

## FORAGE SUITABILITY GROUP

### Loamy and Clayey Soils on Rises and Knolls of Mesic Uplands

FSG No.: G133AA321FL

#### Major Land Resource Area (MLRA 133A):

Southern Coastal Plain

#### Soil Series List

Due to the large list of map units in this group, please refer to Appendix 1.

Angie	Notcher
Dothan	Perdido
Miccosukee	Tifton
Norfolk	

#### Adapted Species List

The native forage species listed are considered adapted to grow on the soils in this group at their natural pH levels. All introduced grass and legume species will need native pH raised to min. 5.5 (unless noted) for best production. All forages listed are adapted to dryland conditions. Consult with state extension service for current cultivar recommendations (<http://agronomy.ifas.ufl.edu/foragesofflorida/>).

#### Perennial Species:

##### Grasses

###### Warm season (Introduced)

- Bahiagrass (*Paspalum notatum*, pH 5.0 – 6.5)
- Bermudagrass (*Cynodon dactylon*)

###### Warm season (Native)

- Big Bluestem (*Andropogon gerardii*)
- Chalky Bluestem (*Andropogon virginicus* var. *glaucus*)
- Splitbeard Bluestem (*Andropogon ternarius*)
- Yellow Indiangrass (*Sorghastrum nutans*)
- Lopsided Indiangrass (*Sorghastrum secundum*)
- Switchgrass (*Panicum virgatum*)
- Eastern Gamagrass (*Tripsacum dactyloides*)

##### Legumes

###### Warm season

- Rhizoma Perennial Peanut (*Arachis glabrata*, pH 5.8-7.0)

#### Annual Species:

##### Grasses

###### Warm season

- Browntop Millet (*Urochloa ramosa*; =*Panicum ramosum*)
- Pearl Millet (*Pennisetum glaucum*)
- Sorghum (*Sorghum bicolor*; includes forage sorghums, sudangrass, and their hybrids)

###### Cool season

- Ryegrass, annual (*Lolium perenne* ssp. *multiflorum*; =*L. multiflorum*)
- Oat (*Avena sativa*)
- Rye (*Secale cereale*)
- Wheat (*Triticum aestivum*)
- Triticale (x *Triticosecale*)

##### Legumes

###### Warm season

- Hairy Indigo (*Indigofera hirsuta*)
- Alyceclover (*Alysicarpus vaginalis*)
- Cowpea (*Vigna unguiculata*)

###### Cool season

- White Clover (*Trifolium repens*, pH 6.0-7.5)
- Red Clover (*Trifolium pratense*, pH 6.0 – 8.0)
- Crimson Clover (*Trifolium incarnatum*)
- Arrowleaf Clover (*Trifolium vesiculosum*)
- Austrian Winter Pea (*Pisum sativum*, pH 6.0-7.5)
- Hairy Vetch (*Vicia villosa*)
- Medics (*Medicago* spp., pH 5.5-8.0)
- Alfalfa (*Medicago sativa*, pH 6.5-7.5)

#### Seasonal and Total Production Estimates

Warm season grass production should be similar to FSG G133AA311 during times of normal summer rainfall, but short term dry periods will have less of an effect on plant growth due to greater clay content in surface layer and higher seasonal water table (between 3 to 5 feet). This will be particularly noticeable in the spring.

Production of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed should be practical most years for all classes of livestock throughout the MLRA. Additionally, overseeding annual ryegrass on a bahiagrass pasture is recommended for this

forage suitability group. If irrigation is available, forage production should be consistently at the upper end listed.

For similar reasons, cool season clovers and other cool season legumes planted in a prepared seedbed, should be considered on this FSG. Grazing management and fertilization need to favor the legume component for persistence, productivity, and seed production when natural reseeding of annual species is desired. Grazing management for seed production also is important for several clover species. White and red clovers are short-term perennials in Florida, but function more like annuals. Other species, like crimson clover, reseed well if they are managed properly. Due to bloat issue, clovers should

be used only in mixtures with cool season grasses, overseeded on bahiagrass pastures, or when a bloat preventative supplement is fed.

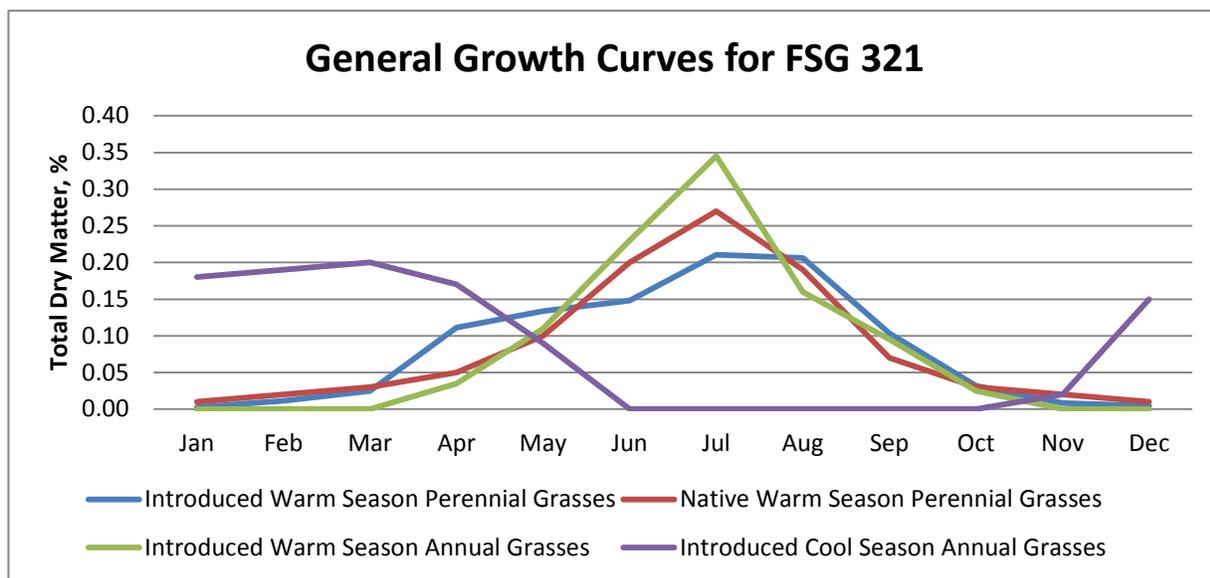
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses may be delayed in the spring due to low rainfall. Once normal summer rainfall begins, plant production should resume. Warm season legumes such as hairy indigo or alyceclover can be planted in a prepared seedbed. They also can be oversown onto warm season grasses in this forage suitability group, although fertilization (no N fertilizer) and grazing management needs to favor legume establishment and persistence. Additional lime may be needed to maintain a pH of 5.5 to 6.0.

Expected Range in Dry Matter Production and Animal Unit Months (AUM) for Different Forages				
Forage	Range in Dry matter, lbs/acre		Range in AUM/acre†	
Bahiagrass, Argentine (100-200 lb N/A) <sup>5,6,7‡</sup>	4,400	12,100	2.8	7.7
Bahiagrass, Pensacola (100-200 lb N/A) <sup>5,6,7</sup>	4,100	11,300	2.6	7.1
Bahiagrass, Tifton 9 (100-200 lb N/A) <sup>5,6,7</sup>	6,800	12,800	4.3	8.1
Bermudagrass, Tifton 85 (100-200 lb N/A) <sup>5,6,7</sup>	6,300	13,000	4	8.3
Bermudagrass, Florakirk (100-200 lb N) <sup>2,5,6,7</sup>	6,300	12,500	4.2	7.9
Bermudagrass, Coastal (100-200 lb N/A) <sup>5,6,7,10</sup>	3,600	12,000	2.5	7.6
Eastern Gamagrass, Pete (100-300 lb N/A) <sup>5,6,7</sup>	4,000	7,500	2.5	4.7
Big Bluestem (100-300 lb N/acre) <sup>5,6,7</sup>	900	2,000	0.6	1.2
Ryegrass (120 lb N/A) <sup>3,4</sup>	3,500	8,000	2.2	5.1
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre) <sup>1</sup>	6,000	8,000	3.8	5.1
Pearl Millet (200 lb N/acre) <sup>5,6,7</sup>	8,000	11,100	5.1	7
Sorghum - Sudangrass (200 lb N/acre) <sup>5,6,7</sup>	10,000	13,000	6.3	8.2
Rhizoma Perennial Peanut <sup>2</sup>	3,500	6,300	2.2	4
Alfalfa <sup>8,9</sup>	9,000	13,000	5.7	8.2
Cool-Season Clovers, overseeded on bahiagrass <sup>4,6,7</sup>	300	1,200	0.2	0.7
Cool-Season Clovers, prepared seedbed <sup>4,6</sup>	1,300	4,000	0.8	2.6
Alyceclover <sup>4</sup>	1,500	3,500	0.9	2.3
Hairy Indigo <sup>4</sup>	2,000	6,000	1.3	3.7

†Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.

‡Superscript numbers refer to references.

**Production Curves:**



Dry Matter Production Distribution by Month												
Forage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Introduced Warm Season Perennial Grasses</b>												
Bahiagrass (Pensacola)		0.01	0.03	0.14	0.14	0.17	0.19	0.17	0.14	0.03		
Bahiagrass (Argentine)		0.01	0.04	0.08	0.09	0.18	0.25	0.22	0.11	0.02		
Bermudagrass (Tifton 85)		0.02	0.02	0.13	0.15	0.13	0.21	0.22	0.08	0.03	0.01	0.00
Bermudagrass (Coastal)	0.01	0.01	0.02	0.13	0.14	0.13	0.21	0.22	0.09	0.02	0.01	0.01
<b>Native Warm Season Perennial Grasses</b>												
Native Warm Season Grasses (Generic)	0.01	0.02	0.03	0.05	0.1	0.2	0.27	0.19	0.07	0.03	0.02	0.01
Eastern Gamagrass	0.01	0.02	0.04	0.16	0.18	0.2	0.16	0.13	0.06	0.02	0.01	0.01
Switchgrass	0.01	0.02	0.03	0.07	0.15	0.19	0.2	0.19	0.09	0.03	0.01	0.01
<b>Legumes or Legume/Grass Combinations</b>												
Rhizoma Perennial Peanut			0.05	0.15	0.14	0.15	0.20	0.18	0.14			
White Clover/Argentine Bahiagrass	0.01	0.02	0.07	0.14	0.17	0.21	0.18	0.12	0.09	0.02		
<b>Cool Season Annual Grasses</b>												
Annual Ryegrass	0.18	0.18	0.2	0.18	0.1						0.02	0.14
Small Grains (Wheat, Rye, etc.)	0.18	0.2	0.2	0.16	0.08						0.02	0.16
<b>Warm Season Annual Grasses</b>												
Sorghum-Sudangrass					0.07	0.2	0.3	0.25	0.15	0.03		
Millet (Pearl and Browntop)				0.07	0.15	0.26	0.39	0.07	0.04	0.02		

## Physiographic Features

Dominantly very deep, nearly level to gently sloping, moderately well drained or well drained soils formed in loamy and/or clayey marine deposits. These soils occur on summits and shoulders of marine terraces. Diagnostic subsurface horizon is an argillic horizon above 20 inches. The organic matter content of the surface layer is dominantly very low to medium. Unless limed, the reaction in the surface layer ranges from extremely acid to slightly acid.

## Climatic Features

**Freeze-free period (>28° F 9 years in 10 at least):**  
 averages 255 d (range 243-273 d)

**Length of growing season (>32° F 9 years in 10 at least):** averages 224 d (range 205-247 d)

**Annual minimum temperature (° F in month of January):**  
 averages 38.2 (range 36.7-39.7)

**USDA Plant Hardiness Zone:**  
 8b (15-20° F, Tallahassee)

**Mean annual precipitation (inches):**  
 averages 62.14 (range 53.18-69.48)

## Group Soil Properties (Statewide)

**Percent Slope:** 0 to 5 percent

**Surface Texture:** Loamy sand, loamy fine sand, sandy loam, fine sandy loam, or their gravelly analogs

**Sand Content of Surface Layer:** 56 to 88 percent

**Clay Content of Surface Layer:** 5 to 20 percent

**Organic Matter Content of Surface Layer:** 0.5 to 5 percent

**Cation Exchange Capacity of Surface Layer (meq/100g):**  
 0.5 to 5.4

**Effective Cation Exchange Capacity of Surface Layer (meq/100g):** 0.4 to 5.7

**Bulk Density of Surface Layer (g/cc):** 1.4 to 1.65

**Saturated Hydraulic Conductivity of Surface Layer:**  
 Moderate to rapid

**Soil Reaction of Surface Layer:** 3.5 to 6.5 (unless limed)

**Available Water Capacity (0 to 30 inches):** 0.4 to 1.0 inch per inch

**Depth to Finer Textured Material:** Less than 20 inches

**Depth to Bedrock:** Greater than 80 inches.

**Drainage Class (Agronomic):** Moderately well, well

**Depth to Seasonal High Water Table (during wet periods):** 3 to 5 feet

**Flooding:** None

**Ponding:** None

## Monthly precipitation (inches) and temperature (F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Precip avg</b>	4.80	6.37	3.78	4.45	6.36	7.04	6.32	5.24	3.31	4.16	4.09	4.80
<b>Avg Min</b>	38.2	40.8	46.9	99.8	60.8	67.8	70.7	70.3	66.4	54.6	46.5	41.3
<b>Avg Temp</b>	51.6	54.9	61.2	67.0	74.4	80.2	82.1	81.8	78.7	69.9	61.5	54.4
<b>Avg Max</b>	62.2	66.1	72.5	78.7	85.3	90.1	91.5	91.0	88.0	80.3	71.9	64.5

## Climate Station Locations (averages from 1971 to 2000; see Appendix 2)

## FSG Documentation

### Inventory Data References:

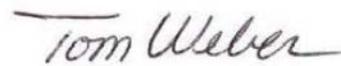
1. Barnett, R.D., D.L. Wright, A.R. Soffes Blount, and R.L. Stanley. 1997. Small Grain Production Recommendations for the 1997-98 Growing Season. Univ. Florida, IFAS, Florida Coop. Ext. Ser. SS-AGR-46.
2. Dunavin, LS. 1996. Fertility Trials with Florakirk Bermudagrass and Chicory and Harvest Date Trial with Florigraze Rhizoma Peanut. Univ. Florida, IFAS, Agric. Exp. Stn., WFREC Res. Rep. WF96-4.
3. ----- . 1997. Cool-Season Forage Trials, 1996-1997. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF97-5.
4. -----, and C.G. Chambliss. 2000. Cool-Season Forage Variety Trials, WFREC, Jay, FL 1999-2000. Univ. Florida, IFAS, Florida Exp. Stn. SS-AGR-85.
5. -----, and D.W. Gorbet. 2000. Variety and Other Trials of Several Forage Grasses and Legumes, Temperate Corn and Grain Sorghum. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF 00-03.
6. ----- . 2001. Variety and Other Trials of Several Forage Grasses and Legumes, Temperate Corn and Grain Sorghum. Univ. Florida, IFAS, Agric. Exp. Stn., WFREC Res. Rep. WFREC Res. Rep. WF01-03.
7. ----- . 2002. Variety and Other Trials of Several Forage Grasses and Legumes and Grain Sorghum. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF02-03.
8. -----, H.A. Peacock, and D.W. Gorbet. 1991. Variety Trials of Warm-Season Perennial Grasses, Grain Sorghum, Millet and Sorghum X Sudangrass Hybrids, and Alfalfa, 1990. Univ. Florida, IFAS, Florida Agric. Exp. Stn., Jay, AREC Res. Rep. WF91-2.
9. ----- . 1993. Variety Trials of Warm-Season Perennial Grasses, Grain Sorghum, Summer Annual Grasses, Alfalfa, and Summer Legumes. Univ. Florida, IFAS, Florida Agric. Exp. Stn., Jay AREC Res. Rep. Jay, AREC Res. Rep. WF93-2.
10. Rhoads, F.M., and R.L. Stanley, Jr. 1989. Coastal Bermudagrass Yield, Soil-pH, and Ammonium Sulfate-Nitrate Rates. Univ. Florida, IFAS, Florida Agric. Exp. Stn., NFREC-Quincy Res. Rep. 89-9.

**State Correlation: Pending**

### Forage Suitability Group Approval:



Rosalind Moore, Acting State Resource Conservationist



Tom Weber, State Soil Scientist

**Appendix 1: Map Unit List**

Angie fine sandy loam	Norfolk loamy fine sand, 0 to 2 percent slopes
Angie sandy loam, 2 to 5 percent slopes	Norfolk loamy fine sand, 2 to 5 percent slopes
Dothan fine sandy loam, 0 to 2 percent slopes	Norfolk loamy sand, 2 to 5 percent slopes
Dothan fine sandy loam, 2 to 5 percent slopes	Notcher fine sandy loam, 0 to 2 percent slopes
Dothan loamy fine sand, 2 to 5 percent slopes	Notcher fine sandy loam, 2 to 5 percent slopes
Dothan loamy sand, 0 to 2 percent slopes	Notcher gravelly sandy loam, 0 to 2 percent slopes
Dothan loamy sand, 2 to 5 percent slopes	Notcher gravelly sandy loam, 2 to 5 percent slopes
Dothan sandy loam, 0 to 2 percent slopes	Perdido sandy loam, 0 to 2 percent slopes
Miccosukee fine sandy loam	Perdido sandy loam, 2 to 5 percent slopes
Angie fine sandy loam	Tifton fine sandy loam, 0 to 2 percent slopes
Angie sandy loam, 2 to 5 percent slopes	Tifton fine sandy loam, 2 to 5 percent slopes
Dothan fine sandy loam, 0 to 2 percent slopes	Tifton gravelly loamy fine sand, 2 to 5 percent slopes
Dothan fine sandy loam, 2 to 5 percent slopes	Tifton loamy fine sand, 2 to 5 percent slopes
Dothan loamy sand, 0 to 2 percent slopes	Tifton loamy sand, 2 to 5 percent slopes
Dothan loamy sand, 2 to 5 percent slopes	Tifton sandy loam, 0 to 2 percent slopes
Dothan sandy loam, 0 to 2 percent slopes	Tifton sandy loam, 2 to 5 percent slopes
Miccosukee fine sandy loam	

<b>Appendix 2: Climate Station Locations</b>		
<b>COOP ID (FL=08)</b>	<b>Location</b>	<b>County</b>
1544	Chipley	Washington
1986	Crestview	Okaloosa
2220	De Funiak Springs	Walton
3230	Fountain	Bay
5275	Madison	Madison
5793	Milton Exp. Stn.	Santa Rosa
5879	Monticello	Jefferson
6240	Niceville	Okaloosa
7429	Quincy	Gadsden
8758	Tallahassee Mun. Air.	Leon