

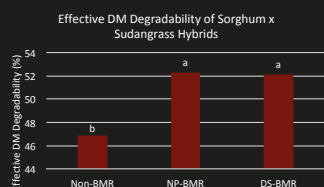
Summer Annuals in a Year-Round Grazing System

Pros:	Cons:
• Quick growing	• Plant annually
• Grazable 1 st year	• Timing of precipitation
• High yielding	• Costs
• High quality	• Quick maturing
• Drought tolerant	• Management intensive
• Can graze or harvest for silage or baleage	• Haying difficult
	• Toxicities



Genetic Traits

- Brown midrib (BMR) trait
 - Genetic mutation
 - Reduced lignin content
 - Higher forage digestibility

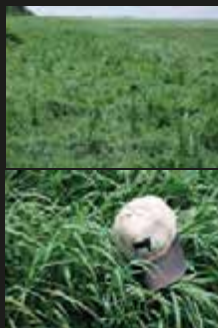


Beck et al., 2007.



Crabgrass

Adaptation
Warm climates of the southeastern U.S. Tolerates poor drained soils. Not drought tolerant.

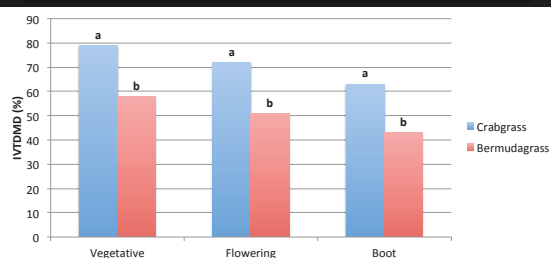


Crabgrass



Slide Credit: Dr. Dennis Hancock, UGA

Potential of Crabgrass as a High Quality Forage



Bosworth et al. (1980): Forage quality of selected warm season weed and forage species harvested at the vegetative, flowering, and booting stages of grasses.

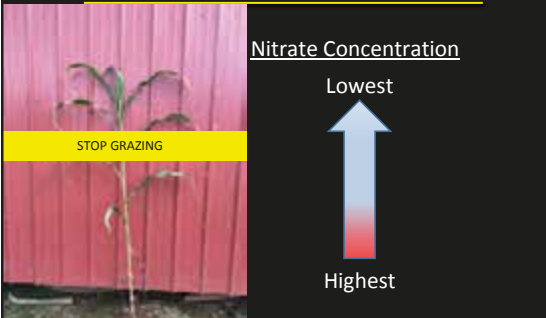
Warm-Season Annuals - Establishment

	Forage Sorghum	Sorghum x Sudangrass	Sudangrass	Pearl Millet	Crabgrass
Seeding depth	1-1 1/2	1-1 1/2	1-1 1/2	3/4-1	1/4

Nitrate and Prussic Acid Poisoning

- **Nitrates**
 - Occurs in sorghums and pearl millet
 - Accumulates during drought/stress
 - Lower in canopy, higher the concentration
 - Stems > Leaves

High Forage Nitrate Grazing Management



Nitrate Concentration

Lowest

Highest

STOP GRAZING

Nitrate and Prussic Acid Poisoning

- **Nitrates**
 - Occurs in sorghums and pearl millet
 - Accumulates during drought/stress
 - Lower in canopy, higher the concentration
 - Stems > Leaves
- **Prussic Acid**
 - Occurs only in sorghums
 - Start grazing once plant reaches 18-24 inches
 - Accumulates during drought and frost stress in leaves

Summer-Annual Forage Pests

- Sugarcane aphid
 - 2012 shift host preferences
 - Flupyradifurone (Sivanto)
 - Transform (Section 18)
- Chinch bug
 - Preventative (14-21 d after emergence)
 - Beta-cyfluthrin (Baythroid)
 - Zeta-cypermethrin (Mustang Max)
- Seed treatment for both pests
 - Gaucho 600 (45 day grazing)

Summer Annual Forage Production in GA

	Forage Dry Matter (lbs/acre)			
	2015		2016	
Forage Type	Tifton	Griffin	Tifton	Griffin
Forage Sorghum				
Sorghum x Sudangrass				
Pearl Millet				

*Adopted from the University of Georgia's, Statewide Variety Testing Program at Griffin and Tifton, Ga.

Which One is Best?



Alta Seeds AS5201
\$63.00/22.7kg

Southern States SS220
\$68.00/22.7kg

Recommendations

- Past recommendations
 1. Price
 2. Convenience “What’s on the shelf”
- Future recommendations
 1. Forage yield
 2. Forage quality
 3. Pest/disease resistance

Objective

- Determine which varieties of forage sorghum (FS), sorghum x sudangrass (SS) hybrids, and pearl millet (PM) CONSISTENTLY yielded well across multiple years and multiple environments.

Variety Testing Programs in the Southeast

Virginia Tech
Blackstone, VA
Years: 2009-2012, 2014-2015

University of Kentucky
Quicksand, KY
Years: 2001-2003

University of Kentucky
Lexington, KY
Years: 2007-2016

University of Georgia
Griffin, GA
Years: 1998-2016

University of Georgia
Tifton, GA
Years: 1998-2016

Samuel Roberts Nobel Foundation
Ardmore, OK
Years: 2001-2004, 2008, 2010





University of Kentucky Lexington, KY



University of Georgia Tifton, GA



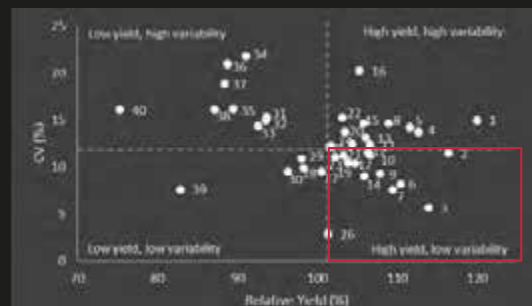
Calculations and Standardization

PM Variety	2015		2015		2014		Overall Relative Yield (%)	Standard Deviation	Coefficient of Variation (CV)
	Tifton, UGA		Griffin, UGA		Blackstone, VT				
	Yield (kg ha ⁻¹)	Relative Yield (%)	Yield (kg ha ⁻¹)	Relative Yield (%)	Yield (kg ha ⁻¹)	Relative Yield (%)			
A	6400		-		9600	124	124		
B	5800		9250		7525				
C	3500		11050		5000				
D	4000		8340		8800				
			6625		7525				
100+ Relative Yield 									
10- Coefficient of Variation 									

Variety Selection Tool

Species	Total Varieties	Varieties That Met Criterion (6 site/year)	Varieties With High Relative Yield + CV < 10
Sorghum x Sudangrass	229		
Pearl Millet	62		

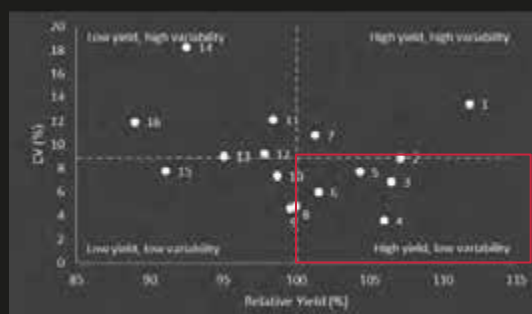
Sorghum x Sudangrass



Sorghum x Sudangrass

Variety Code	Variety	Company/Brand Name	Site-Year Count	Average Relative Yield (%)	CV (%)
2	SS211	Southern States	38	116	11.5
3	ASS201	Alta Seeds	9	114	5.6
6	Summergrazer III	Pennington	27	110	8.2
7	Headless Trudan	NK	6	109	7.5
9	Special Effort	-	8	108	9.2
10	AS9302	Alta Seeds	6	107	11.3
11	Super Sugar	Gayland Ward	22	107	12.3
12	705F (SGxS)	Drya-Gro	6	106	11.5
14	Headless Sordan	NK	6	106	9.0
17	Green Grazer V	Seed Resource	11	105	10.3
18	SG-2000	Coffey	10	104	12.4
19	Super Sugar(DM)	Gayland Ward	9	104	10.4
21	Sweet For Ever	Gayland Ward	10	103	11.1
23	AS9301	Alta Seeds	12	102	11.0
24	Sugar Graze Ultra	Coffey	11	102	12.3
25	SS 220	Southern States	41	101	12.1
26	ExtraGraze bmr	Coffey	3	101	2.8

Pearl Millet



Pearl Millet

Variety Code	Variety	Company/Brand Name	Site-Year Count	Average Relative Yield (%)	CV (%)
2	Tif Exp. 6*	Ga CPES	11	107.13	8.90
3	Tifleaf 3	Ga CPES	46	106.50	6.85
4	Elite III	CSC	8	105.97	3.58
5	SS 635	Southern States	43	104.33	7.71
6	DMP4SR*	USDA-ARS	17	101.53	5.98

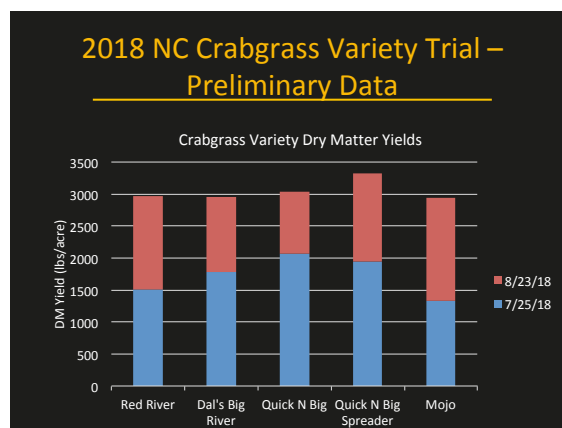
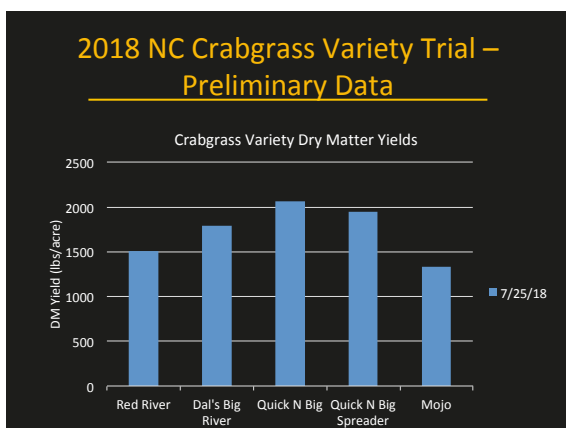
*Indicates Experimental varieties

***Many new varieties of BMR pearl millet are now being evaluated

2018 NC Crabgrass Variety Trial

- Crabgrass planted June 15 in Waynesville, NC





Summary

- Varieties of SS and PM differ in performance across environments
- Select varieties based on TESTED performance
- Management, Management, Management!!!!

Summary

- There are many forage options to ease seasonal transitions in the summer and summer slump in cool-season perennial forage production
- Take advantage of the long growing season and graze it, don't hay it.
- Plan on incorporating summer annual forages into your forage program!

