

FORAGE SUITABILITY GROUP

Sandy Soils on Ridges and Dunes of Xeric Uplands

FSG No.: G155XB111FL

Major Land Resource Area (MLRA 155): Southern Florida Flatwoods

Soil Series List

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

.Apopka	Lake
.Astatula	Orlando
.Candler	Palm Beach
.Deland	Paola
.Ft. Meade	St. Lucie
.Gainesville	

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 the pH level raised to min. 5.5 (unless noted) for best production. Irrigation is not recommended in these soils, and all forages listed are adapted to dryland conditions. 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*)
- Splitbeard Bluestem (*Andropogon ternarius*)
- Yellow Indiangrass (*Sorghastrum nutans*, northern half of MLRA)
- 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 sorghum, sudangrass, and their hybrids)

Legumes and Forbs

Warm season (Introduced)

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

Seasonal and Total Production Estimates

Seasonal and total forage production is limited in this group due to soils being well drained to excessively drained. Surface and subsurface texture is predominantly sandy with low or very low available water capacity, and a seasonal high water table greater than 6 feet. These factors increase drought effects. 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. 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.

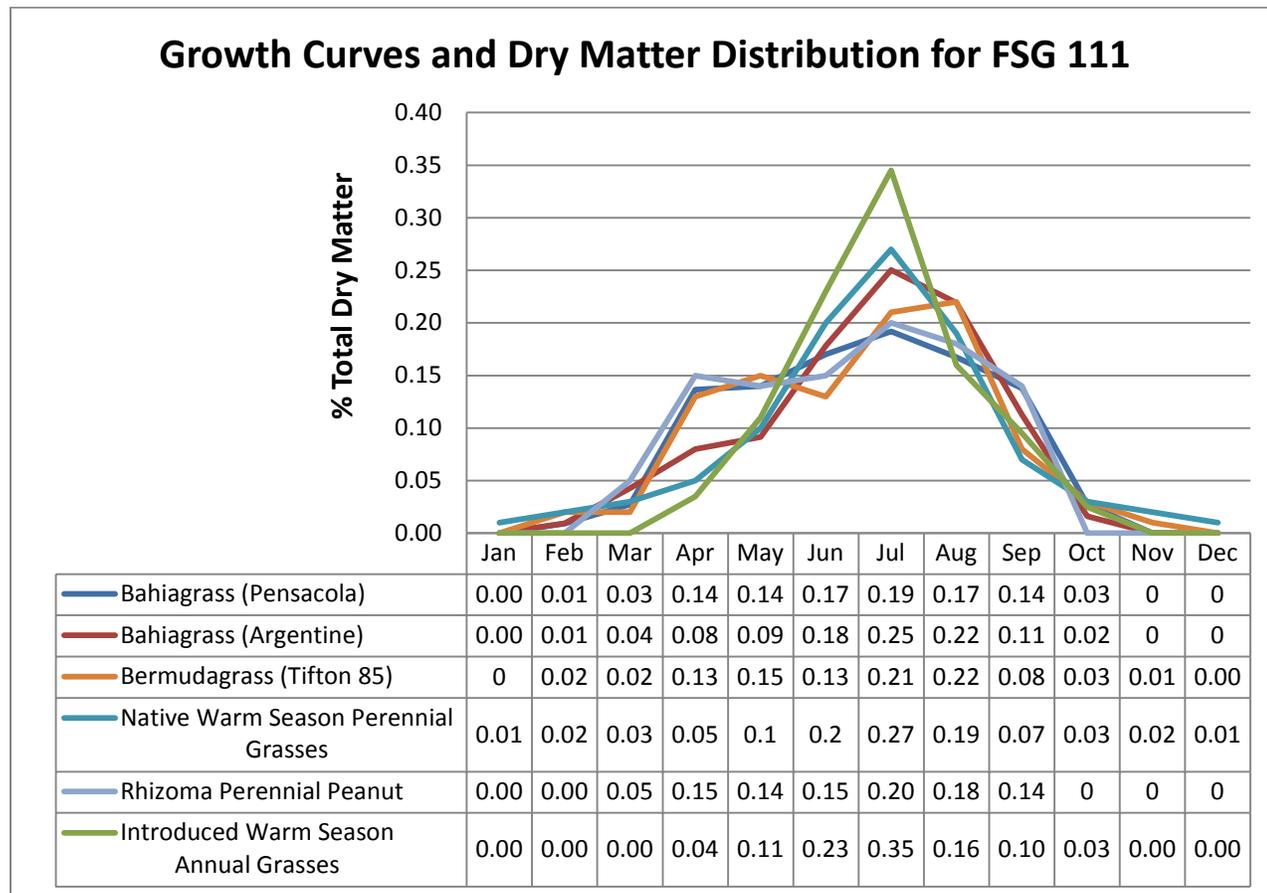
Cool season forage production is very limited due to decreased and sporadic rainfall during winter months (November-March), therefore no cool season forages are recommended and no production data is given.

Expected Range in Dry Matter Production and Animal Unit Months (AUM) for Different Forages				
Forage	Range in Dry Matter Yield, lb/acre		Range in AUM/acre†	
	Bahiagrass (0 lb N/acre) ^{5‡}	2,500	3,500	1.6
Bahiagrass (60 lb N/acre) ^{5,9}	4,000	6,000	2.6	3.8
Bermudagrass (400 lb N/acre) ⁴	14,000	20,000	9.0	12.8
Switchgrass, Alamo ¹	6,000	8,000	3.8	5.1
Rhizoma Perennial Peanut, Florigraze ^{3,7}	7,000	10,000	4.5	6.4
Pearl Millet (limited irrigation, ~400 lb N/acre) ⁶	8,000	16,000	5.1	10.3
Alyceclover ⁸	3,000	5,000	1.9	3.2
Hairy Indigo ²	6,000	12,000	3.8	7.7

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

‡Superscript numbers refer to references.

Production Curves:



Physiographic Features

Dominantly very deep, nearly level to sloping, well to excessively drained soils formed in eolian or sandy marine deposits. These soils occur on summits, shoulders, and back slopes of marine terraces. They have 40 inches to greater than 80 inches of fine sand or sand. Diagnostic subsurface horizon is an argillic horizon below 40 inches or is absent. The organic matter content of the surface layer is dominantly very low or low. 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 337 d (range 290-365 d)

Length of growing season (>32° F 9 years in 10 at least): averages 309 d (range 253-365 d)

Annual minimum temperature (° F in month of January):
 average 50.2 (range 45.2-59.2)

USDA Plant Hardiness Zone:
 9a (20-25° F, Ocala)
 9b (25-30° F, Orlando)
 10a (30-35° F, Ft. Myers)

Mean annual precipitation (inches):
 averages 51.89 (range 45.66-69.53)

Soil Properties

Percent Slope: 0 to 8 percent

Surface Texture: Fine sand, sand, loamy fine sand, loamy sand, gravelly sand

Sand Content of Surface Layer: 81 to 99 percent

Clay Content of Surface Layer: 0.1 to 10 percent

Organic Matter Content of Surface Layer: 0.5 to 5 percent

Cation Exchange Capacity of Surface Layer (meq/100g):
 0.3 to 7.1

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.1 to 6.7

Bulk Density of Surface Layer (g/cc): 1.3 to 1.7

Saturated Hydraulic Conductivity of Surface Layer: Rapid or very rapid

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

Available Water Capacity (0 to 30 inches): 0.1 to 1.0 inch per inch

Depth to Finer Textured Material: 40 to more than 80 inches

Depth to Bedrock: Greater than 80 inches

Drainage Class (Agronomic): Well, somewhat excessive, excessive

Depth to Seasonal High Water Table (during wet periods): More than 6 feet

Flooding: None

Ponding: None

Monthly precipitation (inches) and temperature (F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip avg	2.70	2.59	3.37	2.39	3.90	7.26	6.98	7.14	6.75	3.50	2.66	2.24
Avg Min	50.2	51.4	55.7	59.6	65.5	70.8	72.3	72.7	71.6	63.9	58.9	53.0
Avg Temp	62.3	63.5	67.8	70.5	77.1	81.1	82.0	82.3	81.1	75.8	69.6	63.9
Avg Max	72.7	74.4	78.6	82.7	87.5	90.2	91.5	91.3	89.5	84.8	79.2	74.0

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

FSG Documentation

Inventory Data References:

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8. Williams, M.J., C.G. Chambliss, and J.D. Brolmann. 1993. Potential of 'Savanna' stylo as a stockpiled forage for the subtropical USA. Journal of Production Agric. 6:553-556.
9. Williams, M.J., and R.S. Kalmbacher. 1996. Renovation effects on bahiagrass productivity. Agronomy Journal 88:191-198. Available at: <https://www.agronomy.org/publications/aj/abstracts/88/2/AJ0880020191>. Accessed 17 December 2012.

State Correlation: (NA)

Forage Suitability Group Approval:



Greg Hendricks, State Resource Conservationist



Tom Weber, State Soil Scientist

Appendix 1. Map Unit List

Apopka fine sand, 0 to 5 percent slopes	Gainesville loamy fine sand, 0 to 5 percent slopes
Apopka sand, 0 to 5 percent slopes	Lake fine sand, 0 to 5 percent slopes
Apopka sand, 5 to 8 percent slopes	Orlando fine sand, 0 to 5 percent slopes
Astatula fine sand, 0 to 5 percent slopes	Palm Beach gravelly sand, 0 to 8 percent slopes
Astatula fine sand, 0 to 8 percent slopes	Palm Beach sand, 0 to 5 percent slopes
Astatula fine sand, 5 to 8 percent slopes	Palm Beach sand, 2 to 8 percent slopes
Astatula sand, 0 to 8 percent slopes	Palm Beach-Paola association, 2 to 8 percent slopes
Astatula-Apopka fine sands, 0 to 5 percent slopes	Paola fine sand, 0 to 8 percent slopes
Astatula-Apopka fine sands, 5 to 8 percent	Paola sand, 0 to 5 percent slopes
Candler fine sand, 0 to 5 percent slopes	Paola sand, 0 to 8 percent slopes
Candler fine sand, 5 to 8 percent slopes	Paola-St. Lucie sands, 0 to 5 percent slopes
Candler sand, 0 to 5 percent slopes	St. Lucie fine sand
Deland fine sand, 0 to 5 percent slopes	St. Lucie fine sand, 0 to 5 percent slopes
Deland fine sand, 0 to 8 percent slopes	St. Lucie fine sand, 0 to 8 percent slopes
Fort Meade loamy fine sand, 0 to 5 percent slopes	St. Lucie sand, 0 to 8 percent slopes

Appendix 2: Climate Station Locations		
COOP ID (FL=08)	Location	County
8942	Titusville	Brevard
3163	Fort Lauderdale	Broward
7397	Punta Gorda	Charlotte
2850	Everglades	Collier
4210	Immokalee	Collier
228	Arcadia	DeSoto
5895	Moore Haven Lock	Glades
9401	Wauchula	Hardee
1654	Clewiston US Engin.	Hendry
2298	Devils Garden	Hendry
4662	La Belle	Hendry
236	Archbold Biol. Station	Highlands
369	Avon Park	Highlands
7205	Plant City	Hillsborough
8788	Tampa Intl. Air.	Hillsborough
9214	Vero Beach Muni. Air.	Indian River
9219	Vero Beach	Indian River
1641	Clermont	Lake
5076	Lisbon	Lake
3186	Fort Myers	Lee
6880	Parrish	Manatee
8620	Stuart	Martin
2137	Fort Drum	Okeechobee
6485	Okeechobee	Okeechobee
6628	Orlando Intl. Air.	Orange
4625	Kissimmee	Osceola
611	Belle Glade Exp. Stn.	Palm Beach
1276	Canal Point USDA	Palm Beach
5182	Loxahatchee	Palm Beach
9525	West Palm Beach Intl. Air.	Palm Beach
7851	St. Leo	Pasco
478	Bartow	Polk
4707	Lake Alfred Exp Stn	Polk
4797	Lakeland	Polk
5973	Mountain Lake	Polk
9707	Winter Haven	Polk
1978	Crescent City	Putnam
2915	Federal Point	Putnam
6753	Palatka	Putnam
6065	Myakka River State Park	Sarasota
9176	Venice	Sarasota
7982	Sanford Orlando	Seminole
3874	Hastings ARC	St. Johns
7826	St. Augustine WFOY	St. Johns
3207	Fort Pierce	St. Lucie
1163	Bushnell	Sumter
2158	Daytona Beach Inter. Air.	Volusia
2229	Deland	Volusia