

# 2018 Georgia Grazing School: Southern Forages: Yield, Distribution and Quality



Phillip Brown  
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## Yield, Distribution, and Quality

- Understand these so that forages can be managed according to their needs
- Use species adapted to your area that match:
  - The soil types and soil conditions on your site
  - Your livestock
  - Your management level
  - Your budget



- Spring
- Summer

- Fall
- Winter

## Maximize Grazing Days Hay Production is Expensive

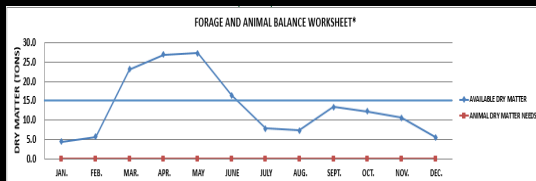
Table 1. Calculating cost of hay production (assuming six tons per acre production).

	Number of Cows					
	35	50	100	200	300	500
Tons/cow	2	2	2	2	2	2
Acres required	12	17	34	67	100	167
Total VC*	\$470	\$470	\$470	\$470	\$470	\$470
VC/Ton	\$80	\$80	\$80	\$80	\$80	\$80
FC*	\$8,750	\$8,750	\$8,750	\$8,750	\$8,750	\$8,750
FC/ton	\$125	\$88	\$44	\$22	\$15	\$9
TC*	\$14,350	\$16,750	\$24,750	\$40,750	\$56,750	\$88,750
TC/ton	\$205	\$168	\$124	\$102	\$94	\$89
TC/1,000# roll	\$103	\$84	\$62	\$51	\$47	\$45
TC/Cow	\$410	\$336	\$248	\$204	\$188	\$178

\* VC = variable cost, FC = fixed cost, TC = total cost.

Grazing costs 1/2 to 1/3 of hay production

## Forage Distribution



## Forage Distribution

- There is No Miracle Forage:
  - That grows all year long
  - Is always high quality
  - Fixes Nitrogen
  - Withstands continuous overgrazing
  - Tolerates all weather extremes
  - Eliminates erosion
  - Doesn't need nutrients.....



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### Forage Distribution

- Perennials as the base
  - Tall Fescue
  - Bermudagrass
  - Bahiagrass
  - Often in combination with Perennial Legumes
- With Complementary plantings of annuals
  - Annual Ryegrass
  - Annual Legumes
  - Warm Season Annuals
  - Brassicac



### Cool Season Perennial Grasses

- Tall Fescue – 2-5 Tons/Acre
- Base forage for the Mountain & Piedmont Regions
- Stockpiles extremely well for Fall & Winter Grazing
- Toxicity Issues

FORAGE AND ANIMAL BALANCE WORKSHEET\*

Month	Available Dry Matter (Tons)	Annual Dry Matter Needs (Tons)
JAN.	1.0	1.0
FEB.	1.0	1.0
MAR.	15.0	1.0
APR.	18.0	1.0
MAY.	15.0	1.0
JUNE.	10.0	1.0
JULY.	5.0	1.0
AUG.	5.0	1.0
SEPT.	10.0	1.0
OCT.	10.0	1.0
NOV.	10.0	1.0
DEC.	5.0	1.0

### Introduced Warm Season Perennial Grasses

- Bermudagrass – Base Forage for the Flatwoods, Coastal Plain, and Piedmont Regions
  - Common – 2-6 Tons/Acre
  - Hybrid – 4-8 Tons/Acre
- Bahiagrass – Best Adapted to the Flatwoods & Coastal Plain Regions
  - 3-5 Tons/Acre

FORAGE AND ANIMAL BALANCE WORKSHEET\*

Month	Available Dry Matter (Tons)	Annual Dry Matter Needs (Tons)
JAN.	0.0	1.0
FEB.	0.0	1.0
MAR.	0.0	1.0
APR.	0.0	1.0
MAY.	0.0	1.0
JUNE.	2.0	1.0
JULY.	3.0	1.0
AUG.	3.0	1.0
SEPT.	2.0	1.0
OCT.	0.0	1.0
NOV.	0.0	1.0
DEC.	0.0	1.0

### Native Warm Season Perennial Grasses

- 3-6 Tons/Acre
- Forage Quality – 8-16% Crude Protein / 58-62% TDN

Pasture Calendar

	April	May	June	July	August	September	October
Switchgrass							
Eastern Gamagrass							
Big Bluestem							
Indiangrass							



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### Cool Season Annual Grasses

Typically used to complement warm season perennial grasses

- Overseeding with No-Till Drill
- 2-4 Tons/Acre
- Small Grains – Oats, Rye, Triticale, Wheat
- Annual Ryegrass
- Often mixed together and with cool season annual legumes

Month	DMY (TONS/ACRE)	ANNUAL DRY MATTER NEEDS (TONS/ACRE)
JUL	0.5	1.0
FEB	1.5	1.0
MAR	3.5	1.0
APR	3.0	1.0
MAY	1.0	1.0
JUN	0.5	1.0
JUL	0.5	1.0
AUG	0.5	1.0
SEPT	0.5	1.0
OCT	0.5	1.0
NOV	1.5	1.0
DEC	1.0	1.0

### Warm Season Annual Grasses

- Pearl Millet, Sorghums, Sudangrass, and SorghumxSudangrass
- And Crabgrass
- 2-6 Tons/Acre
- Prussic Acid Poisoning, Nitrate Concentration
- Can be difficult to keep up with
- Aide in Filling the Tall Fescue summer slump

Month	DMY (TONS/ACRE)	ANNUAL DRY MATTER NEEDS (TONS/ACRE)
JUL	0.5	1.0
FEB	0.5	1.0
MAR	0.5	1.0
APR	0.5	1.0
MAY	1.5	1.0
JUN	3.5	1.0
JUL	1.5	1.0
AUG	3.0	1.0
SEPT	0.5	1.0
OCT	0.5	1.0
NOV	0.5	1.0
DEC	0.5	1.0

### Cool Season Perennial Legumes

- Alfalfa, White Clover, and Red Clover (Annual or Biennial)
- Offer an excellent Legume Component distributed throughout much of the year
- Alfalfa increasingly combined with Bermudagrass
- White & Red Clover often combined with Tall Fescue to "dilute" toxic effects associated with Tall Fescue and improve animal performance

Month	DMY (TONS/ACRE)	ANNUAL DRY MATTER NEEDS (TONS/ACRE)
JUL	0.05	1.0
FEB	0.05	1.0
MAR	0.1	1.0
APR	0.2	1.0
MAY	0.35	1.0
JUN	0.35	1.0
JUL	0.1	1.0
AUG	0.05	1.0
SEPT	0.05	1.0
OCT	0.15	1.0
NOV	0.05	1.0
DEC	0.05	1.0

### Cool Season Annual Legumes

- Crimson Clover, Arrowleaf Clover, Hairy Vetch, Ball Clover, Winter Peas
- Typically used to complement warm season perennial grasses or annual double cropped systems
- Often mixed with cool season annual grasses

Month	DMY (TONS/ACRE)	ANNUAL DRY MATTER NEEDS (TONS/ACRE)
JUL	0.05	1.0
FEB	0.1	1.0
MAR	0.15	1.0
APR	0.25	1.0
MAY	0.45	1.0
JUN	0.1	1.0
JUL	0.05	1.0
AUG	0.05	1.0
SEPT	0.05	1.0
OCT	0.05	1.0
NOV	0.05	1.0
DEC	0.05	1.0

### Benefits of Legumes

- Nitrogen Fixation
  - Reduces Purchased Fertility Needs
- Forage Quality
  - Animal Performance
    - Higher Average Daily Gains
    - Getting into shape for rebreeding

### Diversifying Your Forage Types

- Tall Fescue + Bermudagrass

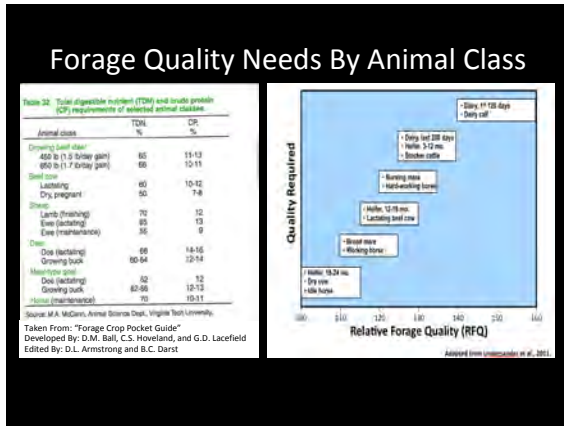
Month	DMY (TONS/ACRE)	ANNUAL DRY MATTER NEEDS (TONS/ACRE)
JUL	1.0	1.0
FEB	3.0	1.0
MAR	4.0	1.0
APR	5.0	1.0
MAY	6.0	1.0
JUN	6.5	1.0
JUL	6.5	1.0
AUG	6.5	1.0
SEPT	5.0	1.0
OCT	4.0	1.0
NOV	3.0	1.0
DEC	2.0	1.0





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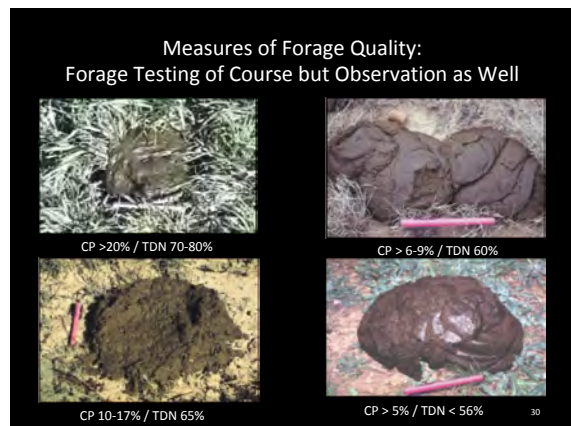
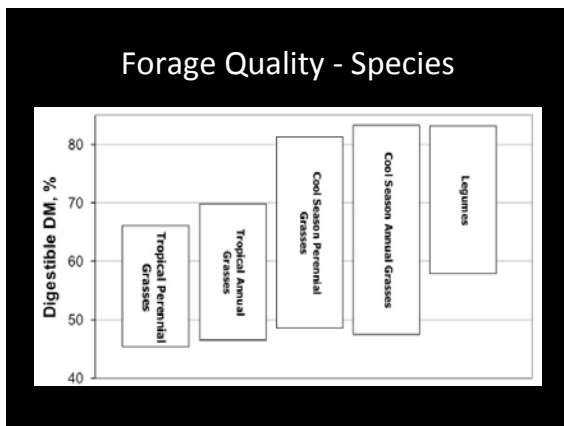
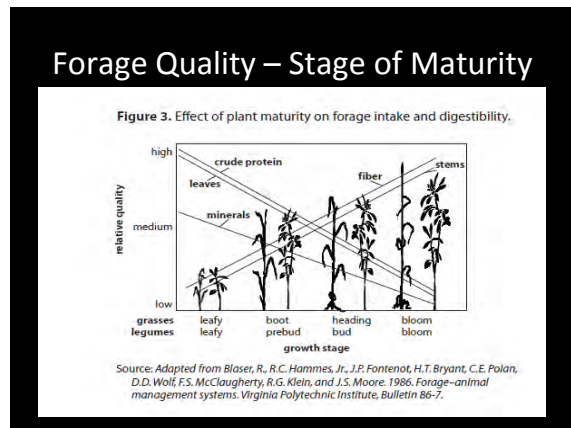
### Forage Quality

- Forage quality can be defined as the extent to which a forage has the potential to produce a desired animal response.
  - What influences our determination of Forage Quality
    - Palatability
    - Intake
    - Digestibility
    - Nutrient Content
    - Anti-Quality Factors
    - Animal Performance

### Management Factors that Affect Forage Quality

Importance	Factor	Recommendations
High	Forage Maturity	Cut the forage in the late vegetative or early reproductive stages of growth. See the Harvest recommendations in Table 5 for detailed information on individual species.
High	Forage Species	Use a high-quality forage species that persists and can be produced economically in your environment. Species resistant to drought and temperature extremes should be used.
Moderate	Forage Utilization	Grazed forage is generally higher quality than conserved forage (i.e., hay, silage, etc.) because of animal selectivity and because fresh forage is generally higher in digestible nutrients. However, selectivity may reduce overall forage utilization compared to mechanically harvested systems.
Moderate	Variety	Use varieties that have proven to provide a good balance of high quality and high yields. Select disease- and insect-resistant varieties.
Moderate	Storage	Protect hay bales from rainfall and weathering during storage (e.g., barn, tarp, etc.). Properly pack and exclude oxygen from forage that is being ensiled.
Moderate	Rain Damage	Avoid cutting if significant rainfall (> 0.50 inches) is predicted during curing, but take care to avoid allowing forage to become overly mature.
Moderate	Heat Damage	Dry forage to the appropriate moisture for making hay (Round: 15%; Square: 18%) and store in a manner that allows adequate ventilation. Maintain integrity of oxygen barrier in silage storage.
Low	Fertilization	Fertilize based on soil test recommendations and at recommended times to sustain CP/mineral concentrations in the forage and to maximize vegetative mass in the standing forage.

Taken From: UGA Extension Bulletin 1425 – Understanding and Improving Forage Quality, D.W. Hancock, et al.



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**Conservation Take Home**

- Good Forage Systems Conserve and Build Soil
- Improve Animal Condition
- Reduce Stored Feed Needs – Provide More Grazing Days
- Improve Quality of Life
  - Less hay production & Feeding – Money Saved

Questions?



There is no miracle forage.....but there are many forage options.....that can be combined into very good forage systems.....to achieve meaningful results those systems require management

