

FORAGE SUITABILITY GROUP

Shallow or Moderately Deep, Sandy or Loamy Soils on Rises and Ridges of Mesic Uplands

FSG No.: G152AA521FL

Major Land Resource Area (MLRA 152A):

Eastern Gulf Coast Flatwoods

Map Unit List

Aripeka-Matmon complex

Seaboard-Bushnell-Matmon complex, 0 to 3 percent slopes

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, but irrigation may be warranted for cool season forages in this FSG. Consult with state extension service for current cultivar or germplasm 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)

- Chalky Bluestem (*Andropogon virginicus* var. *glaucus*)
- Big Bluestem (*Andropogon gerardii*)
- Splitbeard Bluestem (*Andropogon ternarius*)
- Yellow Indiangrass (*Sorghastrum nutans*)
- Switchgrass (*Panicum virgatum*)

Legumes

Warm season (Introduced)

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

Annual Species:

Grasses

Warm season (Introduced)

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

Cool season

- Oat (*Avena sativa*)
- Rye (*Secale cereale*)
- Wheat (*Triticum aestivum*)
- Triticale (x *Triticosecale*)

Legumes

Warm season (Introduced)

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

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*)
- Hairy Vetch (*Vicia villosa*)
- Medics (*Medicago* spp.)

Seasonal and Total Production Estimates

Soils in this FSG are limited by their relatively shallow rooting depth (<40 inches to bedrock) and a water table during the rainy season that can be below 6 foot. Combined, these factors suggest that these soils will have forage production lower than for FSG G152AA221FL. Additionally, establishment and growth of all bahiagrass cultivars will be marginal for those soils in this FSG with pH>6.5. Bermudagrass is the better choice for an introduced perennial grass on those high pH soils.

Similar to FSG G152AA221FL, total annual production is driven largely by rainfall; yields can increase by >1,000 lbs/acre in years with above average rainfall. However

greatly reduced production and even stand loss associated with over grazing can occur in years with below average rainfall. Irrigation is not recommended for these soils due to poor water holding capacity and restricted rooting zone. Establishment of both annual and perennial warm season forages maybe delayed due to limited rainfall in the spring and short term drought periods in the summer months. Total production of all forage species is expected to be considerably less than other FSG,

with a general growth curve weighted more towards the later part of the growing season.

As a consequence of the restricted rooting depth, cool season forage production will reach the upper ranges listed only in years of above average winter rainfall.

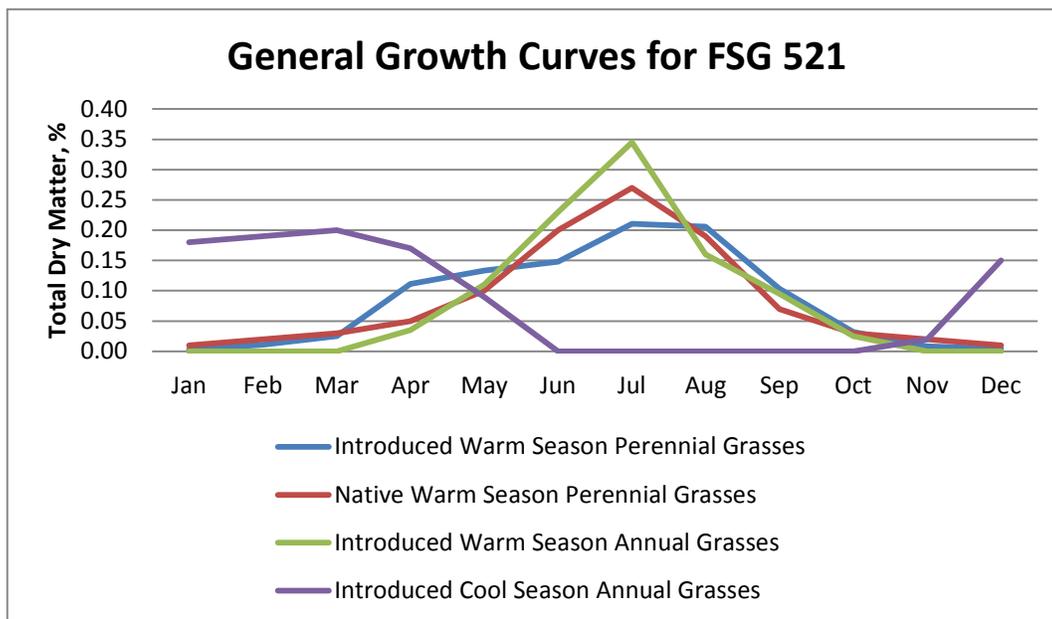
Expected Range in Dry Matter Production and Animal Unit Months (AUM) for Different Forages†				
Forage	Range in Dry matter, lbs/acre		Range in AUM/acre‡	
Bahiagrass, Argentine (100-200 lb N/A) ^{4,5,6,#}	3,550	9,825	2.3	6.3
Bahiagrass, Pensacola (100-200 lb /A) ^{4,5,6}	3,321	9,150	2.1	5.9
Bahiagrass, Tifton 9 (100-200 lb N/A) ^{4,5,6}	5,508	10,350	3.5	6.6
Bermudagrass, Tifton 85 (100-200 lb N/A) ^{4,5,6}	5,080	10,560	3.3	6.8
Bermudagrass, Florakirk (100-200 lb N) ^{2,4,5,6}	5,320	10,150	3.4	6.5
Bermudagrass, Coastal (100-200 lb N/A) ^{4,5,6,7}	2,920	9,700	1.9	6.2
Big Bluestem (100-300 lb N/acre) ^{4,5,6}	705	1,600	0.5	1.0
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre) ¹	4,860	6,500	3.1	4.2
Pearl Millet (200 lb N/acre) ^{4,5,6}	6,480	9,025	4.2	5.8
Sorghum - Sudangrass (200 lb N/acre) ^{4,5,6}	8,100	10,530	5.2	6.8
Rhizoma Perennial Peanut ²	2,850	5,100	1.8	3.3
Cool-Season Clovers, prepared seedbed ^{3,5}	1,080	3,240	0.7	2.1
Alyceclover ³	1,215	2,825	0.8	1.8
Hairy Indigo ³	1,620	4,860	1.0	3.1

†Production data based on 10% reduction yield range of FSG G152AA221FL.

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

#Superscript numbers refer to references.

Production Curve:



Dry Matter Production Distribution by Month												
Forage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Introduced Warm Season Perennial Grasses												
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
Native Warm Season Perennial Grasses												
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
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
Legumes or Legume/Grass Combinations												
Rhizoma Perennial Peanut			0.05	0.15	0.14	0.15	0.20	0.18	0.14			
Cool Season Annual Grasses												
Small Grains (Wheat, Rye, etc.)	0.18	0.2	0.2	0.16	0.08						0.02	0.16
Warm Season Annual Grasses												
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 shallow to moderately deep, nearly level to sloping, somewhat poorly drained to well drained soils formed in less than 40 inches of sandy or loamy marine deposits or residuum over limestone bedrock. These soils occur on summits, shoulders, and back slopes of bedrock controlled uplands. Diagnostic subsurface horizon is an argillic horizon, or is absent. A few members have either a mollic or umbric horizon. The organic matter content of the surface layer is dominantly very low or low. Unless limed, the reaction in the surface layer ranges from strongly acid to moderately alkaline.

Climatic Features

Freeze-free period (>28° F 9 years in 10 at least):
 averages 268 d (range 243-295 d)

Length of growing season (>32° F 9 years in 10 at least): averages 235 d (range 206-267 d)

Annual minimum temperature (° F in month of January):
 averages 53.7 (range 49.0-64.5)

USDA Plant Hardiness Zone:
 8b (15-20° F, Tallahassee)
 9a (20-25° F, Gainesville)

Mean annual precipitation (inches):
 averages 60.77 (range 52.83-69.20)

Soil Properties

Percent Slope: Dominantly 0 to 5 percent, but ranges to 8 percent

Surface Texture: Dominantly sand, fine sand, and loamy fine sand. A few members are loam, sandy clay loam, or loam.

Sand Content of Surface Layer: 40 to 98 percent

Clay Content of Surface Layer: 1 to 23 percent

Organic Matter Content of Surface Layer: 0.5 to 5 percent

Cation Exchange Capacity of Surface Layer (meq/100g):
 0.6 to 25.7

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.3 to 3.5

Bulk Density of Surface Layer (g/cc): 1.3 to 1.53

Saturated Hydraulic Conductivity of Surface Layer: Rapid

Soil Reaction of Surface Layer: 5.1 to 8.4

Available Water Capacity (0 to 30 inches): 0.1 to 1.5 inch per inch

Depth to Finer Textured Material: Less than 40 inches

Depth to Bedrock: Dominantly 10 to 40 inches to limestone

Drainage Class (Agronomic): Somewhat poorly, moderately well, well

Depth to Seasonal High Water Table (during wet periods): 1.5 feet to greater than 6 feet below the surface

Flooding: None. A few members are occasionally flooded with brief duration.

Ponding: None

Monthly precipitation (inches) and temperature (F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip avg	5.25	4.28	5.67	3.52	3.78	6.20	7.82	7.44	5.82	3.46	3.54	3.75
Avg Min	40.5	43.0	48.9	83.7	62.0	66.9	71.6	71.4	68.1	57.1	49.0	43.2
Avg Temp	53.7	56.7	62.7	68.1	75.3	80.8	82.6	82.3	79.4	70.6	62.6	55.8
Avg Max	64.1	67.3	73.3	79.1	85.6	90.1	91.3	90.9	88.3	81.2	73.3	66.2

Climate Station Locations (averages from 1971 to 2000; see Appendix 1)

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. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Florida Cooperative Extension Service, SS-AGR-46.
2. Dunavin, L.S. 1996. Fertility trials with Florakirk bermudagrass and chicory and harvest date trial with Florigraze rhizoma peanut. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF96-4.
3. -----, and C.G. Chambliss. 2000. Cool-season forage variety trials, WFREC, Jay, FL 1999-2000. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, SS-AGR-85.
4. -----, and D.W. Gorbet. 2000. Variety and Other Trials of several forage grasses and legumes, temperate corn and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF00-03.
5. ----- . 2001. Variety and other trials of several forage grasses and legumes, temperate corn and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF01-03.
6. ----- . 2002. Variety and other trials of several forage grasses and legumes and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF02-03.
7. Rhoads, F.M., and R.L. Stanley, Jr. 1989. Coastal bermudagrass yield, soil-pH, and ammonium sulfate-nitrate rates. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, North Florida Research and Education Center-Quincy Research Report 89-9

State Correlation: (NA)

Forage Suitability Group Approval:



Greg Hendricks, State Resource Conservationist



Tom Weber, State Soil Scientist

Appendix 1: Climate Station Locations		
COOP ID (FL=08)	Location	County
3230	Fountain	Bay
6842	Panama City	Bay
2008	Cross City	Dixie
3855	Pensacola Sherman NAS	Escambia
6997	Pensacola Regional Air.	Escambia
211	Apalachicola	Franklin
9566	Wewahitchka	Gulf
5539	Mayo	LaFayette
8758	Tallahassee Mun. Air.	Leon
9120	Usher Tower	Levy
5275	Madison	Madison
6240	Niceville	Okaloosa
3841	Whiting Field NAS	Santa Rosa
5099	Live Oak	Suwannee
7025	Perry	Taylor
8565	Steinhatchee	Taylor