Southeast Cattle Advisor Marketing School | March 8th

Maximizing Forages as an Economical Feed Resource

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Crop and Soil Sciences – UGA

Looking Ahead

- Gain / acre vs. ADG
- Stocking Rate
- Grazing Days

Photo credit: Noble Foundation.

Looking Ahead

- **Focusing on Forage Quality**
  - **Optimizing Digestibility (TDN, IVDMD, etc.)**
  - **Maximizing Dry Matter Intake (DMI)**
  - **Maximizing Feed Efficiency (FE)**

Photo credit: Noble Foundation.

Looking Ahead

- **Observations of Stocker Productivity in Major Forage System Types**
  - **Legumes!!!**

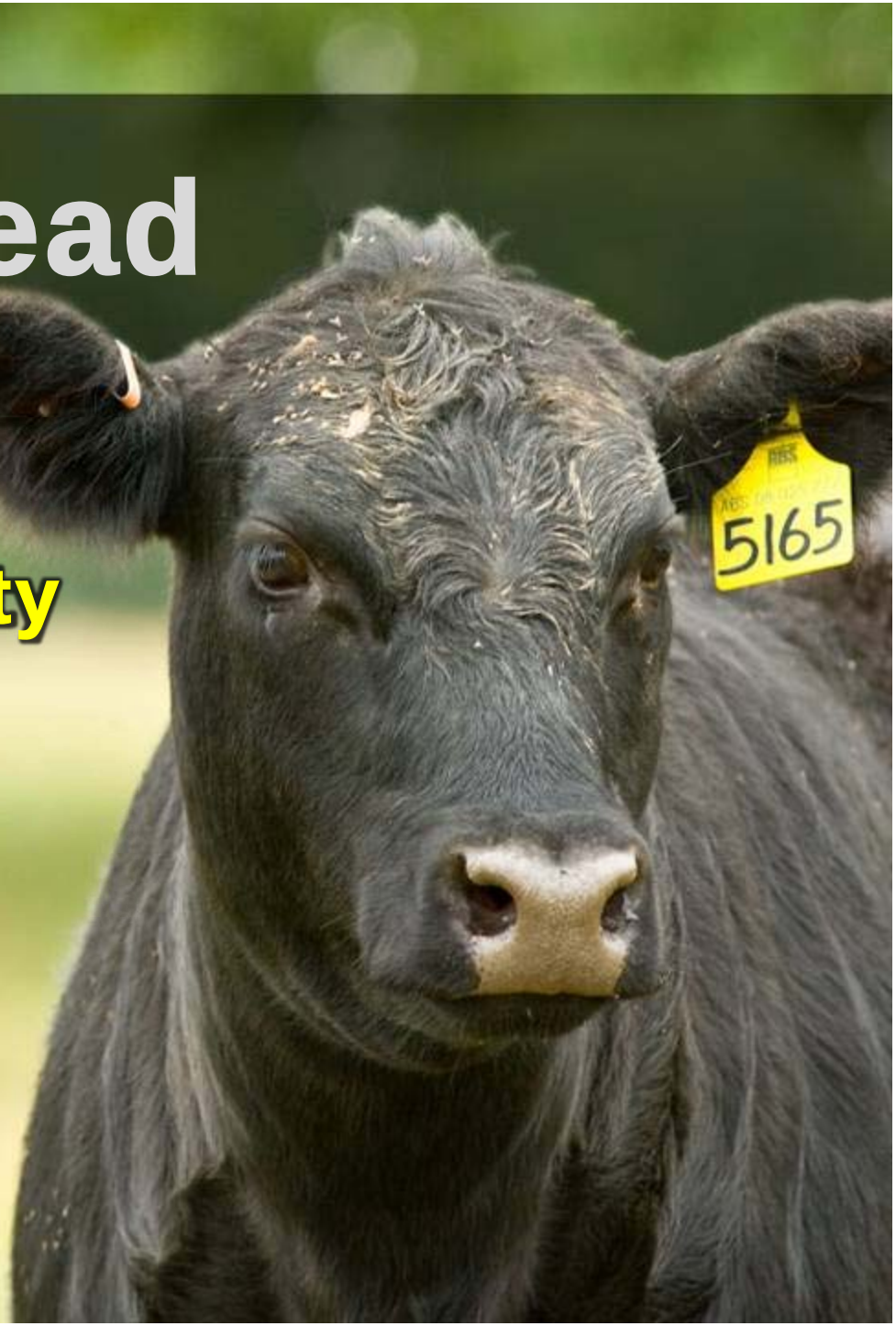
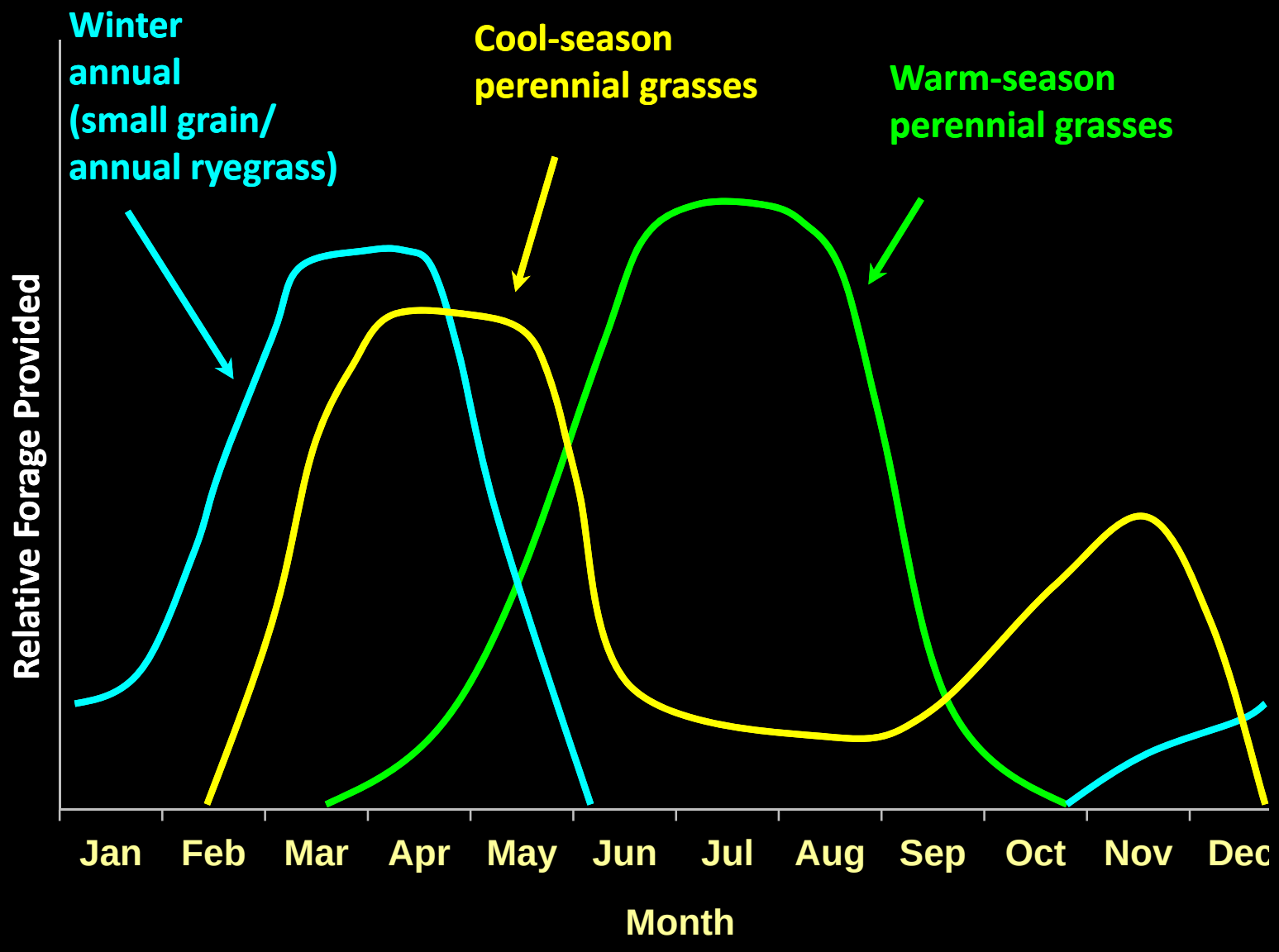
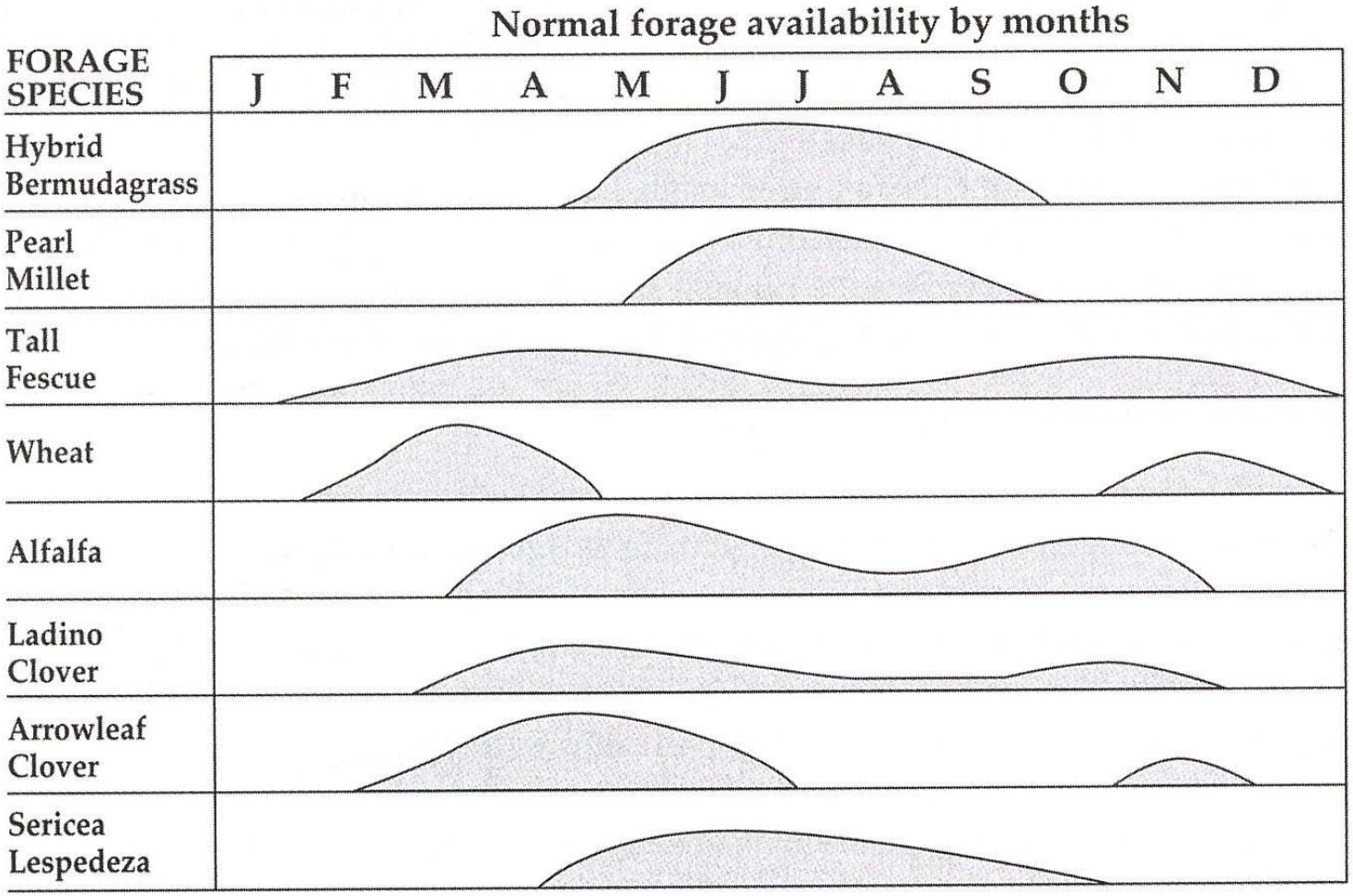


Photo credit: Noble Foundation.

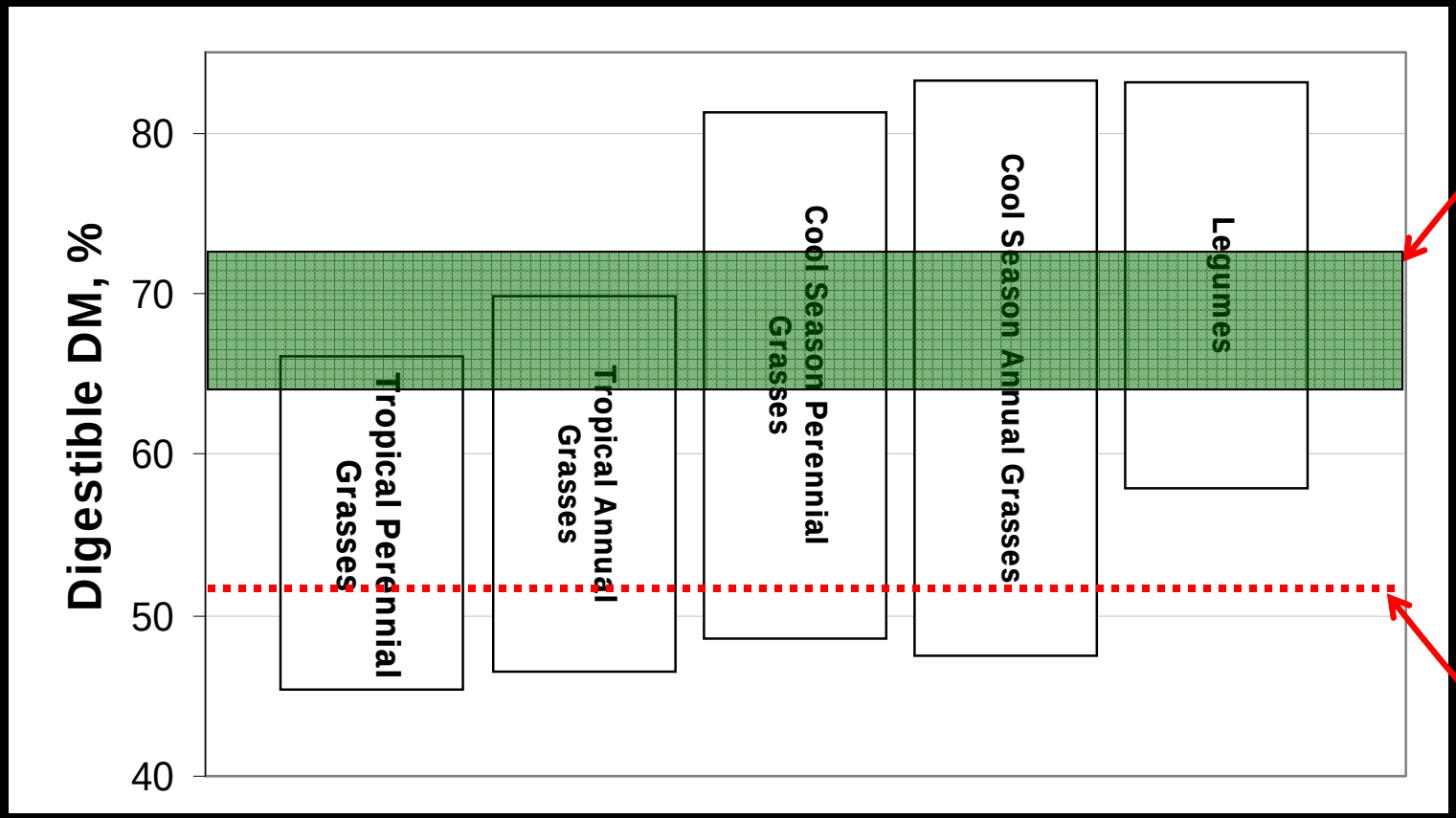
Forage Needed – Forage Provided



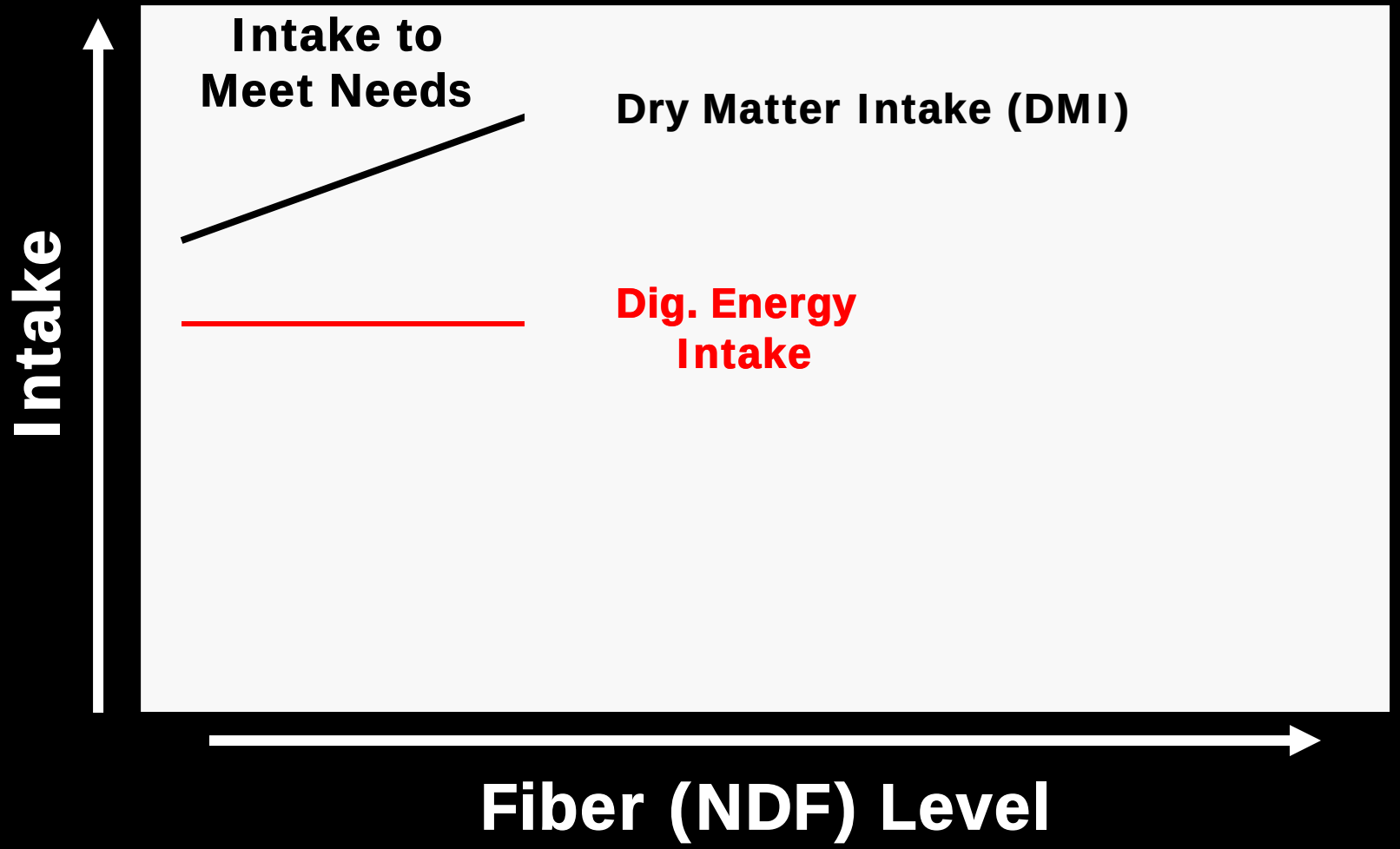
Forage Productivity Differs Throughout the Year



Quality Differences in the Major Forage Species



The Relationship between Fiber (NDF) and Dry Matter Intake (DMI)



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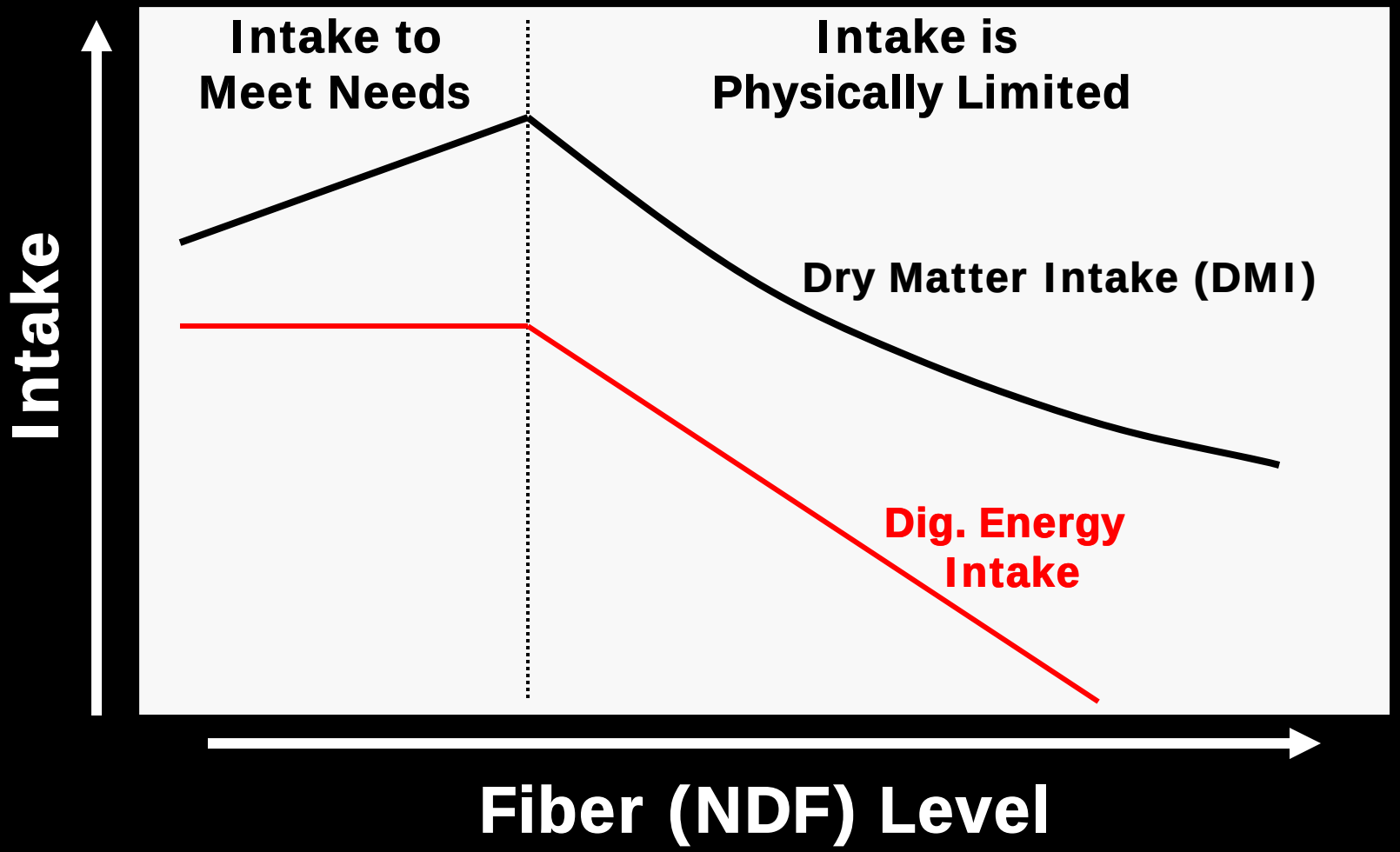
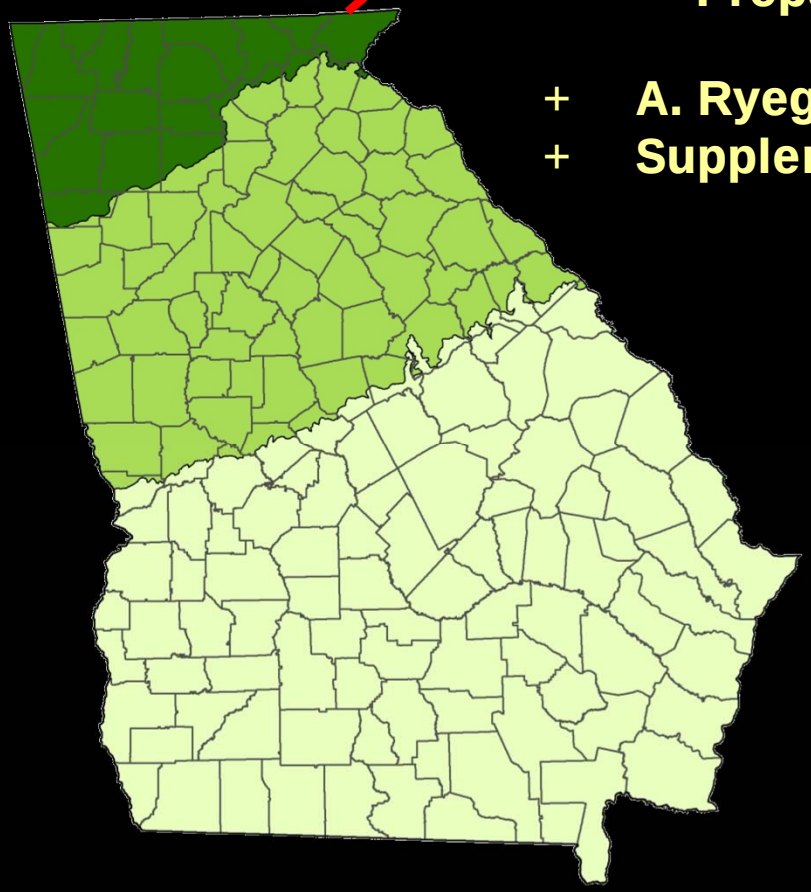


Georgia's Stocker Forages

High Quality Forage Systems

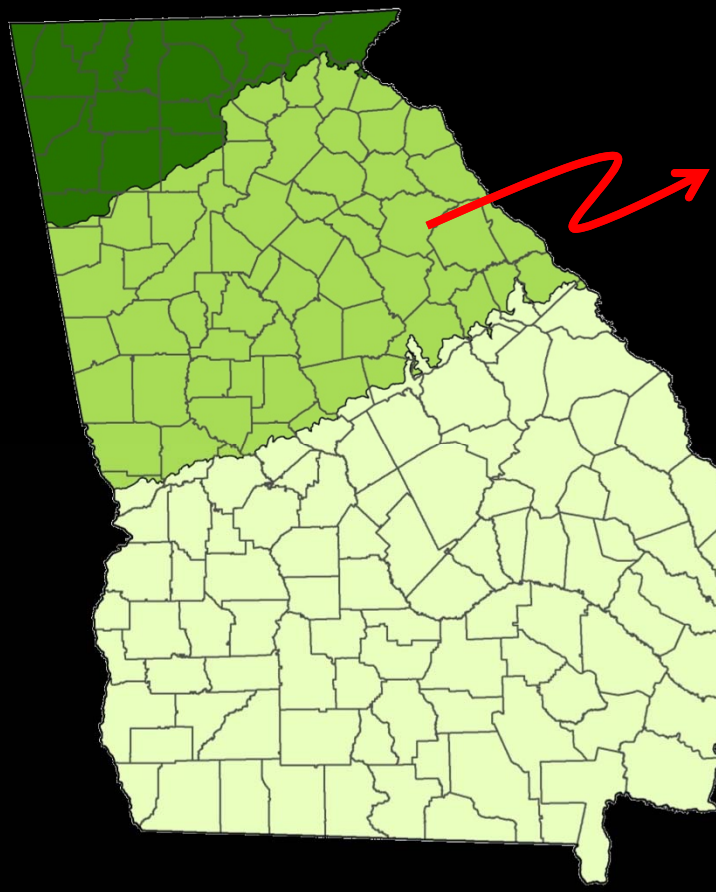


A. NE Tall fescue + Clover
B. Winter Annual Grass
   - Prepared Seedbed

\+ A. Ryegrass Hay/Baleage
\+ Supplementation

Georgia's Stocker Forages

High Quality Forage Systems



A. NE Tall fescue + Clover (Upper Pied.)
   - Spring Only

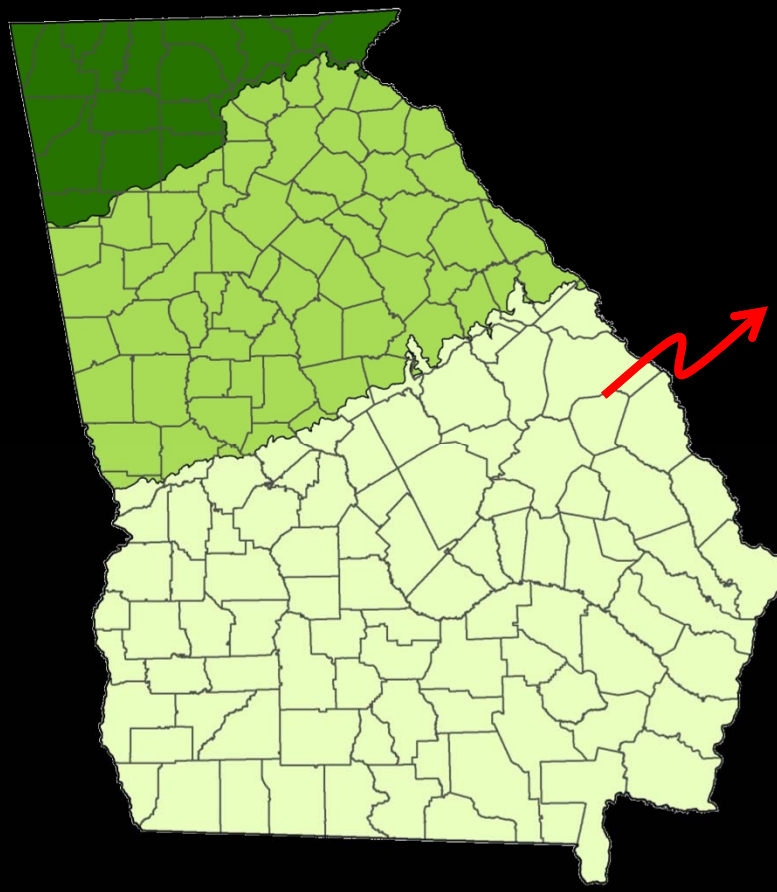
B. Winter Annual Grasses (& Legumes?)
   - Sodseeded

\+ A. Ryegrass Hay/Baleage

\+ Supplementation

Georgia's Stocker Forages

High Quality Forage Systems



A. Winter Annual Grasses (& Legumes!)
   - Sodseeded or Prepared Ground

B. Tifton 85 Bermudagrass

C. Summer Annuals (distant 3rd)

\+ A. Ryegrass Hay/Baleage

\+ Supplementation

Efficiencies of Grazing and Mechanized Harvest

Method	Efficiency
Grazing	
Continuous Stocking	30-40%
Slow Rotation (3-4 paddocks)	50-60%
Moderate Rotation (6-8 paddocks)	60-70%
Strip Grazing	70-80%

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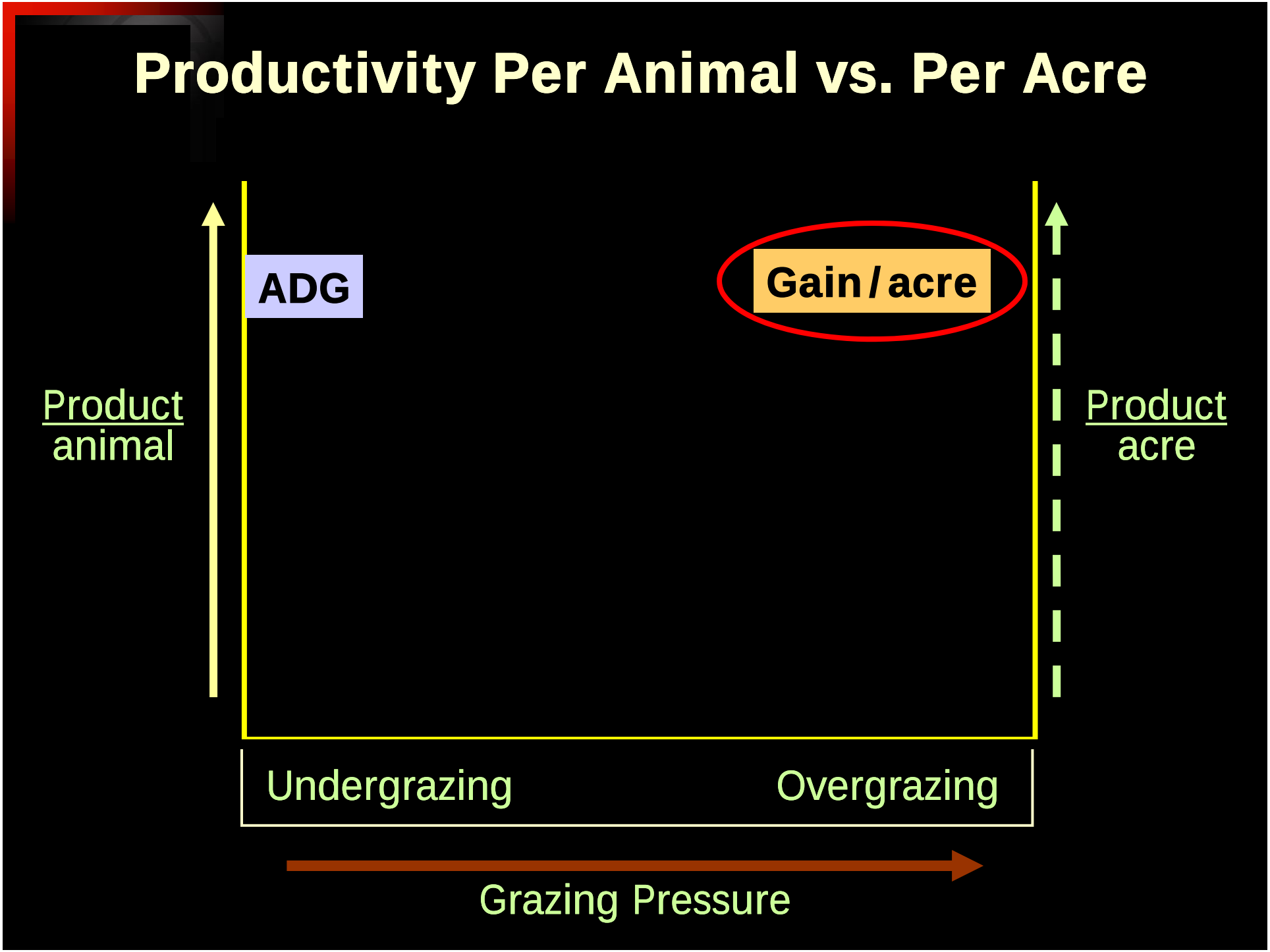
Productivity Per Animal vs. Per Acre



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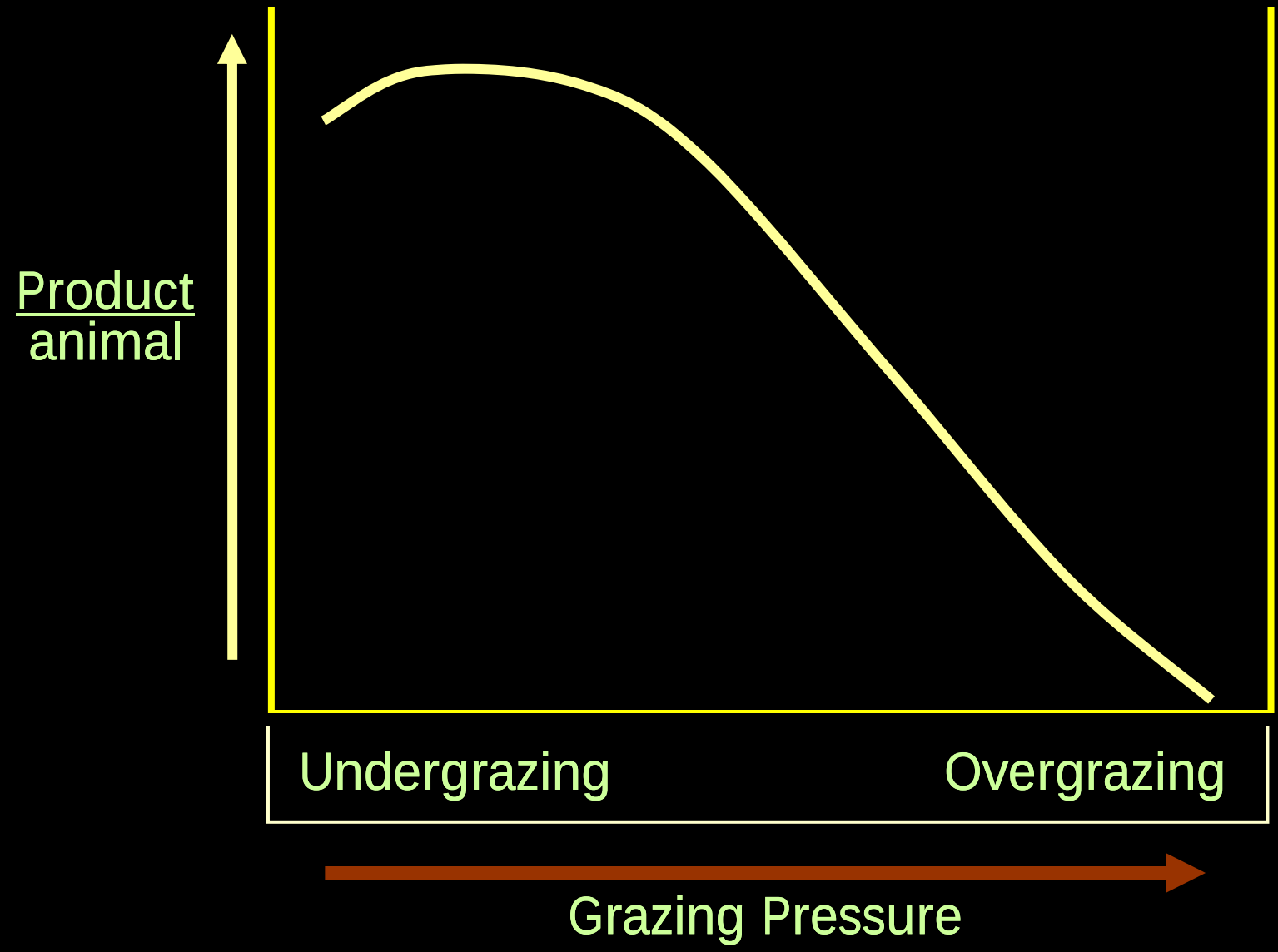

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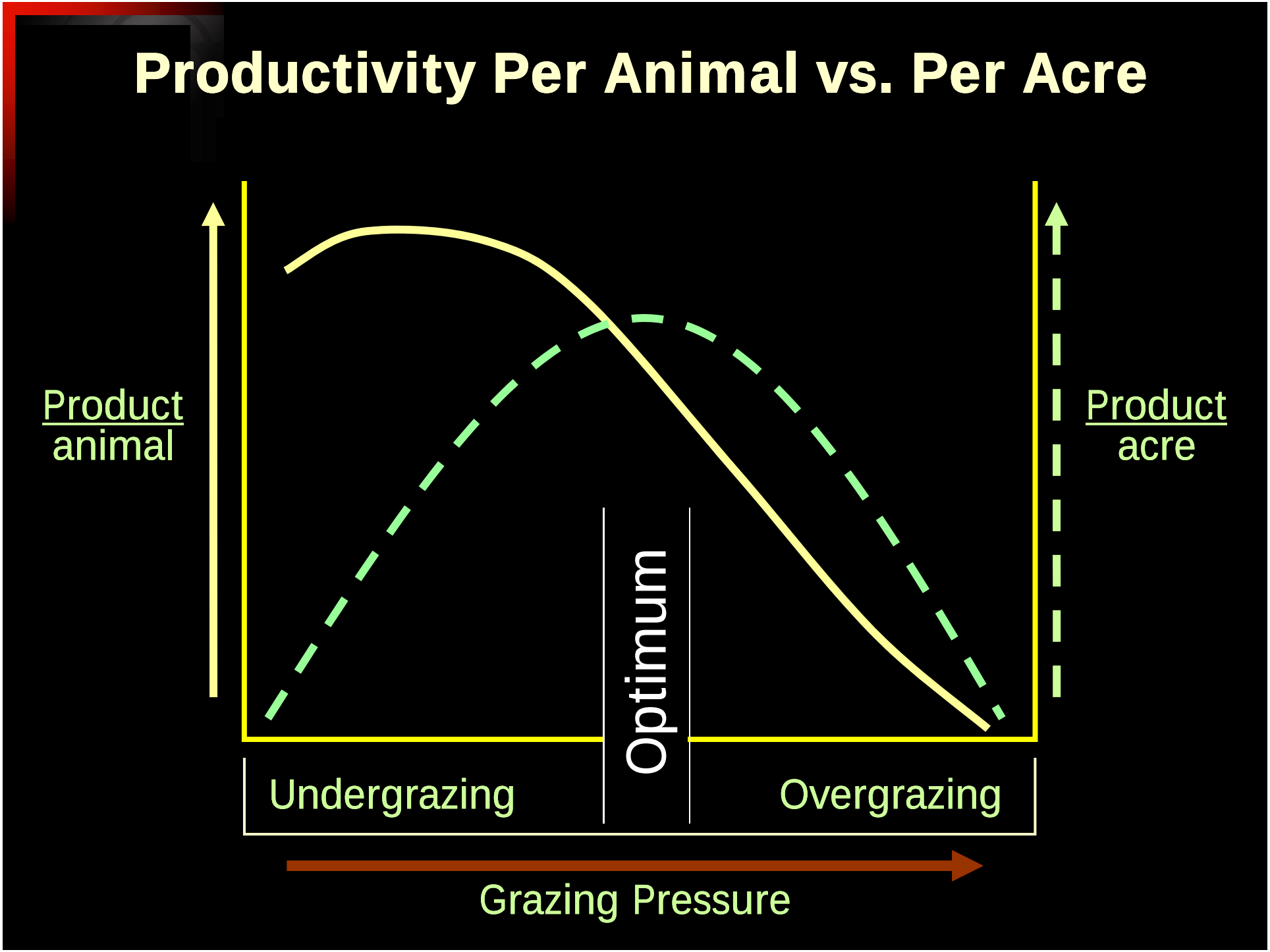

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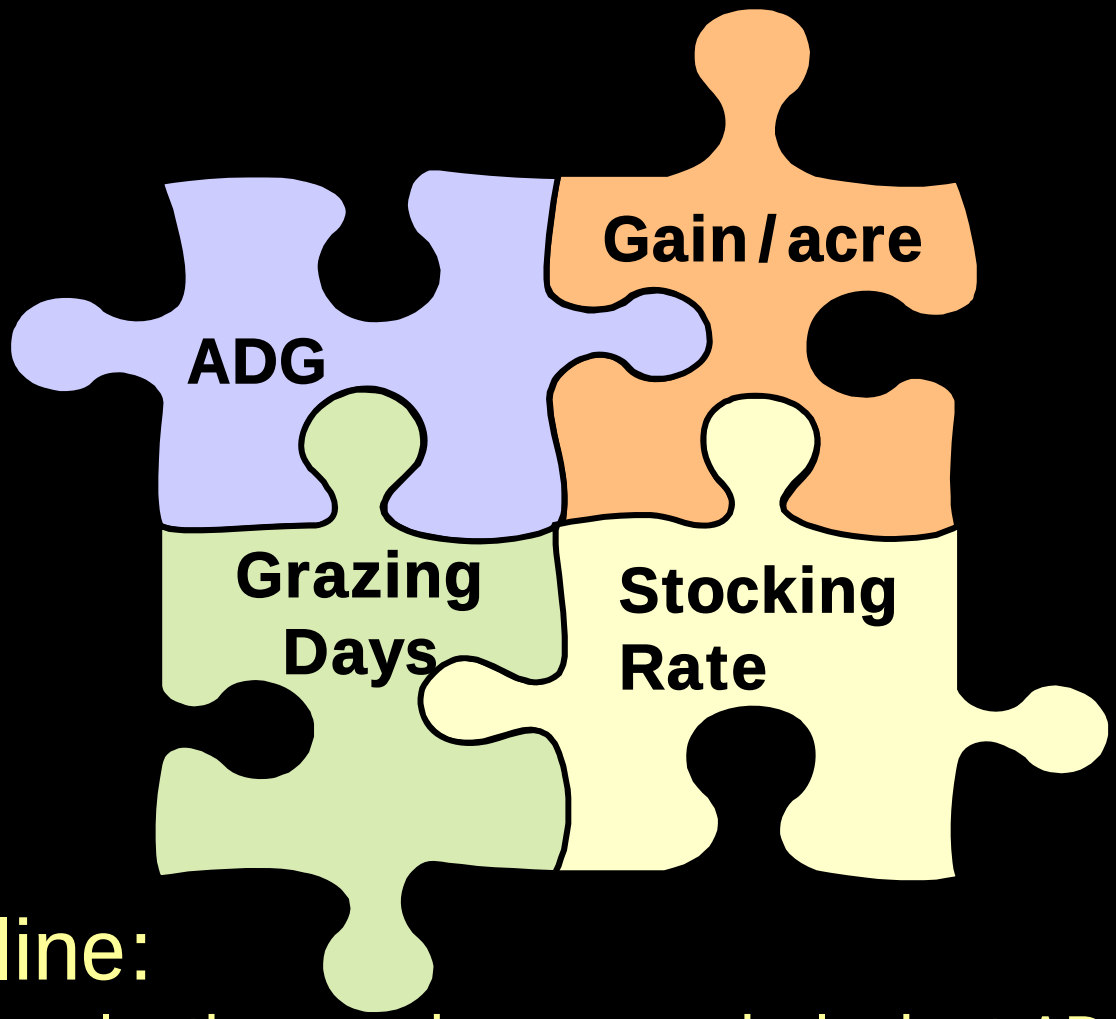

Bottomline:

- When evaluating grazing research, look at ADG, Gain/acre, Grazing Time, and Stocking Rate simultaneously.

Effect of Tall Fescue and the Endophyte on Stocker Production

	ADG	Gain	Stocking Rate	Grazing Time
	(lbs/hd/d)	(lb/acre)	(hd/acre)	(days)
Fall				
Jesup E+	1.5	137	1.5	63
Jesup E-	2.3	211	1.5	63
Jesup NE	2.1	188	1.5	63
GA 5 NE	2.2	209	1.5	63

In the fall, tall fescue is either "Boom or Bust."

Parish, 2001. University of Georgia Ph.D. Dissertation.

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Spring				
Jesup E+	0.8	119	1.6	91
Jesup E-	2.2	313	1.6	91
Jesup NE	1.8	251	1.6	91
GA 5 NE	2.2	308	1.6	91

Parish, 2001. University of Georgia Ph.D. Dissertation.

Effect of Tall Fescue, Endophyte, and White Clover on Stocker Production in the Spring

	ADG (lbs/hd/d)	Gain (lb/acre)
E+	1.10	126
NE	→ 1.83	→ 186
E+ & WC	1.60	150
NE & WC	→ 2.61	→ 252

Jesup Tall Fescue and Durana White Clover. 3-yr trial. Eatonton, GA.
Hill, Andrae, and Bouton (unpublished data)

Winter Annual Forage Systems

Overseeding Winter Annuals into Bermuda

- **Ryegrass (Annual)**
- **Rye**
- **Oats**
- **Wheat**
- **Triticale**
- **Arrowleaf clover**
- **Crimson clover**
- **Red clover***

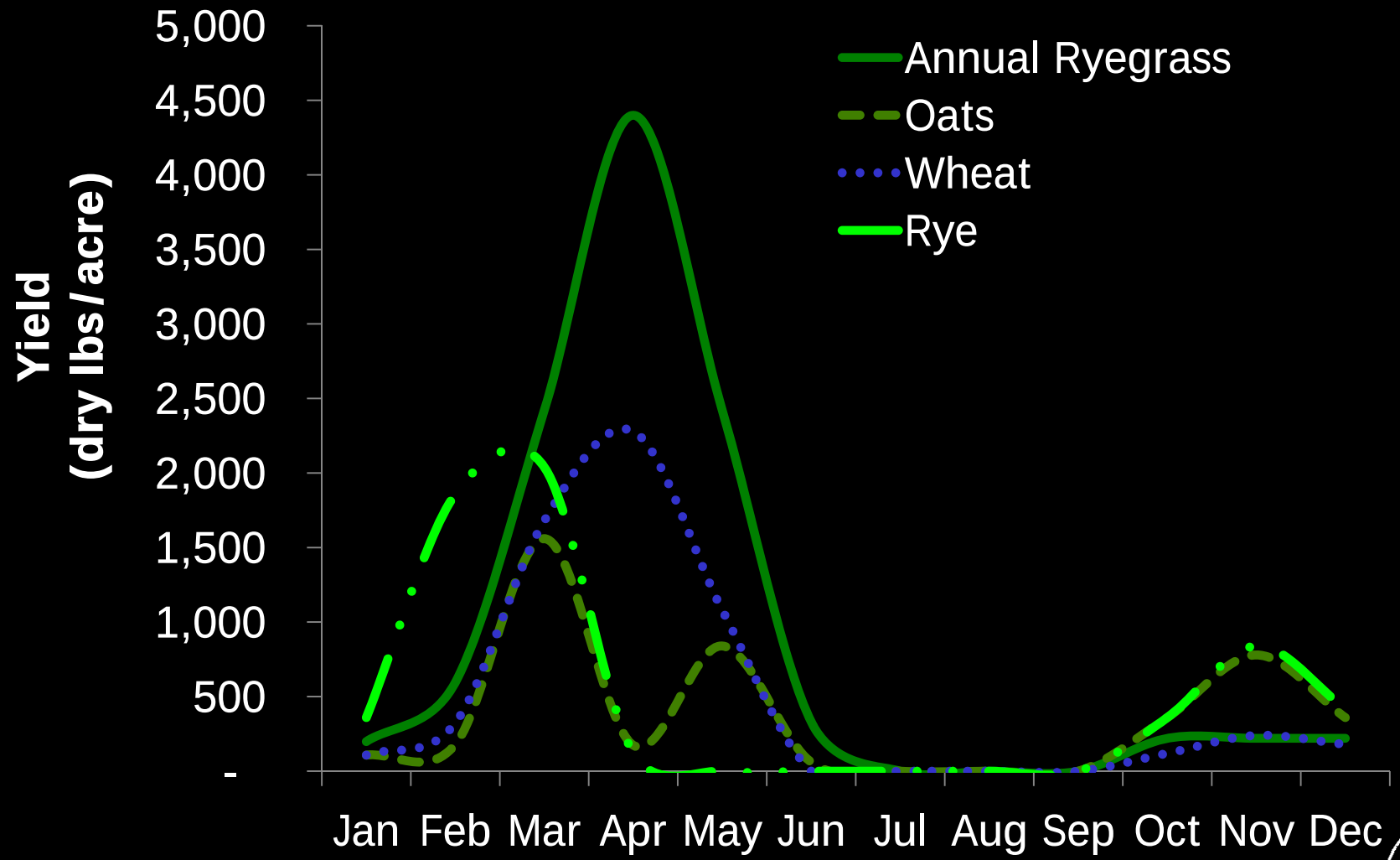
Winter Annual Forage Quality

Species	Crude Protein	Total Digestible Nutrients	Annual Yield*
	------- % -------		lbs DM/acre
Ryegrass	10-20	56-74	10,630
Oats	8-14	55-70	7,100
Wheat	8-14	52-70	7,110
Rye	8-14	50-70	4,850
Arrowleaf	14-17	56-75	3,470
Crimson	14-16	57-75	3,570

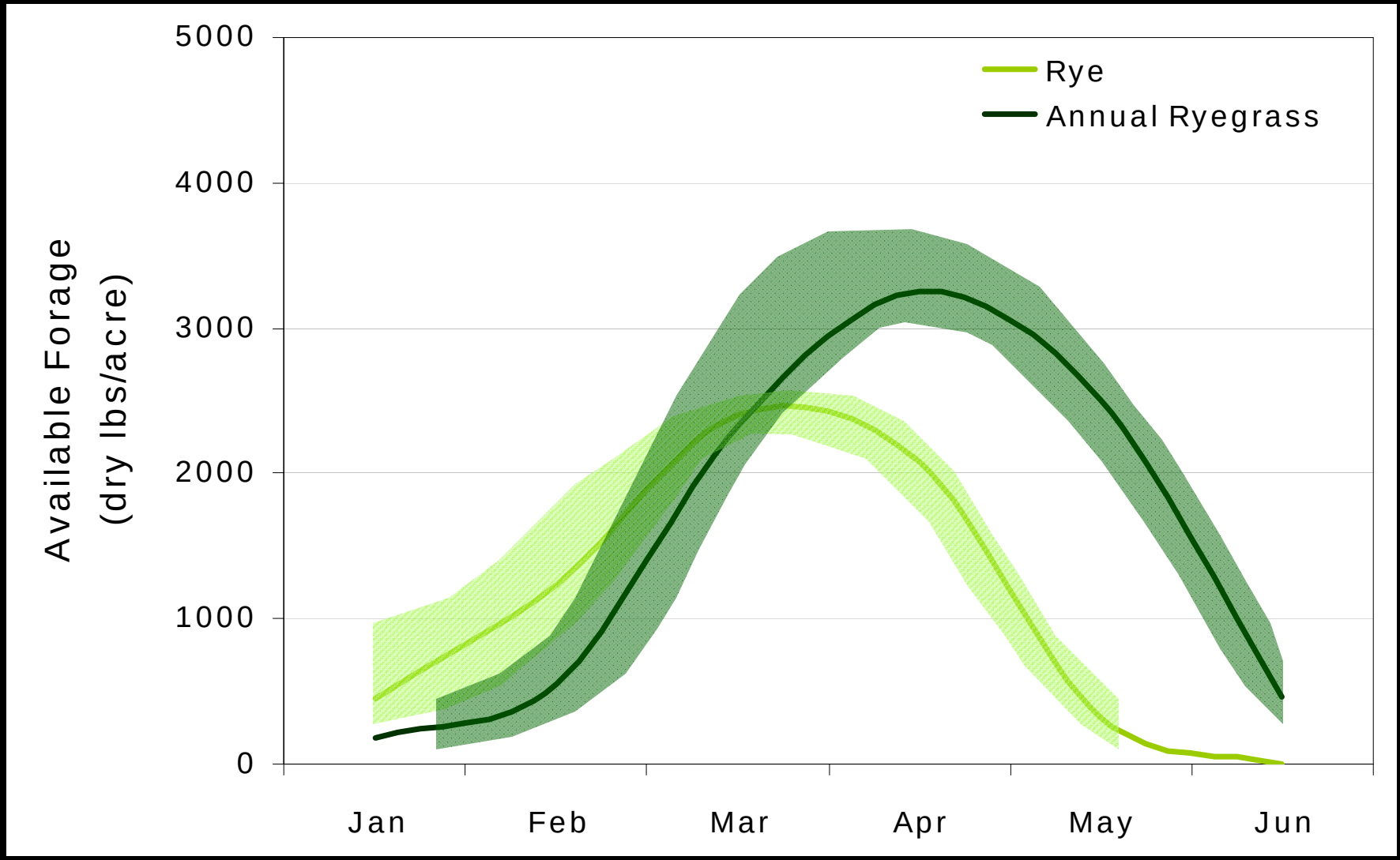
Quality ranges are approximate and are highly dependant upon forage maturity at grazing/harvest. Yields are 3-yr averages from GA and AL.

1785

Winter Annual Forage Distribution



Winter Annuals: When and How Much



Effect of Winter Annual Mixture on Beef Production

	ORG	RG	RRG	TRG	WRG
ADG (lbs/hd/d)					
Winter	1.19	0.73	1.39	1.11	1.20
Spring	2.45	2.60	2.39	2.07	2.37

Beck et al., 2007. J. Anim. Sci. 85:536-544 (SW Arkansas, Avg. of 2 yrs)

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	ORG	RG	RRG	TRG	WRG
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Winter	1.19	0.73	1.39	1.11	1.20
Spring	2.45	2.60	2.39	2.07	2.37
Gain (lb/acre)	253	239	281	219	256

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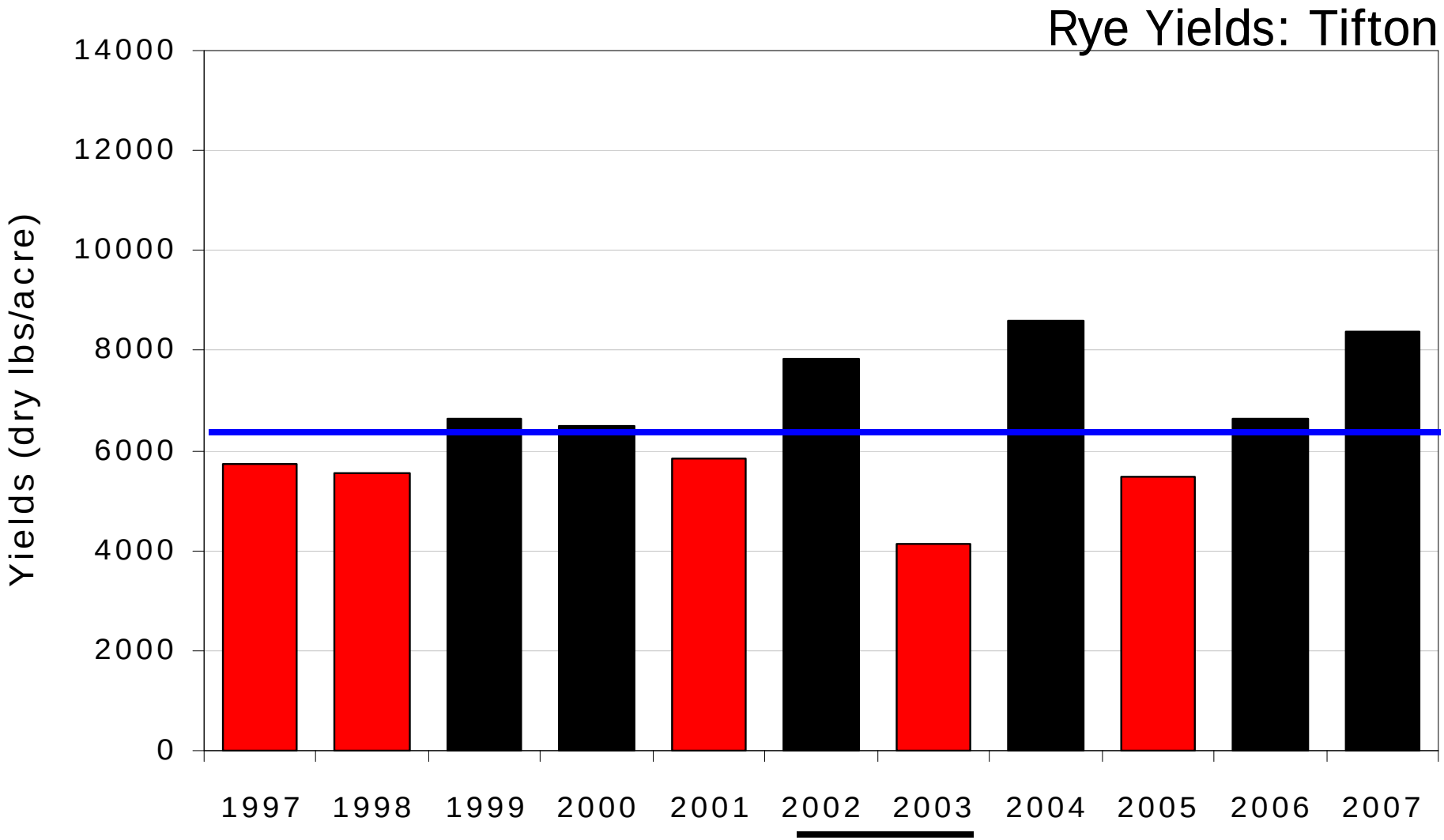
Spring	2.45	2.60	2.39	2.07	2.37
Gain (lb/acre)	253	239	281	219	256
Cost of Gain ($/lb)	$0.29	$0.28	$0.25	$0.39	$0.28
Net Return ($/acre)	$110	$106	$144	$56	$115

Beck et al., 2007. J. Anim. Sci. 85:536-544 (SW Arkansas, Avg. of 2 yrs)

Winter Annual Forage Systems



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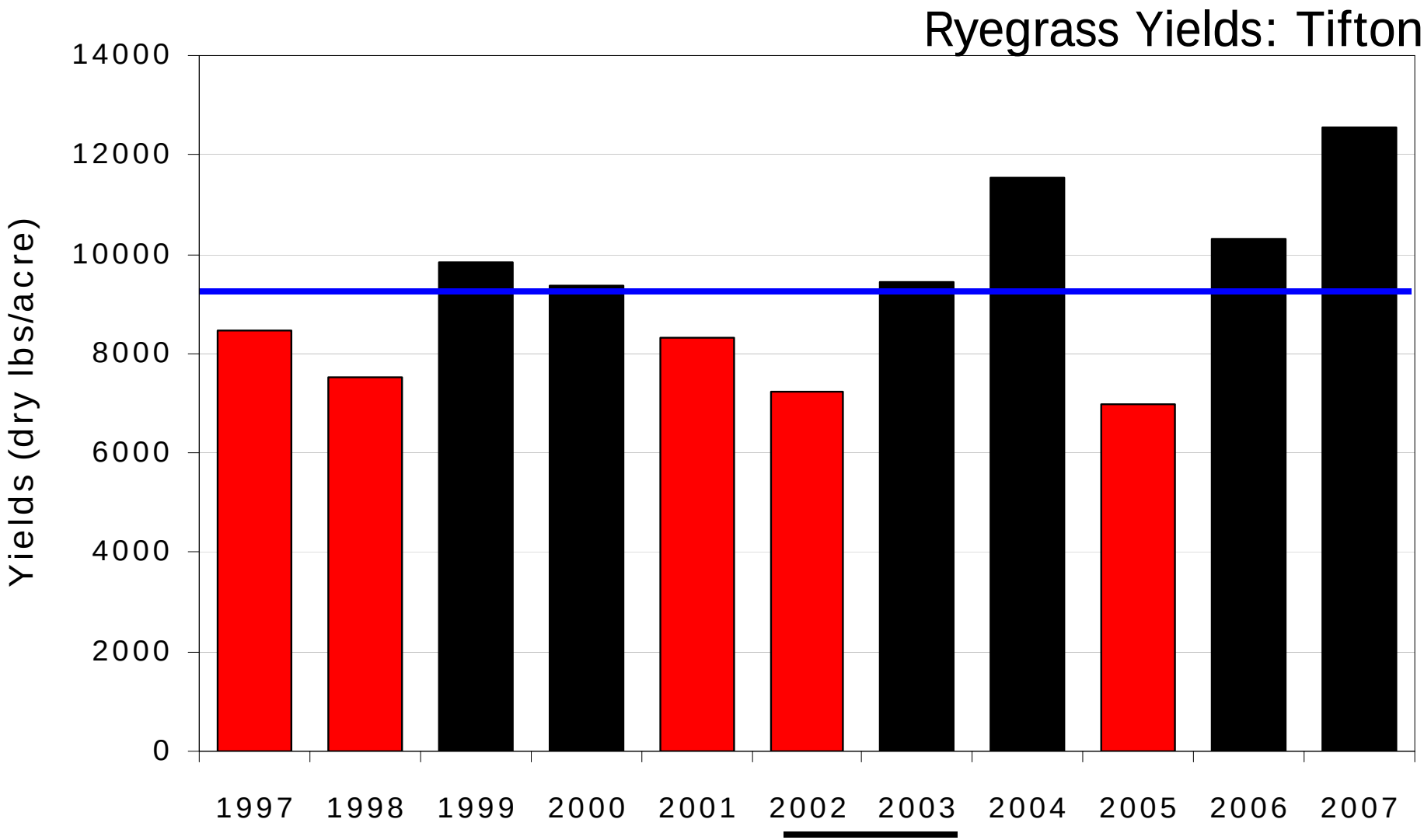

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Mechanical	
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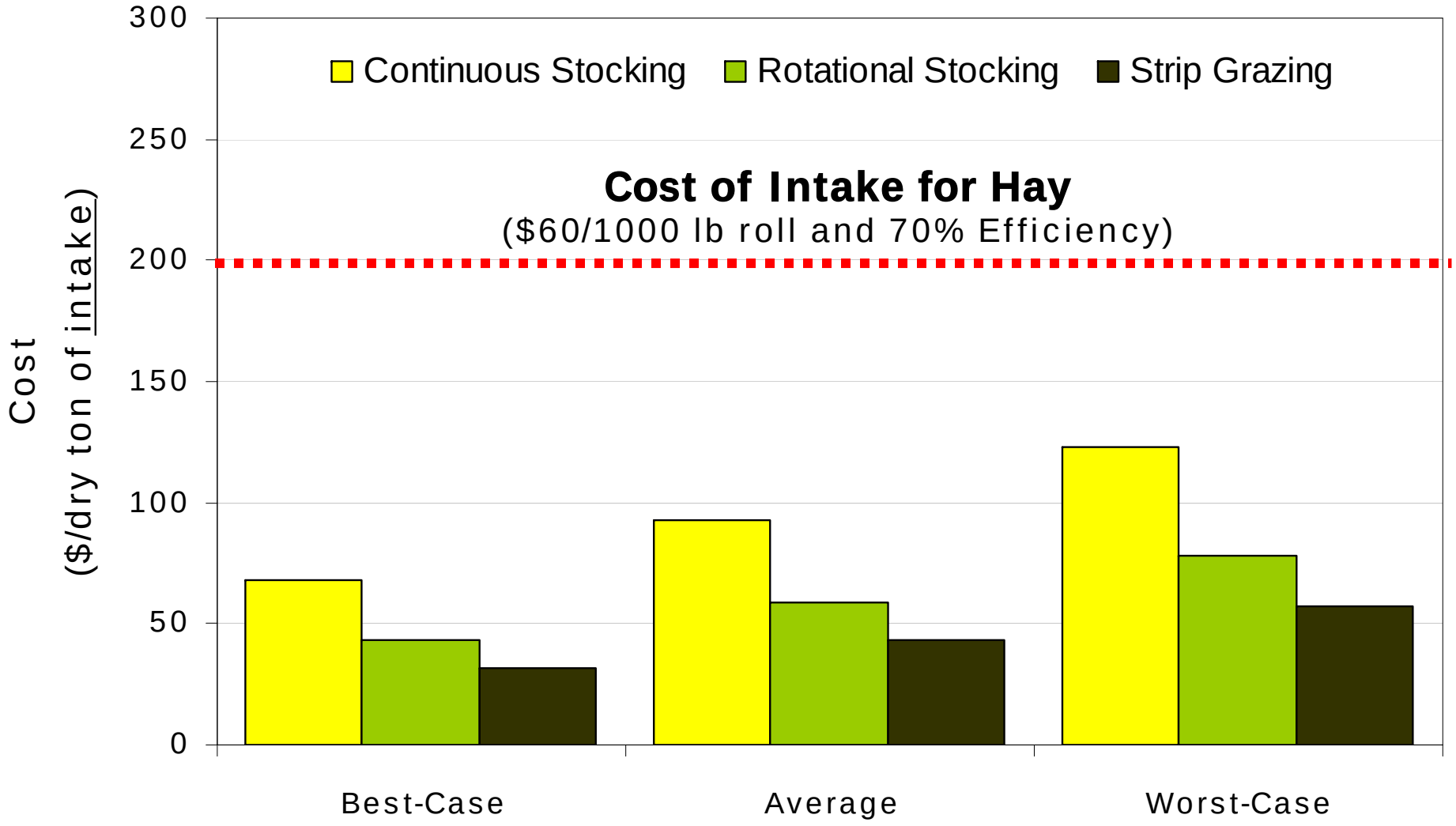
Silage	60-85%
Green Chop	70-95%

Winter Annual Forage: Ryegrass
Cost per ton of INTAKE



Beef Production on Selected Winter Annual Regimens vs. No Winter Annual

Treatment	N Added	Added Grazing	ADG	Gain/acre
	(lbs/ac per yr)	(d/yr)	(lbs/hd/d)	(lbs)
No Annuals	100	0	1.57	293
Ryegrass	150	53	1.76	422
Arrowleaf + Crimson	0	24	1.94	410
Rye + Arrowleaf + Crimson	100	81	1.92	560

Hoveland et al., 1978. Agron. J. 70:418-420.

Stocker Performance on Rye and Rye-Based Mixtures – Eatonton, GA 2010

Treatment	Grazing Period	Stock Rate	ADG	Gain
	(days)	(hd/a)	(lbs/hd/d)	(lbs/a)
Rye Only	**83**	**1.87**	**2.73**	**421**
+ Wheat	**83**	**1.96**	**2.57**	**412**
+ A. Ryegrass	**134**	**1.60**	**1.92**	**409**
+ Crimson + Arrowleaf	**129**	**1.51**	**2.29**	**444**

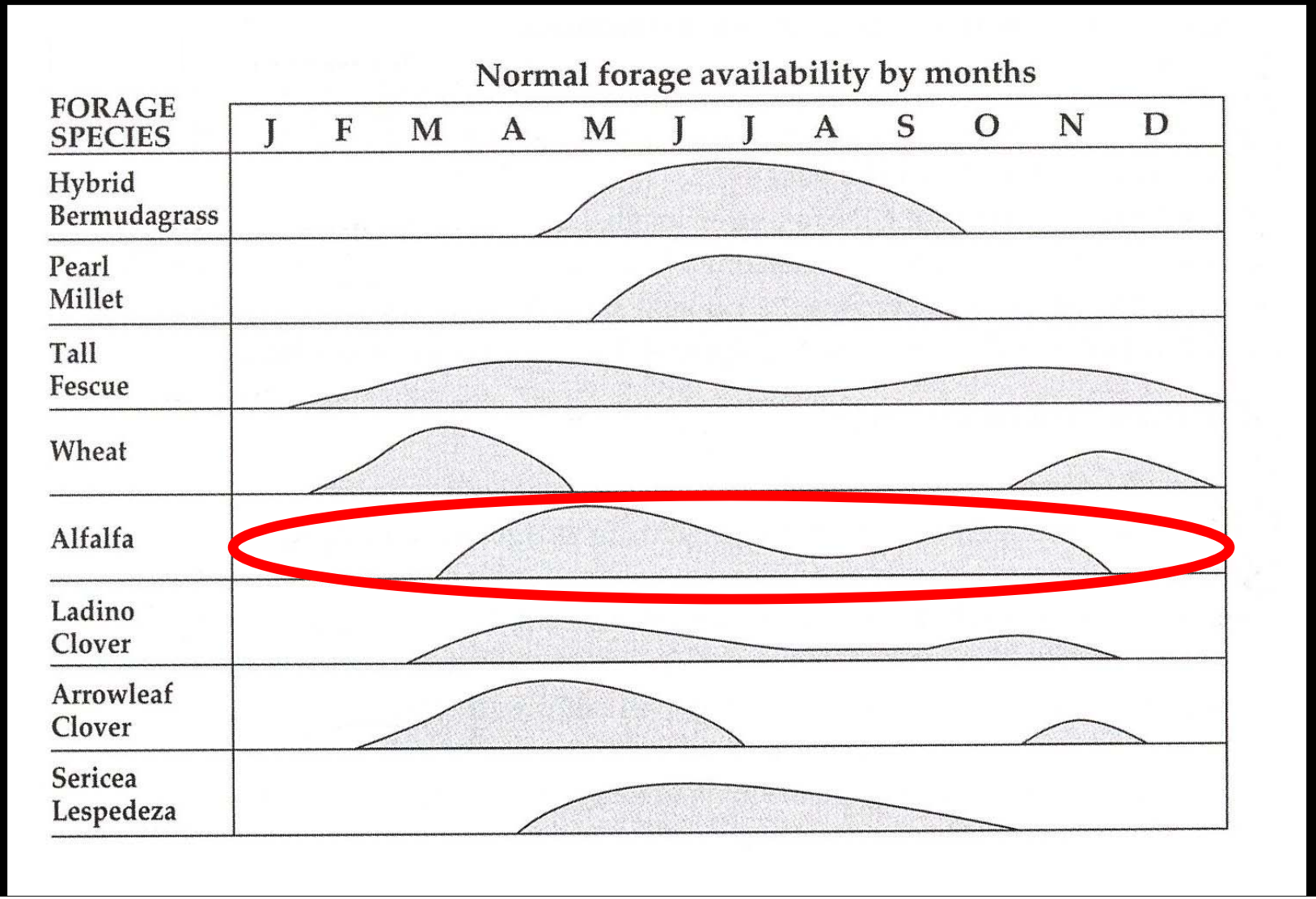
Hancock et al., Unpublished data.

Stocker Performance on Rye and Rye-Based Mixtures – Eatonton, GA 2010

Treatment	Pasture Cost of Gain	Ending Value	Beg. Value	Value of Gain
	($/lb of gain)	*($/hd/a)*		*($/lb/a)*
Rye Only	$0.410	$1,626	$1,159	$367
+ Wheat	$0.440	$1,674	$1,318	$356
+ A. Ryegrass	$0.520	$1,444	$1,084	$360
+ Crimson + Arrowleaf	$0.415	$1,412	$1,015	$398

Hancock et al., Unpublished data.

Forage Productivity Differs Throughout the Year



Stocker Steer Performance on Alfalfa

Forage Allowance	Stocking Density	ADG	Gain / acre	Grazing Days
	Hd/ac	lbs/hd/d	lbs	days
High	1.05	2.08	264	128
Medium	1.50	1.66	295	183
Low	2.35	1.38	387	286

Bates et al., 1996. J. Prod. Ag. 9:418-423. (Avg. of 3 yrs: 1989, 90, 91.)

Steer Performance when Rotationally Grazing Alfalfa or High-Tannin (HT) or Low-Tannin (LT) Sericea Lespedeza

Legume Treatment	Stocking Density	ADG	Gain / acre	Final Wt.
	Hd/ac	lbs/hd/d	lbs	
Alfalfa	1.3	2.16	475	878
HT Sericea	1.3	1.39	248	785
LT Sericea	1.2	1.65	276	840

Schmidt et al., 1987. AL Ag. Exp. St. Circular 288 (Avg. of 3 yrs)

Broad-Scope Assessment of Pasture Systems for Stockers

ALABAMA A&M AND AUBURN UNIVERSITIES

Stocker Cattle

Performance and Calculated Pasture Costs

ALABAMA COOPERATIVE Extension SYSTEM

Alabama A&M and Auburn Universities

Forage Systems with Highest ADG

Rank	Forage System	ADG (lbs)
1	NE Tall Fescue w/White Clover	2.61
2	Alfalfa	2.16
3	EF Tall Fescue (≈ NE)	2.13
4	Sericea Lespedeza (cont.)	1.87
5	Orchardgrass w/Ladino	1.83
6	Orchardgrass	1.77
7	Sericea Lespedeza (rotat.)	1.65
8	Oats & Crimson Clover	1.60
9	Rye, Ryegrass & Crimson Clover	1.57
10	Tall Fescue w/Ladino Clover	1.53

Adapted from Ball and Prevatt (2009) and other studies

Forage Systems with Highest ADG

Rank	Forage System	ADG (lb)
1	Tall Fescue (NE + White Clover)	2.61
2	Alfalfa	2.16
3	Tall Fescue (endo. free ≈ NE)	2.13
4	Sericea Lespedeza (cont.)	1.87
5	Orchardgrass w/Ladino	1.83
6	Orchardgrass	1.77
7	Sericea Lespedeza (rot.)	1.65
8	Oats & Crimson Clover	1.60
9	Rye, Ryegrass & Crimson Clover	1.57
10	Tall Fescue w/Ladino Clover	1.53

Adapted from Ball and Prevatt (2009) and other studies

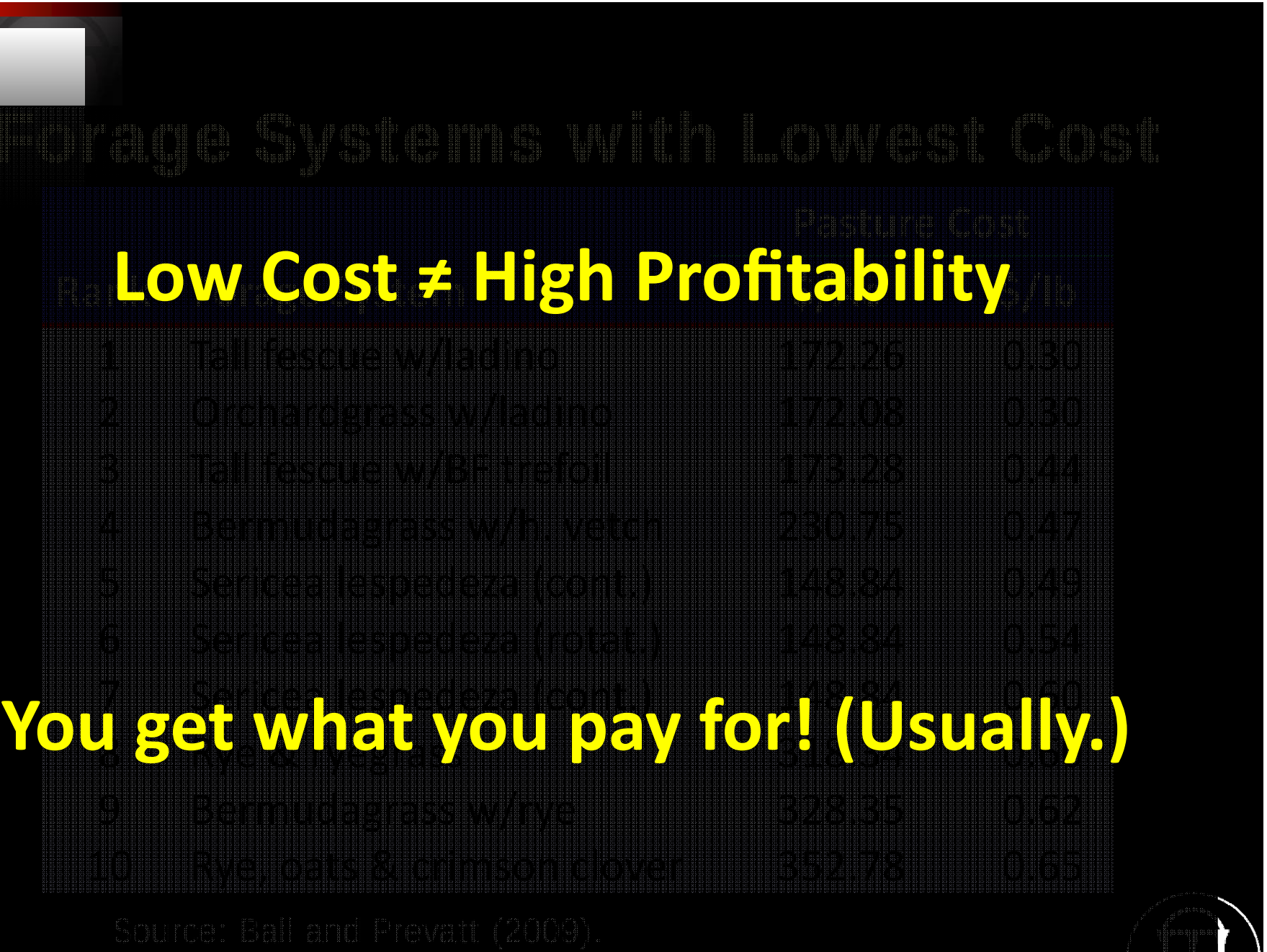
High ADG ≠ High Profitability

Production is vanity… Profit is sanity!

Forage Systems with Lowest Cost

Rank	Forage System	Pasture Cost $/Ac	Pasture Cost $/lb
1	Tall fescue w/ladino	172.26	0.30
2	Orchardgrass w/ladino	172.08	0.30
3	Tall fescue w/BF trefoil	173.28	0.44
4	Bermudagrass w/h. vetch	230.75	0.47
5	Sericea lespedeza (cont.)	148.84	0.49
6	Sericea lespedeza (rotat.)	148.84	0.54
7	Sericea lespedeza (cont.)	148.84	0.60
8	Rye & ryegrass	318.34	0.60
9	Bermudagrass (hybrid) w/rye	328.35	0.62
10	Rye, oats & crimson clover	352.78	0.65

Source: Ball and Prevatt (2009).


rage Systems with Lowest Cost
Pasture Cost
Low Cost ≠ High Profitability
1 Tall fescue w/Ladino 172.28 0.30
2 Orchardgrass w/Ladino 172.08 0.30
3 Tall fescue w/BFbirdsfoot 173.28 0.44
4 Bermudagrass w/h.vetch 230.75 0.47
5 Sericea lespedeza (cont.) 148.84 0.49
6 Sericea lespedeza (rotat.) 148.84 0.54
9 Bermudagrass w/Rye 328.35 0.62
10 Rye, oats & crimson clover 352.78 0.65
You get what you pay for! (Usually.)
Source: Ball and Prevatt (2009).

rage Systems with Highest Profitability

Rank	Forage System
1	Tall fescue w/ladino
2	Orchardgrass w/ladino
3	Bermudagrass (Hybrid) + 320 lbs N
4	Rye, ryegrass & crimson clover
5	Bermudagrass w/vetch
6	Rye & ryegrass
7	EF Tall Fescue (≈ NE)
8	Bermudagrass w/rye
9	Bermudagrass (Hybrid) + 160 lbs N
10	Oats & crimson clover

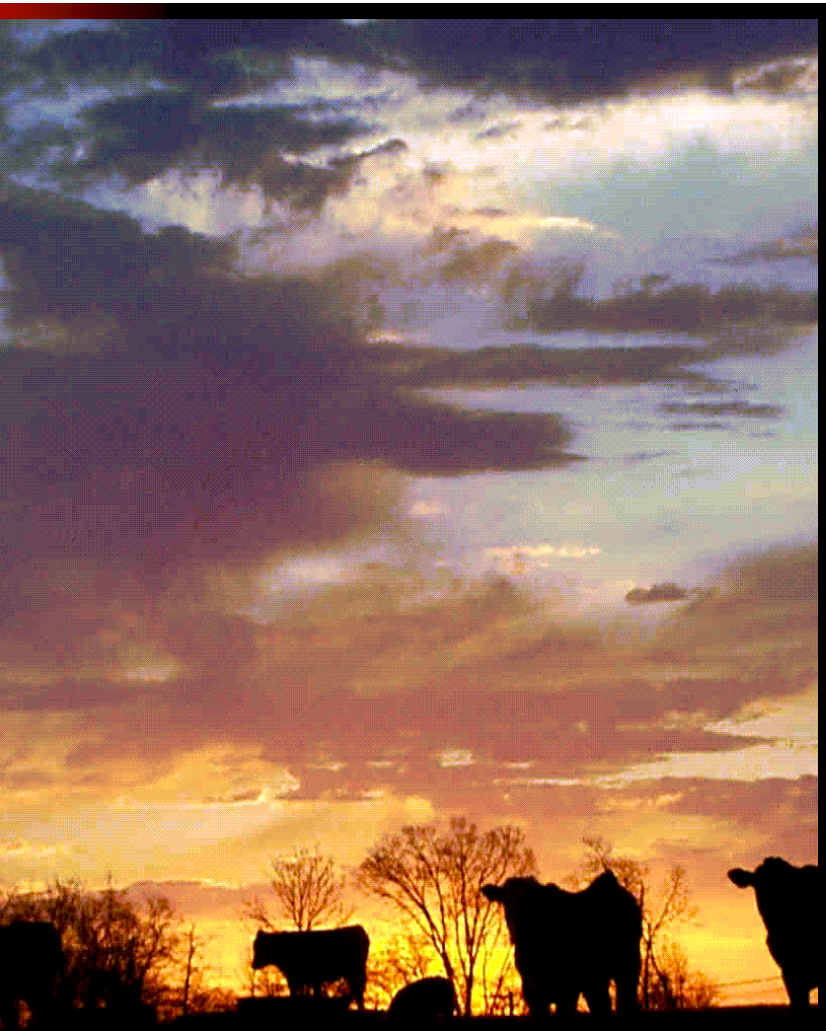
all
ue +
over

NE Tall fescue

Verify by using the costs per acre and estimates of gain

THE SEVEN LOWEST PASTURE COSTS/LB OF GAIN INVOLVED LEGUMES

4 OF THE TOP 5 MOST PROFITABLE FORAGE OPTIONS USE LEGUMES EXTENSIVELY!!!



QUESTIONS?

www.georgiaforages.com
1-800-ASK-UGA1

GRASS