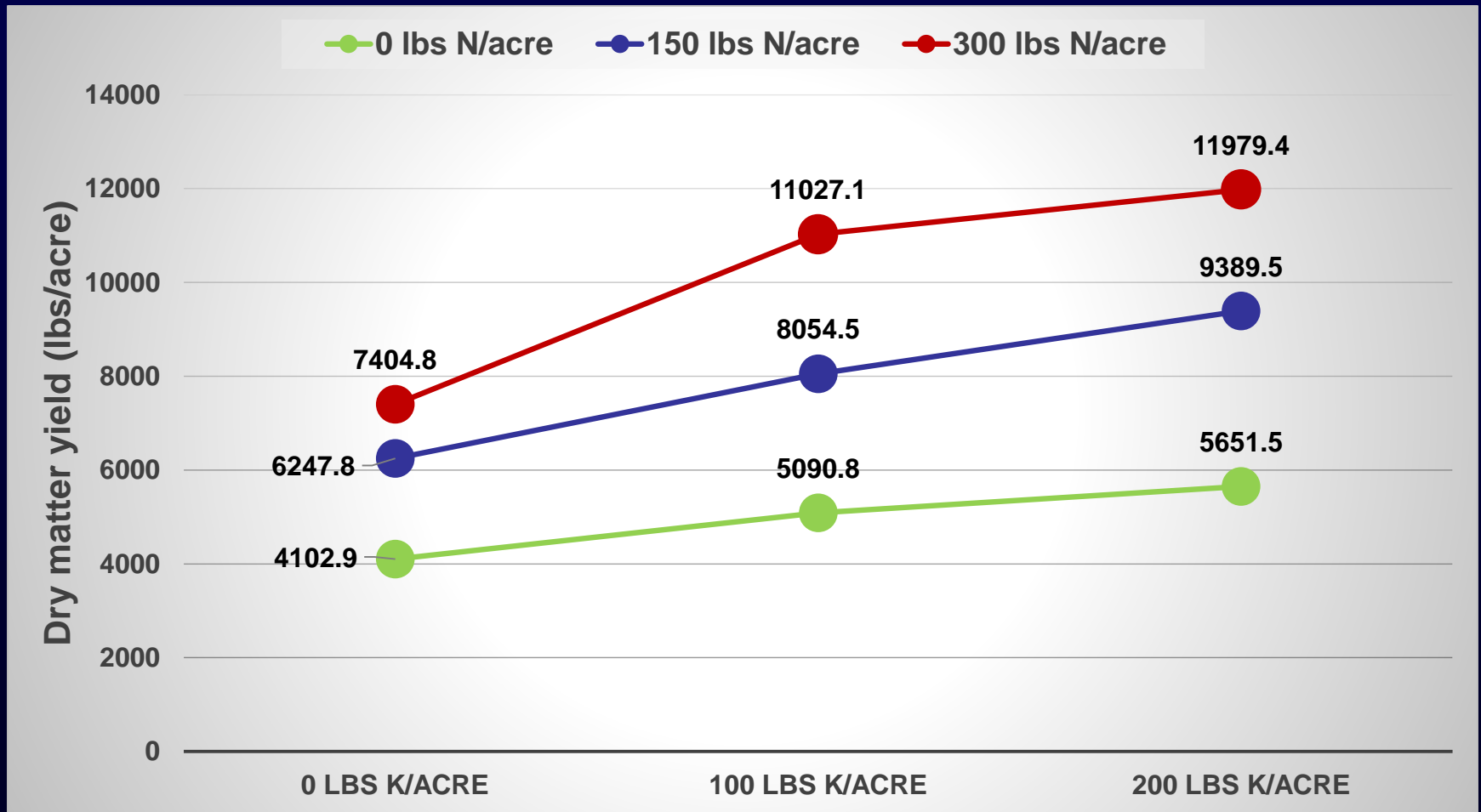
Now is time to act...

- Existing technologies allow us to increase productivity and profit per unit land area
- Ratio between beef price and technologies are favorable
- Improve your livestock operation efficiency and get ready for the years to come

Forage Management Priorities

- Build up the soil fertility
- Recover degraded grasslands
- Choosing the right grazing method
- Cool-season pastures: a double (or even triple) cropping ...
- Forage legumes: a plus to your pastures
- Weed control (**Dr. J. Ferrell's talk**)

Pensacola bahiagrass response to N and K; Quincy, FL



Adapted from Overman et al. (2004)

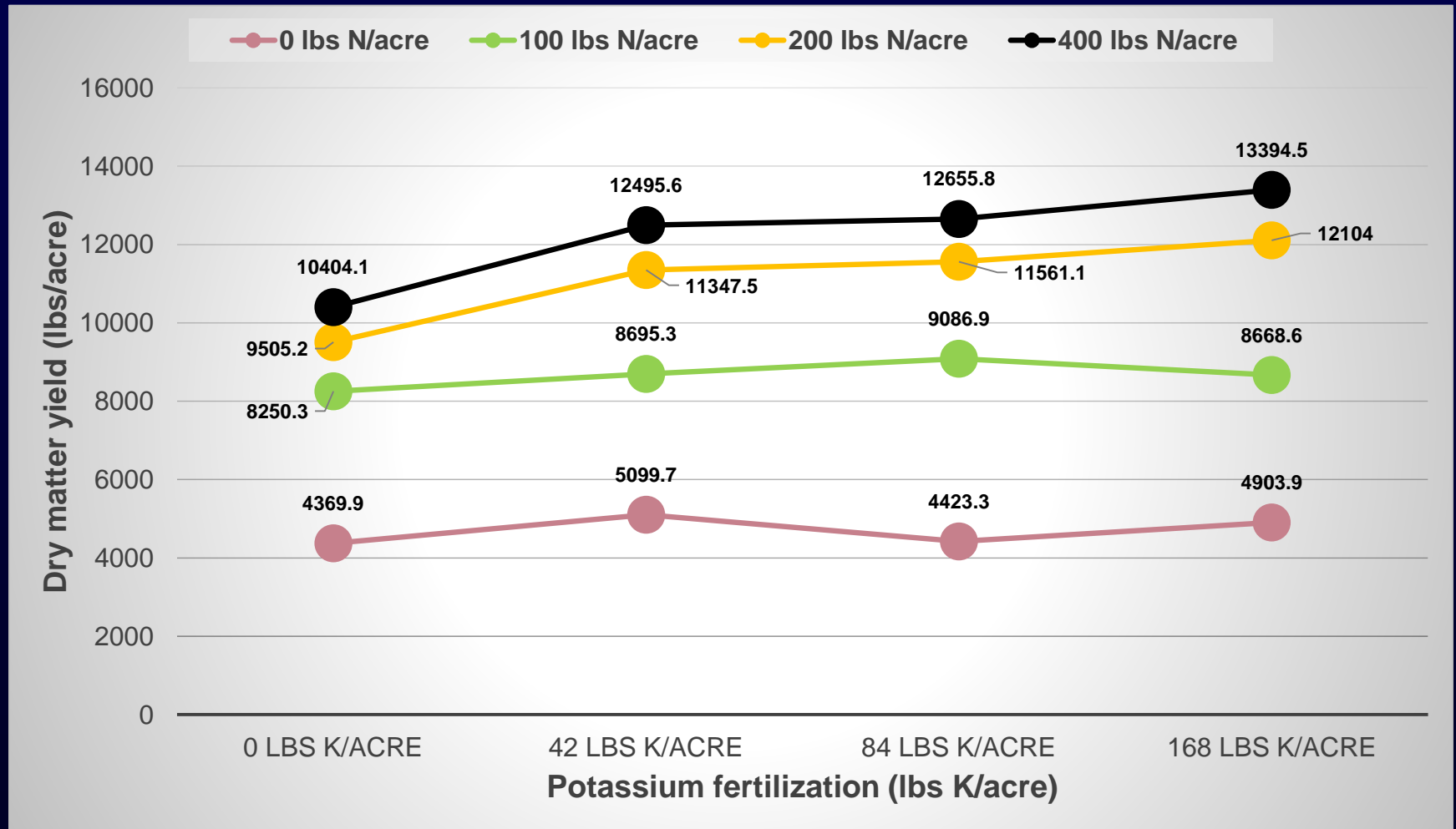
N use efficiency of Pensacola bahiagrass; Quincy, FL

Lbs of dry matter per lb of applied N

	0 lbs K/acre	100 lbs K/acre	200 lbs K/acre
150 lbs N/acre	14	20	25
300 lbs N/acre	11	20	21

- Fertilizer cost for 20 lb. of DM was approximately \$0.80 (including P and K)
- Assuming a 400-lb. steer consuming 10 lb./d and gaining 0.8 lb./d on bahiagrass, we will have 1.6 lb./d of gain with two steers
- 1.6 lb. of gain values at least \$3.20 (4x the fertilizer cost)

Coastal bermudagrass response to N and K; Watkinsville, GA



Adapted from Overman et al. (1991); 45 lbs P/acre was also applied for all treatments

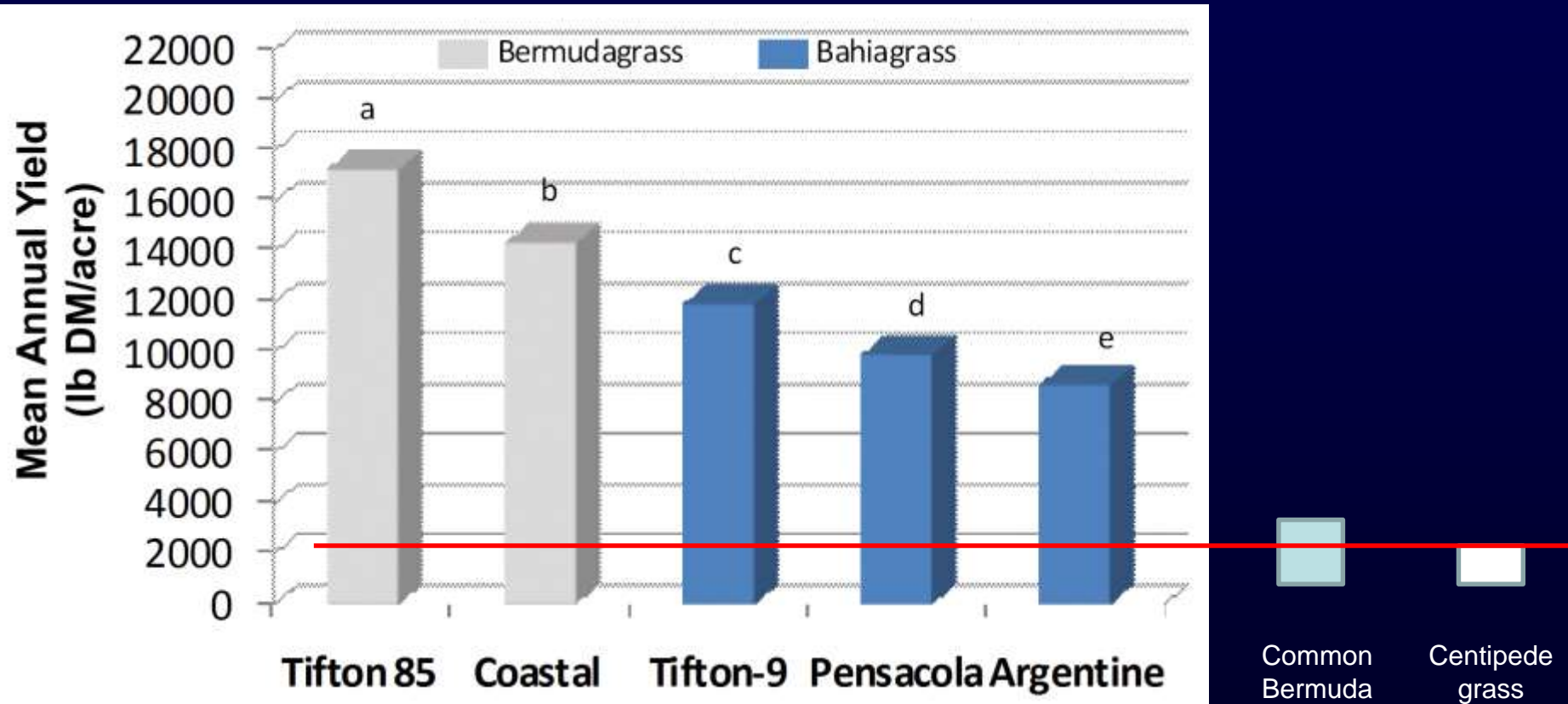
N use efficiency of Coastal bermudagrass; Watkinsville, GA

Lbs of dry matter per lb of applied N

	0 lb. K/acre	42 lb. K/acre	84 lb. K/acre	168 lb. K/acre
100 lb. N/acre	39	36	47	38
200 lb. N/acre	26	31	36	36
400 lb. N/acre	15	18	21	21

- In general, N use efficiency is greater for improved bermudagrass varieties compared to bahiagrass
- In this example, approx. twice as much forage was produced for the same N input
- Consider starting N fertilization in more productive grasses

Recover degraded grasslands – choosing the right species



Bahiagrass varieties

	Herbage accumulation (lbs./acre)	
Cultivar	Year	
	2010	2011
Argentine	5710 b [†]	3836 a
Pensacola	5264 c	3033 c
Tifton 9	6156 ab	3301 c
UF Riata	6245 a	3569 b

Bermudagrass varieties

Cultivar	Herbage accumulation (lbs./acre)	Crude Protein (% of DM)	Digestibility (% of DM)
Jiggs	4,104	11.6	58.4
Coast-cross-2	2,757	12.9	63.2
Tifton 85	2,650	10.2	63.9
Florakirk bermudagrass	3,390	11.6	58.0
Florico stargrass	3,274	12.0	61.7
Standard Error	357	1.9	2.2

Bermudagrass variety trial in Marianna, FL

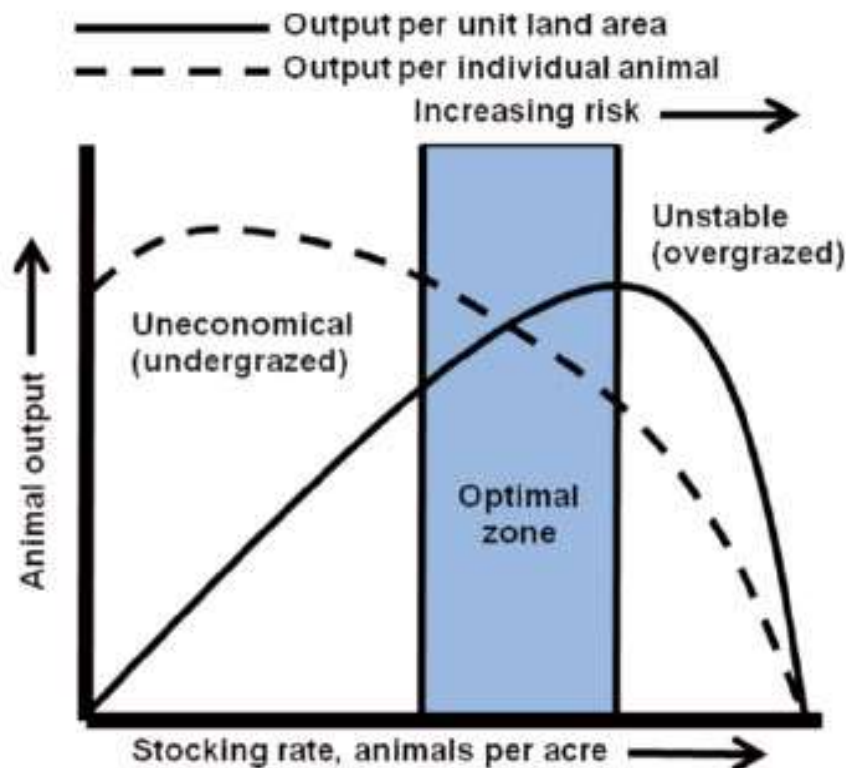


Grazing management makes a difference

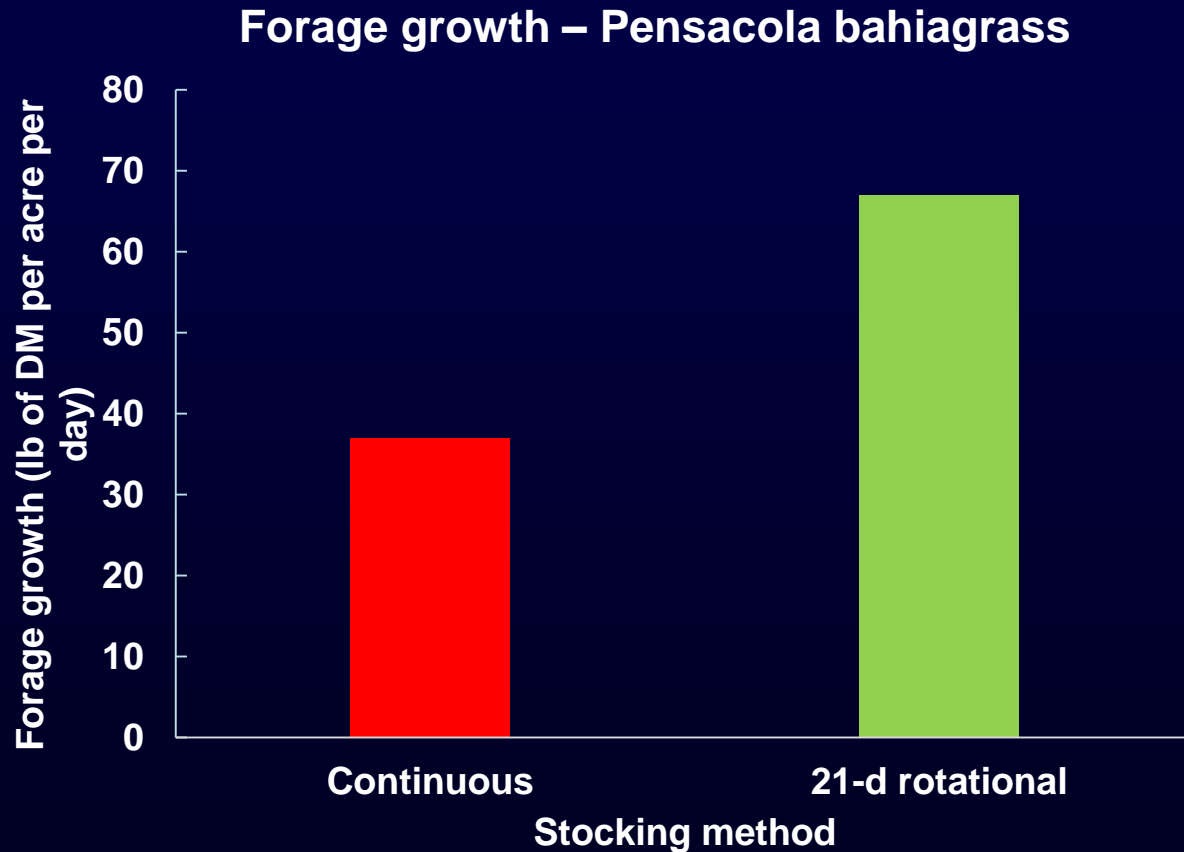
Undergrazing



Overgrazing

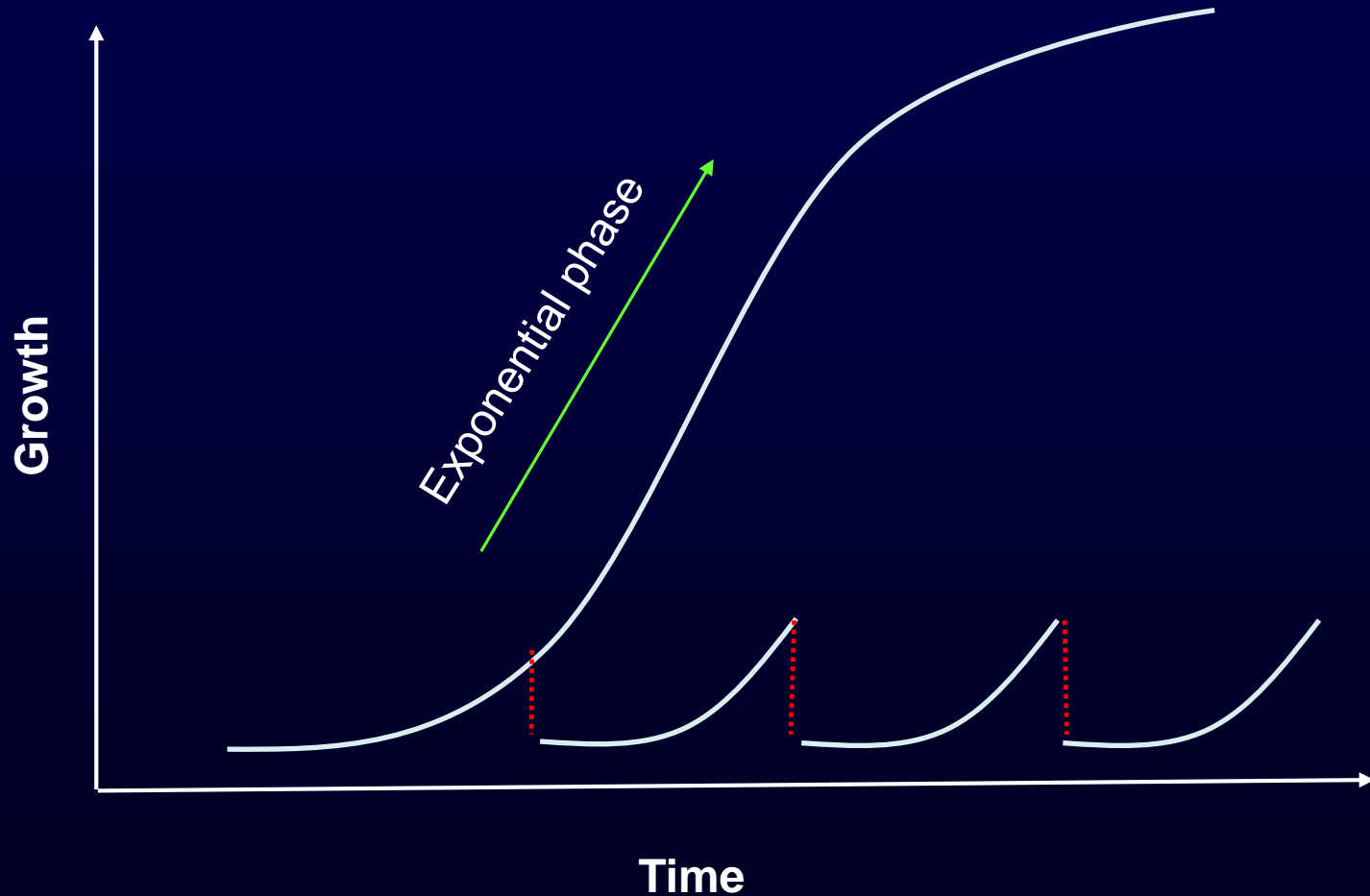


Rotational stocking increases DM yield



Adapted from Stewart et al. (2005)

Longer resting period increases growth



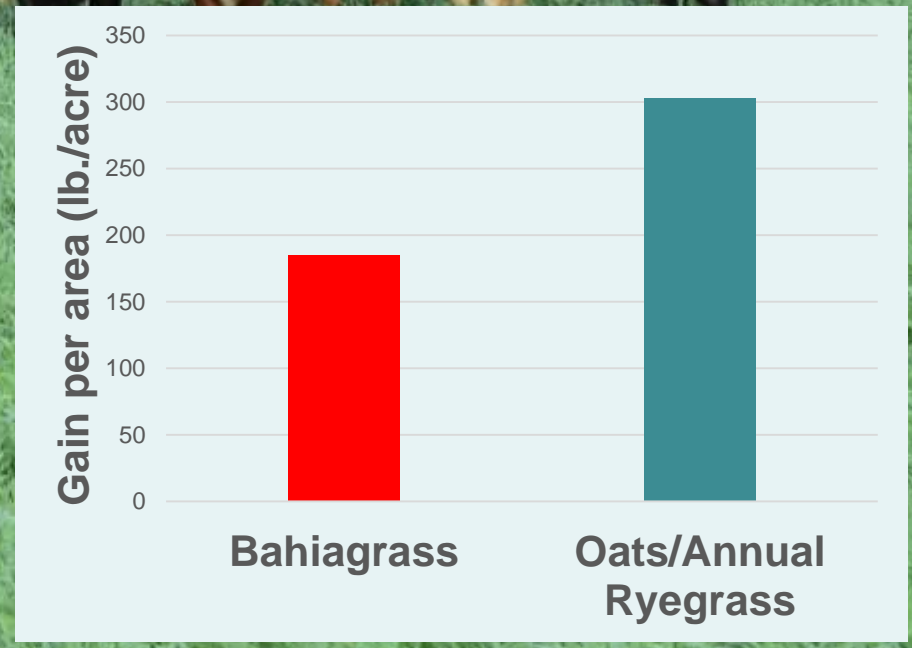
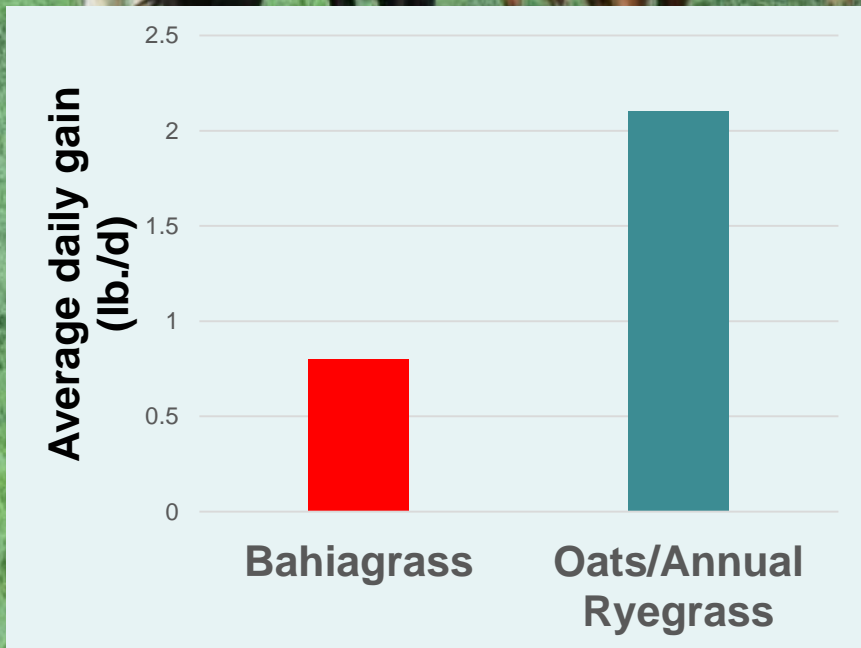
At least two paddocks...

Forage DM yield (Lbs/yr)	Forage utilization rate (%)		
	20%	40%	60%
	----- Steers [§] /acre -----		
4,000	0.17	0.34	0.52
8,000	0.35	0.70	1.05
12,000	0.52	1.04	1.56
16,000	0.70	1.40	2.10

[§]Assuming a 500-lbs steer, average daily dry matter intake of 12.5 lbs/steer, 365 d of grazing season (sum of warm-season and cool-season forages).



Cool-season pastures: a double (or even triple) cropping ...



Bahiagrass data: Stewart et al. (2007); Oat/Ryegrass data: Dubeux et al. (2014)

Cool-season pastures: a double (or even triple) cropping ...

	Small grain/annual ryegrass mixture		
	Rye/ ryegrass	Oat/ ryegrass	Triticale/ ryegrass
Average Daily Gain (lbs./day)	1.7	2.1	2.1
Stocking rate (steers*/acre/112 d)	1.8	1.8	1.7
Gain per area (lbs./acre)	299	303	286



Cool-season pastures: a double (or even triple) cropping ...

Table 1. Cool-Season Annual Forage Cost Per DM Ton Consumed For Various Levels of Forage Production and Production Cost Per Acre

Forage Production DM lbs./Acre	Utilization* DM lbs./Acre	Cool-Season Annual Forage Production Cost Per Acre				
		\$100	\$150	\$200	\$250	\$300
		\$/Ton DM Consumed				
2,000	1,300	\$153.85	\$230.77	\$307.69	\$384.62	\$461.54
4,000	2,600	\$76.92	\$115.38	\$153.85	\$192.31	\$230.77
6,000	3,900	\$51.28	\$76.92	\$102.56	\$128.21	\$153.85
8,000	5,200	\$38.46	\$57.69	\$76.92	\$96.15	\$115.38
10,000	6,500	\$30.77	\$46.15	\$61.54	\$76.92	\$92.31
12,000	7,800	\$25.64	\$38.46	\$51.28	\$64.10	\$76.92

*Forage utilization was assumed to be 65 percent of the available total forage production (column one × 0.65)

Source: Chris Prevatt (2014)

<http://www.agweb.com/article/economics-of-grazing-cool-season-annual-forages-university-news-release/>

Cool-season pastures: a double (or even triple) cropping ...

✓ Assuming \$116 per ton of DM consumed

✓ 400-lb steer consuming 10 lb DM/d

✓ Average Daily Gain of 2.1 lb/d

✓ 1 ton of cool-season forage (DM) costs \$116

but produces 420 lb of cattle live weight which

is equal to at least \$840



Forage legumes: a plus to your pastures



Perennial Peanut Establishment

Tilled strip prior to planting



RP 3 months after planting



10-year-old RP/BG mixture



RP 1 yr after planting



On-farm trials – Perennial peanut

- Two establishment methods x two PP varieties
- Four locations in Florida



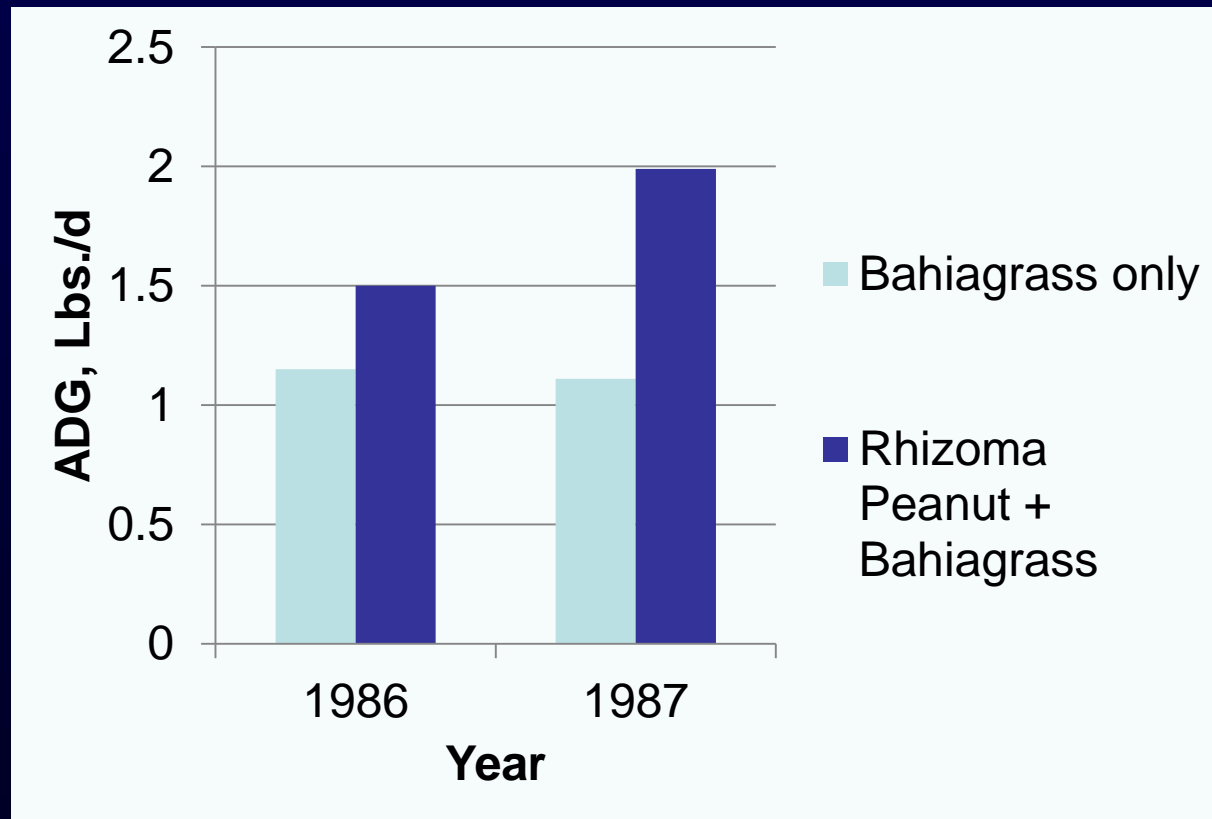
Arachis on bahiagrass (and T-85)



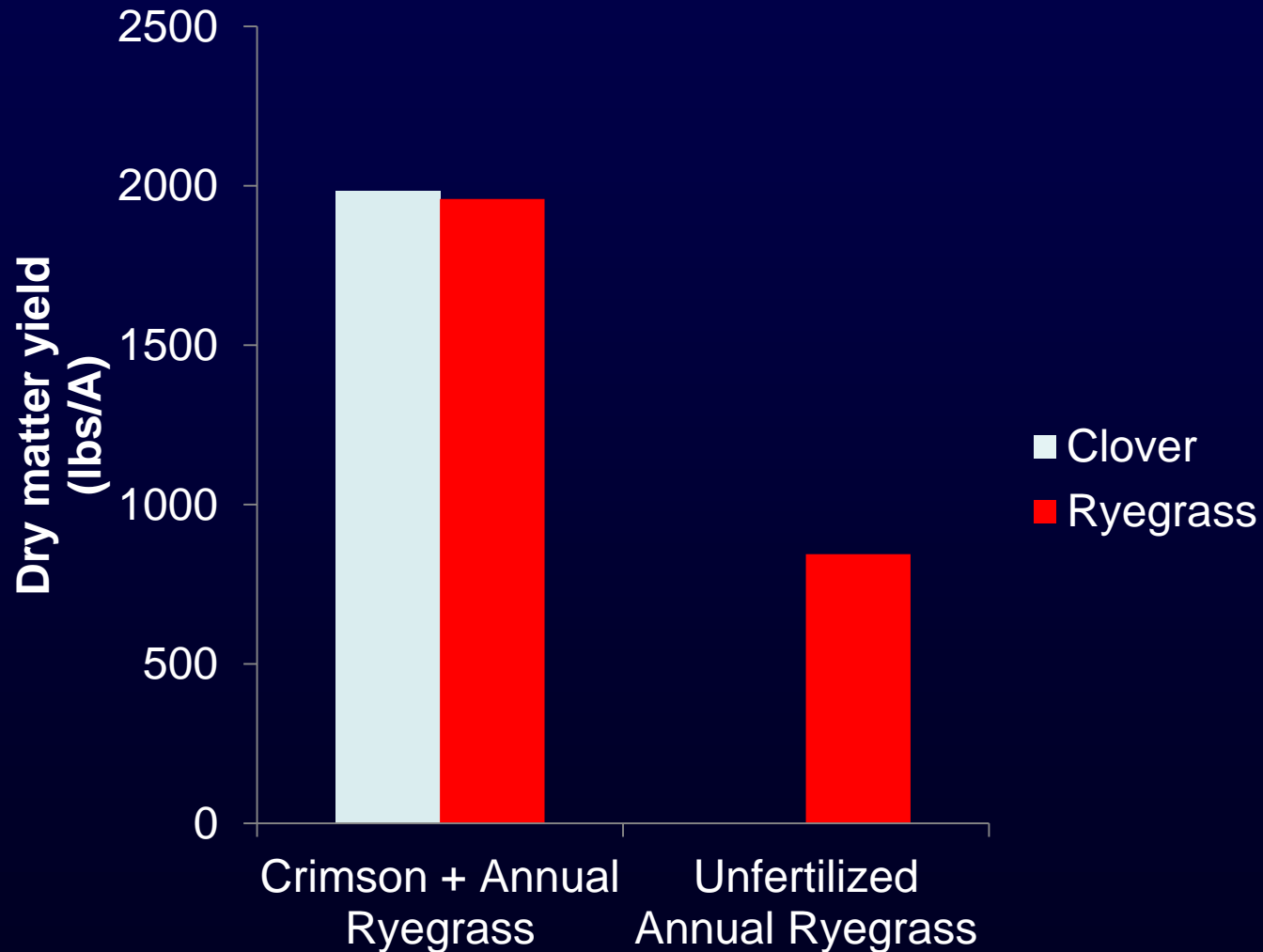
Alfalfa no-till drilled on bahiagrass and Tifton-85



Cattle perform better in mixed RP-BG than in bahiagrass only pasture

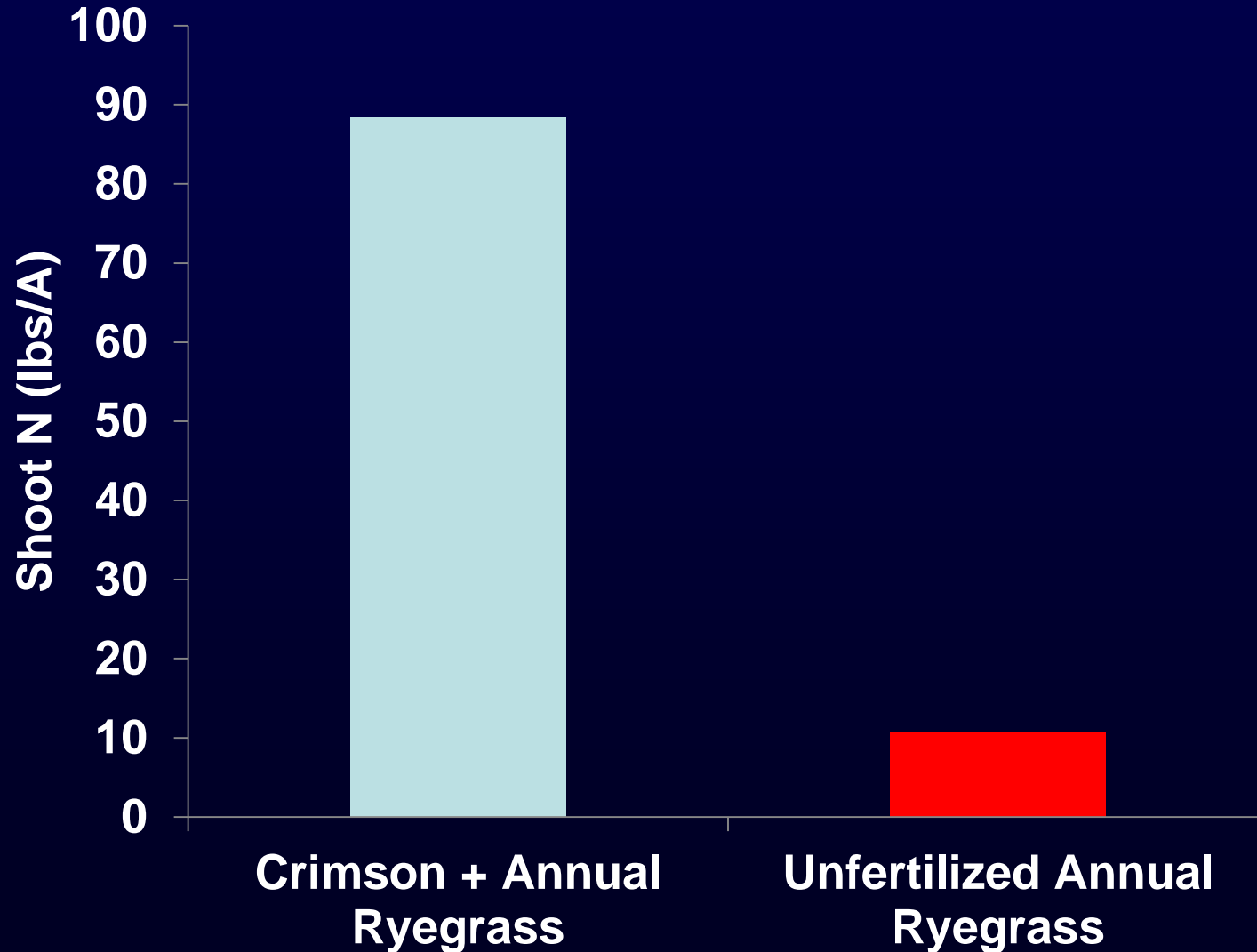


Cool-season legumes also benefit cattle and add N to the pasture



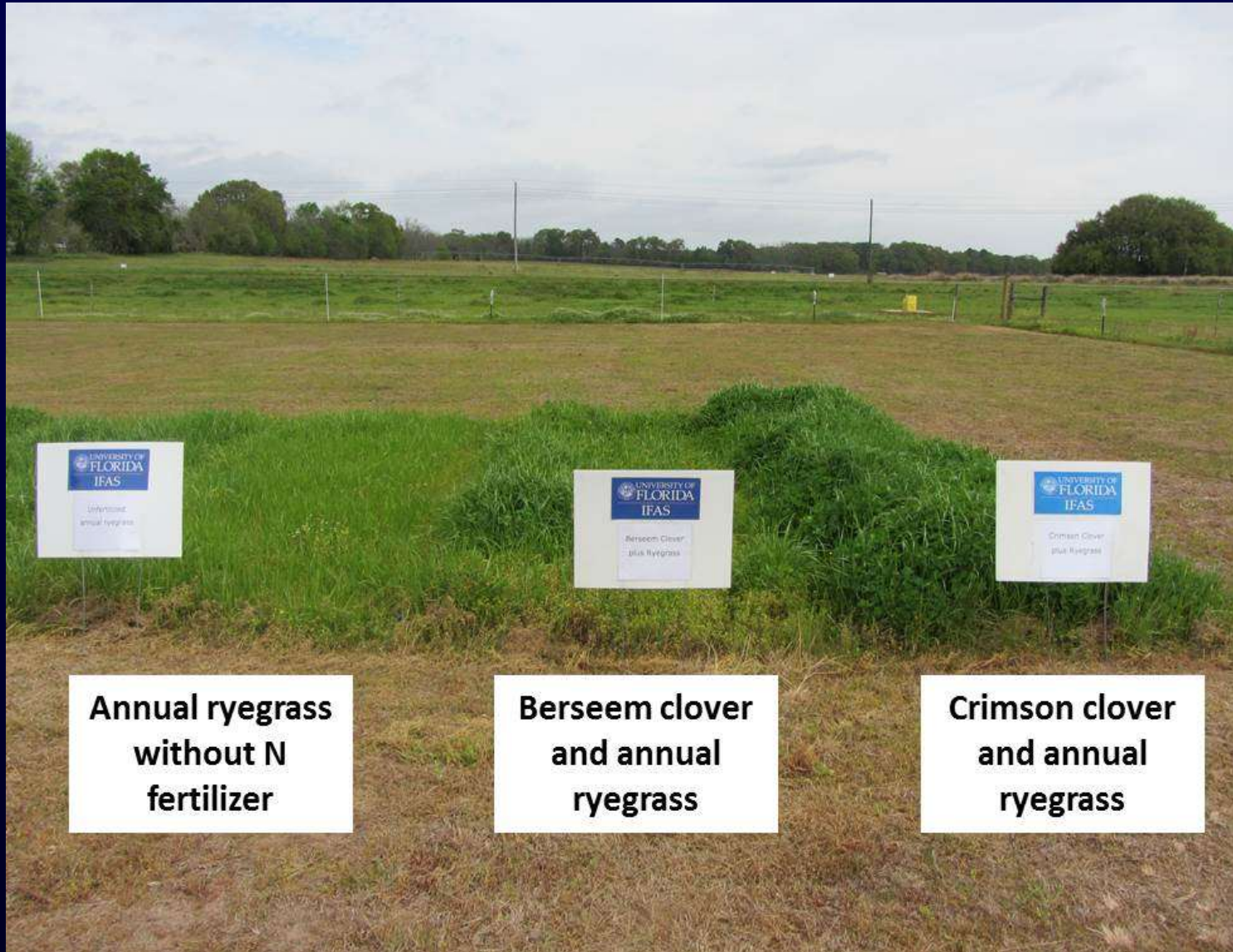
Dubeux (2014)

Cool-season legumes also benefit cattle and add N to the pasture



Dubeux (2014)

One image is worth a thousand words...



UNIVERSITY OF
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IFAS
Annual ryegrass
without N fertilizer

**Annual ryegrass
without N
fertilizer**

UNIVERSITY OF
FLORIDA
IFAS
Berseem Clover
plus Ryegrass

**Berseem clover
and annual
ryegrass**

UNIVERSITY OF
FLORIDA
IFAS
Crimson Clover
plus Ryegrass

**Crimson clover
and annual
ryegrass**

How/Where should I start?

- **Control the weeds and replace low productive invasive species by more productive ones**
- **Pick the best spots to start a pasture fertilization program. Start small (10-20% of the farm is a good initial goal)**
- **Do not miss the opportunity of the cool-season forages and forage legumes!**
- **As you intensify your system, start the rotational grazing! You will get the most out of it!!**

Harvesting the benefits...

Simulating 100-acres farm with different scenarios

Traditional System	Indices
Stocking rate	3 acres/cow-calf unit
Number of cows	33
Weaned calves per year [§]	28
Cost with fertilizers	0
Cost with cool-season	0
Cost with hay feeding [£]	\$8,486
Gross income with weaned calves [§]	\$33,600
Extra Expenses (EE) with fertilizers/cool season and hay	\$8,486
Gross income – EE	\$25,114

[§] Assuming 85% weaning rate; [£]20 lb/cow-calf/d during 180 d, 30% feeding losses, \$50/1000 lb bale; [§]28 calves @\$1,200/calf

Harvesting the benefits...

Simulating 100-acres farm with different scenarios

Improved System	Indices
Stocking rate	1.5 acres/cow-calf unit
Number of cows	66
Weaned calves per year [§]	62
Cost with fertilizers [€]	\$8,000
Cost with cool-season [‡]	\$30,000
Cost with hay feeding [£]	\$5,657
Gross income with weaned calves [§]	\$86,800
Extra Expenses (EE) with fertilizers, cool season, and hay	\$43,657
Gross income – EE	\$43,143

This is 72% more compared to the traditional system

[§] Assuming 95% weaning rate; [£]20 lb/cow-calf/d during 60 d, 30% feeding losses, \$50/1000 lb bale; [€]100 lb N/acre plus P and K @ \$0.80 per lb.; [‡]100 acres @ \$300/acre; [§]62 calves @ \$1,400/calf

Take Home Messages

- Now is the time to prepare for the upcoming years
- Existing technologies allow us to improve productivity and income per unit land area
- Livestock prices are attractive and they will continue looking good for a few more years
- Act now and get ready for the future



Thank you

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