Grazing Herd Management during Drought:

Forages

Forage Utilization and Grazing Management during a Drought

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Overgrazing During Drought

- Plants slow way down and go dormant
- Drought rarely kills most pasture species.
  - But can if combined with poor fertility, overgrazing, or pests…
  - Competition w/ warm-season species
- Overgrazing reduces reserves (carbohydrates) and root growth

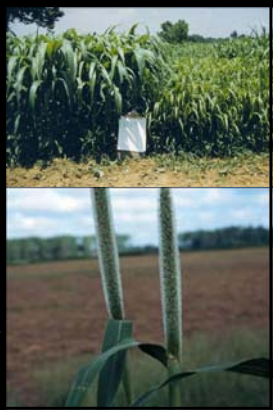
Drought Tolerance

Species	Water Use Efficiency	Max. Root Depth
	DM lbs/inch	inches
Coastal Bermudagrass	1646	78
Pensacola Bahiagrass	1194	79
Tall Fescue	1064	48
Ladino Clover	480	38
Red Clover	436	45

From: Southern Forages, as adapted from Doss et al. (1960; 1962; 1963)

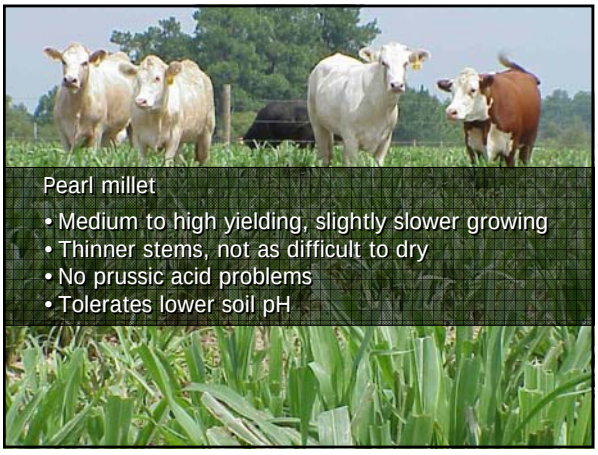
Summer Annuals

- Best if grazed
- Hay making problems
- Tolerates low soil fertility
- Do better if high fertility
- Prussic acid problems
- Nitrate toxicity problems
- Too mature = low quality



Summer Annuals

- All have nitrate toxicity potential
- Sorghums have prussic acid potential
  - Sorghums should NOT be fed to horses
- Seed supply is low (if any)
- Late plantings result in low yields



Pearl millet

- Medium to high yielding, slightly slower growing
- Thinner stems, not as difficult to dry
- No prussic acid problems
- Tolerates lower soil pH

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Summer Annuals

- Forage sorghum
  - High yielding, fast growing
  - Thick stems, difficult to dry for hay
- Sudangrass
  - Medium yielding, fast growing
  - Thinner stems, difficult to dry for hay
- Sorghum x sudan hybrids
  - High yielding, fast growing
  - Still have thick stems and difficult to hay

BMR (Brown Mid-Rib)

- Brown mid-rib describes a prominent characteristic of low-lignin summer annuals: the mid-rib of their leaves are brown.
- Lower lignin should result in greater digestibility.
- This is true, but it lowers standability and, in many cases, yield.
- BMR varieties are good to use, but not necessarily best for Georgia conditions.

Other Summer Annuals

- Browntop Millet
  - 4000-7000 lbs/acre
- Foxtail Millet
  - 3000-5000 lbs/acre
- Proso Millet
  - 2000-4000 lbs/acre
- Red River Crabgrass
  - 4000-7000 lbs/acre
- Forage Soybean
  - 4000-7000 lbs/acre

Source: http://www.ppws.vt.edu/scott/weed_id/panra.htm


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Summer Annual Establishment

- Plant anytime after April 15th
  - Plan on 3 harvests per year
  - Later plantings = few harvests
- Seeding
  - Seed can be broadcast or
  - Planted in rows - narrow (< 15 in.) or wide (≤ 36 in.)
  - Planting depth of ½ to 1 inch.

Summer Annual Fertilization

- 60 - 80 lbs of actual N/ac at planting
- 60 - 80 lbs N/ac after each harvest
- Requires significant P and K
  - Follow soil test recommendations
  - K is really important under drought conditions
- Pearl millet is less sensitive to low soil pH

Emergency Forage Base

	2005 Total (3 cuts)	2006 Total (4 cuts)
SORGHUM/SUDAN	---------- Dry lbs/ac ----------	
SS 211A	26813 a	12944 a
Summergrazer III	22053 b	11405 b
SS 220 BMR	19246 c	10731 b
PEARL MILLET		
Tifleaf 3	17441 a	10728 a
SS 635	17273 a	9309 b
Pennleaf	16602 a	8826 b

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Summer Annual Varieties

Selection Criteria:

1. Yield Production

- Sorghum x Sudans
  - Recommended varieties: SS-211A, Summergrazer III, SU2LM
- Pearl Millet
  - Tifleaf 3, SS-635, SS-501, Pennleaf

www.georgiaforages.com for more data.

Summer Annual Harvesting

- Hay Production (good), baled silage (better), or grazing (best)
- Sometimes difficult to tell if it is dry enough to bale
  - Must be below 15% Moisture if round baled
- Grazing = boot stage
  - Usually 18-22 inches in height
- Hay/baleage = early head
  - Usually 30-40 inches
- Cutting height at or above 8 inches (CRITICAL)
  - Cutting too low will clip below the growing point.

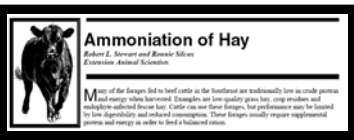
Summer Annual Forage Quality

	Forage sorghum	Pearl millet	Tropical corn
CP	12.9	14.3	8.3
ADF	36	35	33
NDF	61	59	55
WSC	2.7	2.0	6.5

Ward et al., 2001. J. Dairy Sci. 84:177–182

Nitrate in forage fed to beef cattle.

Forage Nitrate (ppm dry forage)	Guidance
< 4500	Safe to feed with adequate feed and water
4,500 to < 6,500	Safe under most conditions, but if feeding pregnant animals limit to half (1/2) ration
6,500 to < 9,000	Limit to half (1/2) ration
9,000 to < 15,000	Limit to third (1/3) ration
15,000 to < 18,000	Limit to quarter (1/4) ration
> 18,000	Potentially lethal, very risky



- Inc. CP (+ 6 – 7% points)
- Inc. TDN (+ 7 – 20% pts)
  - Urea addition inc. CP but not TDN
- Cost: $25-35/ton DM

Drought Recovery

- Allow the pasture to recover
  - Leave sufficient grazed stubble
    - Tall Fescue: 2 - 3 in.
    - Bermudagrass: ~2 in.
    - Bahiagrass: ~ 1 ½ in.
- Not too soon!
  - Target height to start grazing
    - Tall Fescue: 4 - 8 in.
    - Bermudagrass: 4 - 8 in.
    - Bahiagrass: 4 - 6 in.
- Reintroduce pastures slowly

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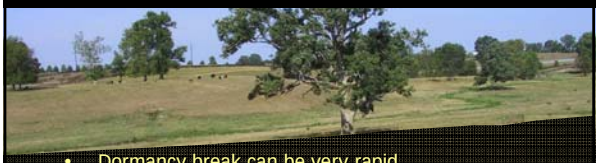
Recovering from the Drought



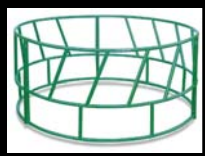
- Dormancy break can be very rapid.
- Nitrate issues
  - Rains will cause rapid N-release and uptake
  - High nitrate levels for first 3 – 7 days.
- Monitor the amount of weed competition.

Feeding Losses

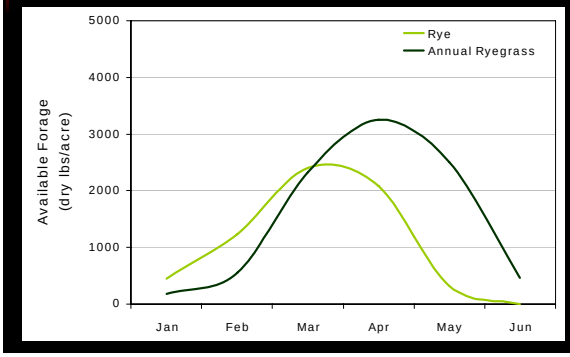
Method	1 day	7 day
	---- % Waste----	
Unrolled	12.3	43.0
Ring	4.9	5.4

Feeding Losses

Item	% Waste
Ring	6
Trailer	11
Cradle	15



Winter Annual Forage Systems



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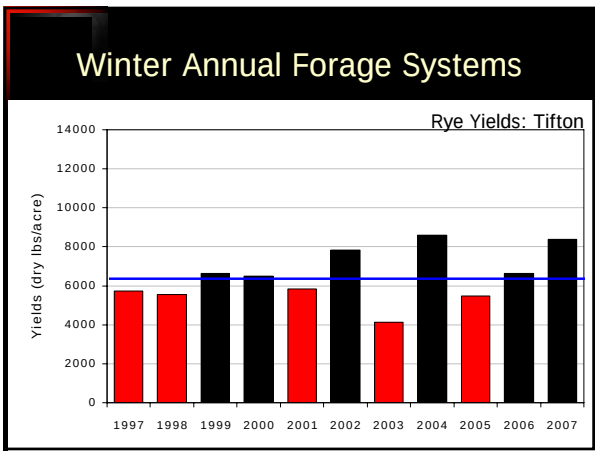

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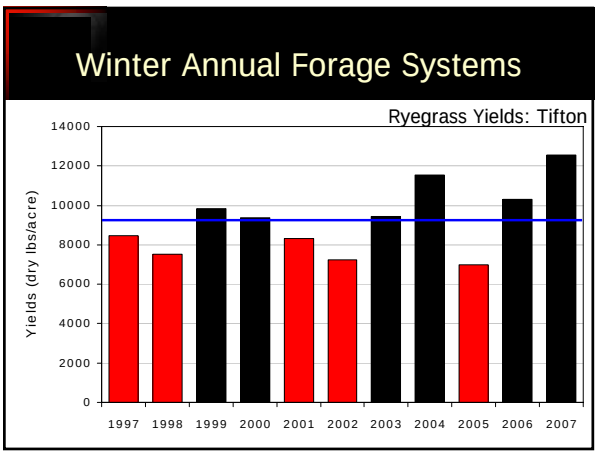

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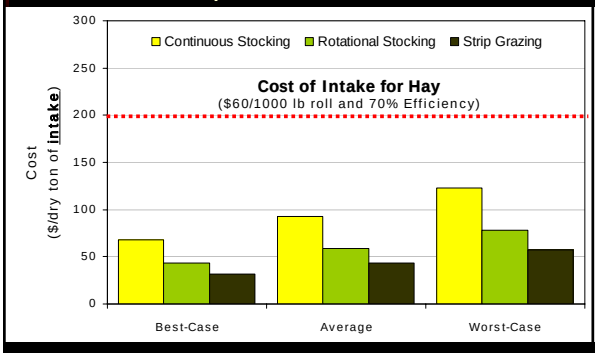
Efficiencies of Grazing and Mechanized Harvest

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%

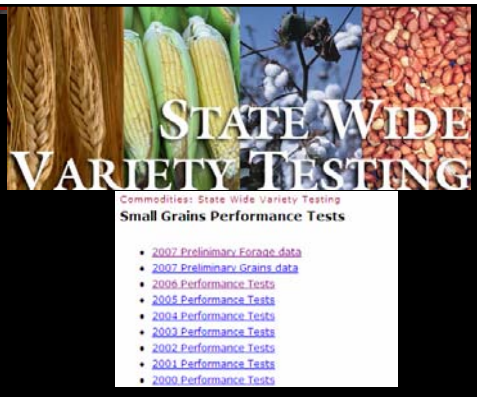
Winter Annual Forage: Ryegrass Cost per ton of INTAKE



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)



http://www.caes.uga.edu/commodities/swvt/index.html

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