Developing a Forage Plan For Stocker Cattle

Developing a forage plan for stocker cattle

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GRASS

Overview

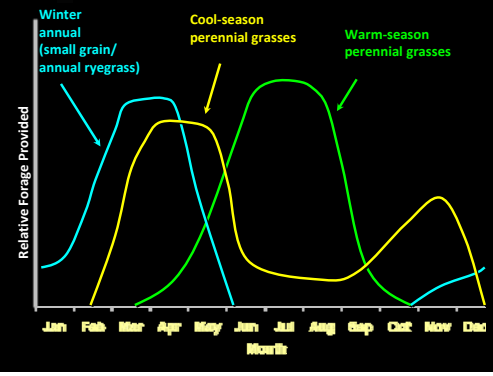
- Gain/acre vs. ADG
- Focusing on Forage Quality
  - Optimizing Digestibility (TDN, IVDMD, etc.)
  - Maximizing Dry Matter Intake (DMI)
  - Maximizing Feed Efficiency (FE)
- Observations of Stocker Productivity in Major Forage System Types
- Ten Habits of Highly Successful Forage Production

Georgia's Grass:
A Diverse Forage Base

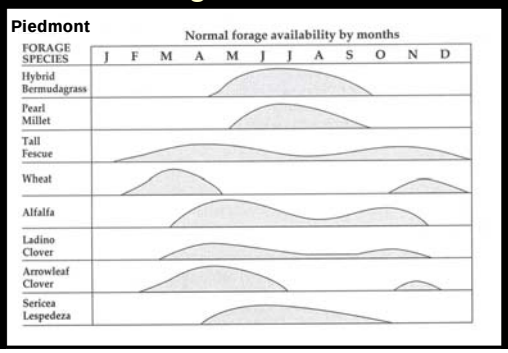
1) Tall fescue (pasture)
2) Bermudagrass (hay)
3) Some annuals (pasture, hay)
4) Some legumes and forbs.

1) Bermudagrass (hay, pasture)
2) Bahiagrass (pasture)
3) More annuals (hay, pasture)
4) Few legumes and forbs.

Forage Needed – Forage Provided



Forage Productivity Differs Throughout the Year



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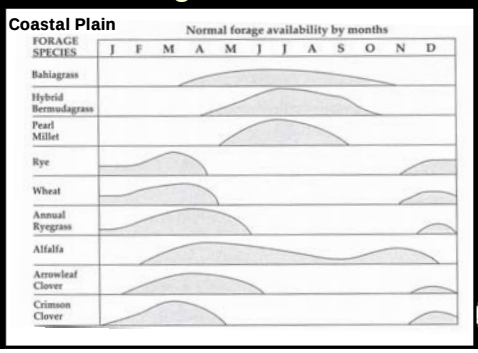

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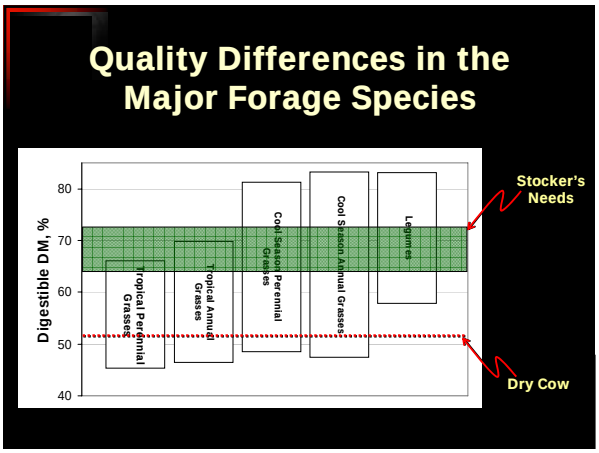

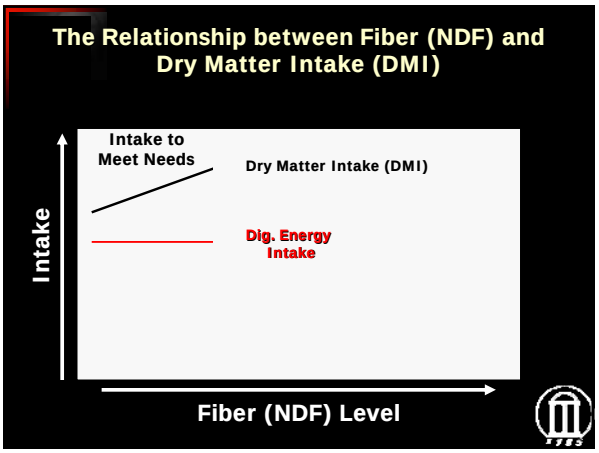

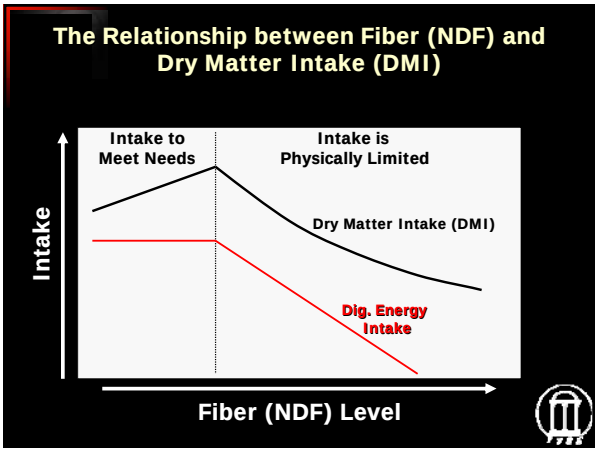

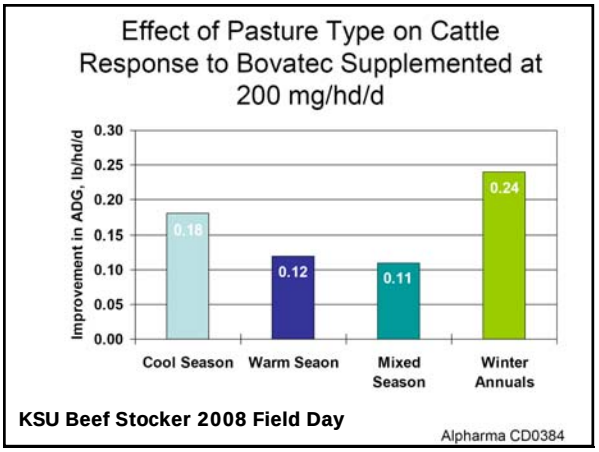

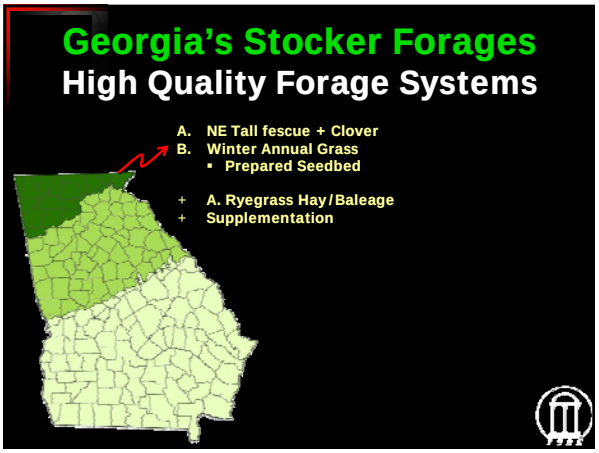

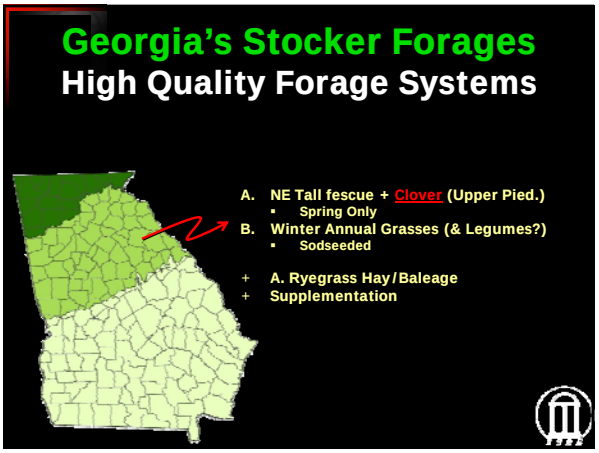

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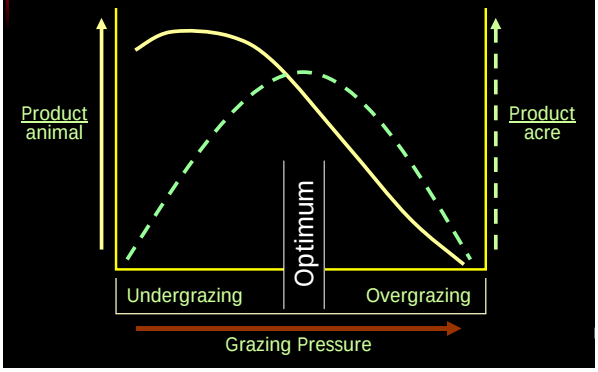
Georgia's Stocker Forages
High Quality Forage Systems

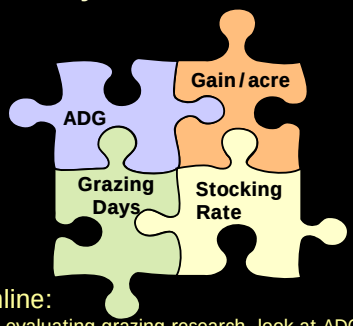
A. Winter Annual Grasses (& Legumes?)
   - Sodseeded or Prepared Ground
B. Tifton 85 Bermudagrass
C. Summer Annuals (distant 3rd)

\+ A. Ryegrass Hay/Baleage
\+ Supplementation

Productivity Per Animal vs. Per Acre



Productivity Per Animal vs. Per Acre



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 (lbs/hd/d)	Gain (lb/acre)	Stocking Rate (hd/acre)	Grazing Time (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)

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Winter Annual Forage Systems

Overseeding Winter Annuals into Bermuda

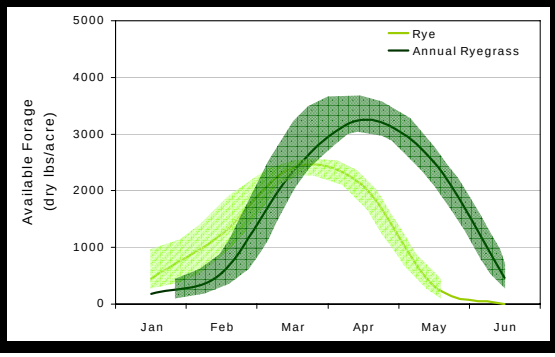
- **Ryegrass (Annual)**
- **Rye**
- **Oats**
- **Wheat**
- **Triticale**
- **Arrowleaf clover**
- **Crimson clover**
- **Red clover***

Winter Annual Forage Quality

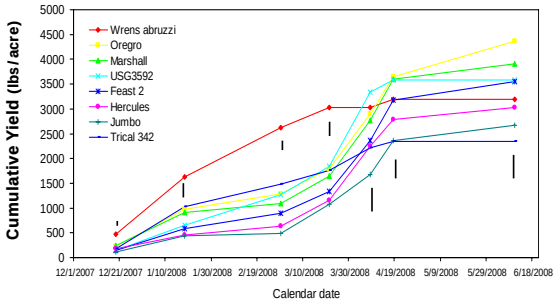
Species	Crude Protein	Total Digestible Nutrients	Annual Yield*
	------- % -------		lbs DM/acre
Ryegrass	10-20	56-74	10,630
Oats	8-14	55-70	7,100
Wheat	8-14	52-70	7,110
Rye	8-14	50-70	4,850
Arrowleaf	14-17	56-75	3,470
Crimson	14-16	57-75	3,570

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

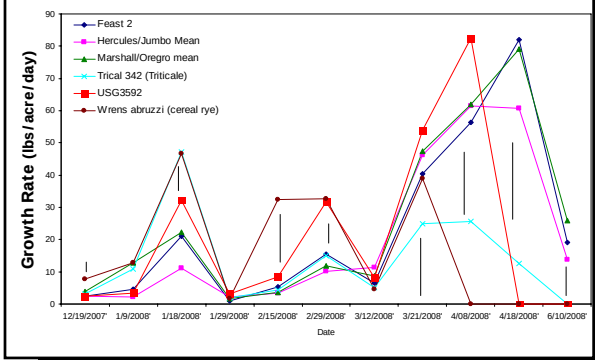
Winter Annuals: When and How Much



Cumulative growth curves for cool season annual forages – Wrens, GA



Growth rates for cool season annual forages – Wrens, GA



The Effect of Clover Addition on Productivity of Beef Steers

Treatment	ADG	Gain/ acre	Gain/ animal	Stocking Rate
	lbs/hd/d	lbs	lbs	Hd/ac
Fescue (E-) + 60 lb N/ac	1.9	383	213	1.8
Fescue (E-) + L + R clovers	2.3	356	260	1.4
Rye + Clover + Ryegrass	2.5	513	241	2.1

Hoveland et al., 1991. J. Prod. Ag. 4:24-28. (Avg. of 3 yrs: 1985, 87, 88.)

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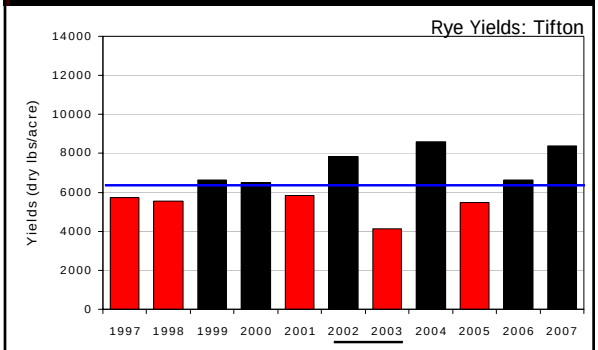
Winter Annual Forage Systems



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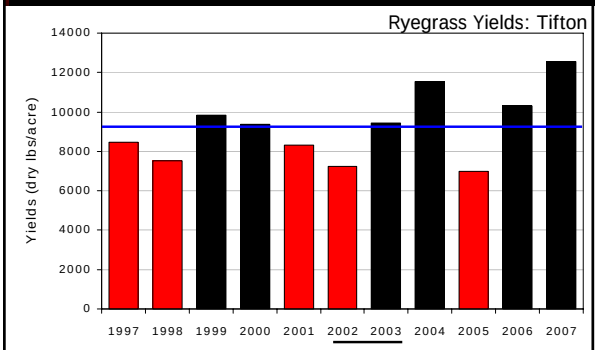


Effect of Winter Annual Mixture on Beef Production

	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
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)

Stocker Production on Bermudagrass: Selected Winter Annual Regimens vs. No Annuals

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

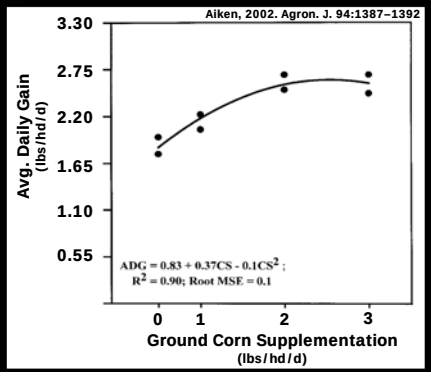
Hoveland et al., 1978. Agron. J. 70:418-420.

Stockers on Warm Season Perennial Grasses

	ADG	Gain	Stocking Rate	Grazing Time
	(lbs/hd/d)	(lb/acre)	(hd/acre)	(days)
Pensacola (bahia)	0.95	222	1.5	131
Coastal	1.08	331	2.5	131
Coastcross I	1.50	469	2.5	131
Tifton 78	1.43	704	3.2	169
Tifton 85	1.47	1032	4.4	169

(top) Utley et al., 1974. J. Anim. Sci. 38:490-495.
(bottom) Hill et al., 1993. J. Anim. Sci. 71:3219-3225.

Effect of Ground Corn on ADG for Steers on Midland Bermudagrass



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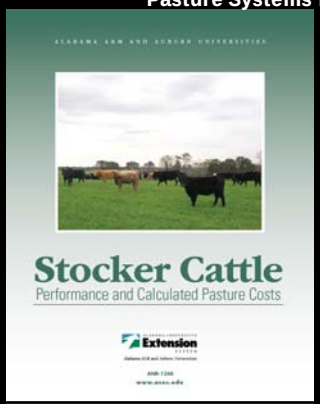
Broad-Scope Assessment of Pasture Systems for Stockers



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 presented herein.

Forage Systems with Highest ADG

High ADG ≠ High Profitability

Production is vanity… Profit is sanity!

Forage Systems with Lowest Cost

		Pasture Cost	
Rank	Forage System	$/Ac	$/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).

Forage Systems with Lowest Cost

Low Cost ≠ High Profitability

You get what you pay for! (Usually.)

Forage 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

NE Tall fescue + w. clover

NE Tall fescue

Verify by using the costs per acre and estimates of gain per acre from Ball and Prevatt (2009) and market price for selling calves.

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THE SEVEN LOWEST PASTURE COSTS/LB OF GAIN INVOLVED

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

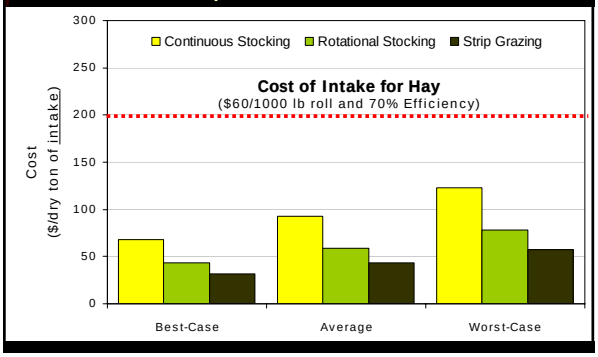
FORAGE YIELD POTENTIAL MAKES A DIFFERENCE:

HYBRID BERMUDA COSTS < BAHIAGRASS < COMMON BERMUDA

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%
Mechanical	
Hay	30-70%
Silage	60-85%
Green Chop	70-95%

Winter Annual Forage: Ryegrass Cost per ton of INTAKE



Ten Habits of Highly Successful Grass Farmers

1. **Maximize Pasture Utilization**
2. **Reduce Forage Waste**
3. **Minimize Stored Forage Requirements**
4. **Invest Wisely**
5. **Soil Test, Lime, & Fertilize**
6. **Know Forage Options & Animal Nutrition Needs**
7. **Manage for Forage Quality**
8. **Use Legumes**
9. **Use Good Establishment Practices**
10. **Minimize Pests and Plant-Related Disorders**

GRASS

Grazing School 2009
September 22-23
UGA-Athens
Livestock Arena

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