FORAGE SUITABILITY GROUP

Sandy Soils on Rises and Knolls of Mesic Uplands

FSG No.: G155XB131FL

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.

Adamsville	Placid variant
Adamsville variant	Pomello
Bimini	Satellite
Cassia	Seffner
Electra	Sparr
Narcoossee	Turnbull variant
Newnan	Zolfo

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*)
- Stargrass (*Cynodon nlemfuensis*, adapted on these soils only south of I-4*)*

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*, northern half of MLRA)
- Yellow Indiangrass (*Sorghastrum nutans*, northern half of MLRA)
- Lopsided Indiangrass (*Sorghastrum secundum*)
- Switchgrass (*Panicum virgatum*)

Legumes

Warm season

- Rhizoma Perennial Peanut (*Arachis glabrata*, pH 5.8-7.0; additional management required for high water table)
- Carpon desmodium (*Desmodium heterocarpon*)

Annual Species:

Grasses

Warm season

- Browntop Millet (*Urochloa ramosa*; = *Panicum ramosum*)
- Pearl Millet (*Pennisetum glaucum*)
- Sorghum (*Sorghum bicolor*; includes forage sorghum, 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 rimpaui*)

Legumes

Warm season

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

Seasonal and Total Production Estimates

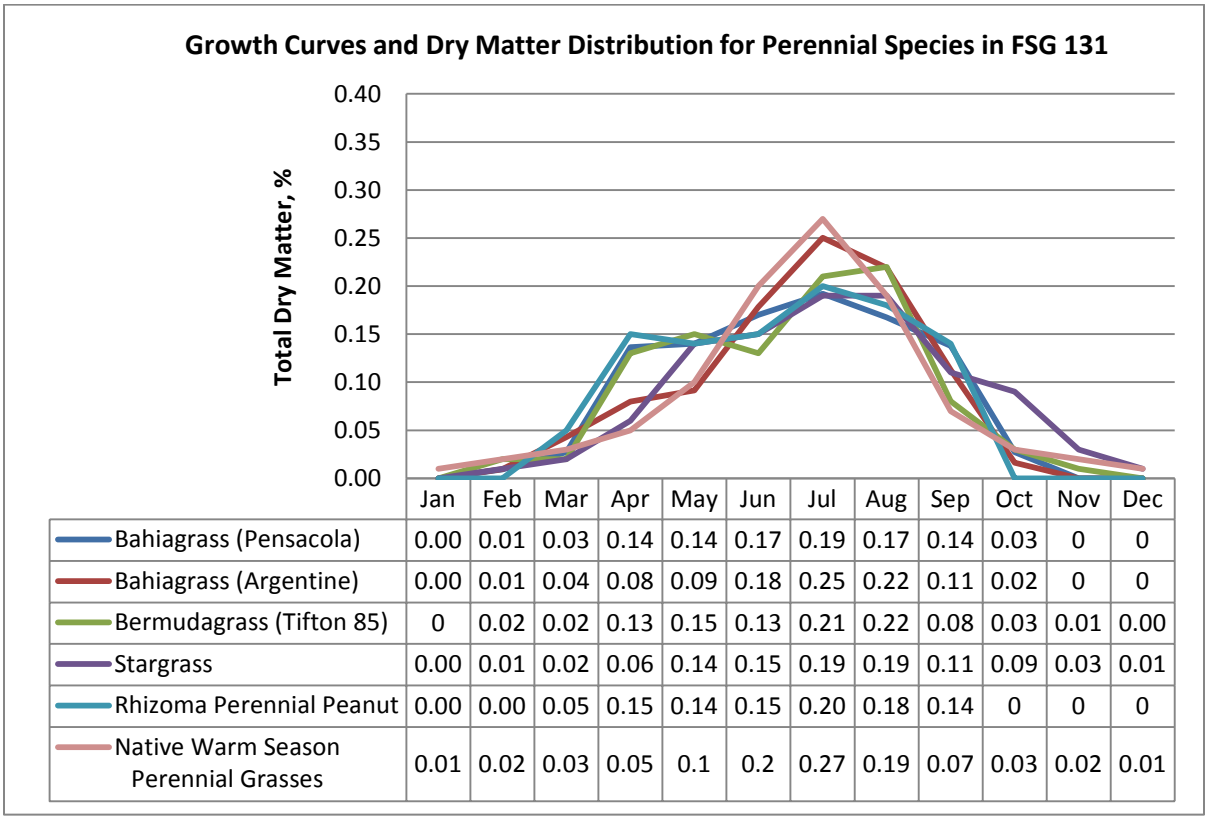
Seasonal and total forage production may be limited during low rainfall periods due to deep sandy soils in this group. Surface and subsurface texture is predominantly sandy. Soils in this group have moderate water holding capacity and a seasonal high water table ranging from 1 - 3 foot during wet periods. Total production of all forage species is expected to be higher than FSG G155XB111FL due to increased available water during the growing season, but lower than FSG G155XB141FL due to lower water availability at other times of the year. Irrigation is commonly used for crop production on these soils and can be found on old abandoned crop land converted to improved pastures; however, increases in yield's related to irrigation are not well documented for these soils.

For this FSG, use of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed is dependent upon the location in the MLRA. Forage production is usually at the middle to lower end of the production range due to limited and sporadic rainfall during fall and winter months, particularly in the southern half of this MLRA. Additionally in the southern portion of the MLRA, warm temperatures persisting into the fall and returning quickly in the spring greatly shorten the production period for cool season forages. Thus in the southern portion of the MLRA, cool season forages are not recommended on this FSG. In the northern half of the MLRA, this FSG will generally only produce sufficient winter grazing in years with average and above average rainfall (El Niño winters) for specialized management uses such as creep grazing, early weaning, or purebred operations. Overseeding annual ryegrass on a bahiagrass pasture is not recommended anywhere in this MLRA for this FSG, due to excessive competition from bahiagrass for soil moisture and substantial moisture requirement from ryegrass.

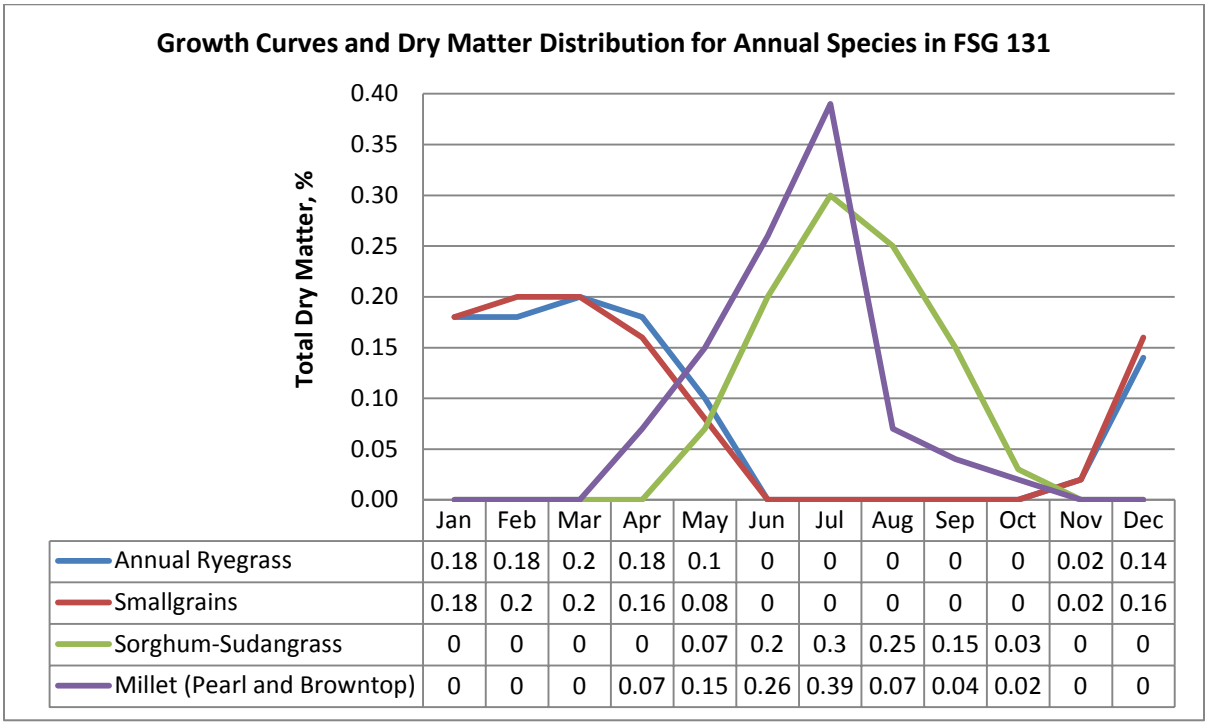
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses or legumes may be delayed in the spring due to low rainfall. Often production of perennial species also dips during the April/May dry period. Once normal summer rainfall begins, plant production should resume. Carpon desmodium can also be oversown onto bahiagrass stands in this forage suitability group, although root knot nematodes may limit the production of the legume after a few years. Annual legumes such as hairy indigo or alyceclover can be oversown on bahiagrass stands 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 (0 lb N/acre) [10,11]#	2,250	4,500	1.4	2.9
Bahiagrass (60 lb N/acre)[11]	5,250	7,500	3.4	4.8
Carpon desmodium/Bahiagrass[5]	4,900	6,400	3.1	4.1
Bermudagrass, (200 lb N/acre)[6]	10,000	14,000	6.3	8.9
Stargrass (≈400 lb N/acre)[9]	8,250	11,250	5.3	7.2
Rhizome Perennial Peanut[7]	8,000	14,000	5.1	8.9
Pearl Millet (225 to 300 lb N/acre)[1,3]	6,000	12,000	3.8	7.6
Sorghum X Sudangrass (225 to 300 lb N/acre)[1,3]	10,000	24,000	6.3	15.2
Hairy Indigo[4]	1,500	2,250	1.0	1.4
Annual Ryegrass[2,8]	1,500	5,250	1.0	3.4

†Production data based on 25% decrease from FSG G155XB141FL except for bermudagrass, rhizoma perennial peanut, and warm season annuals.
‡Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.
#Superscript numbers refer to references.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahiagrass (Pensacola)	0.00	0.01	0.03	0.14	0.14	0.17	0.19	0.17	0.14	0.03	0	0
Bahiagrass (Argentine)	0.00	0.01	0.04	0.08	0.09	0.18	0.25	0.22	0.11	0.02	0	0
Bermudagrass (Tifton 85)	0	0.02	0.02	0.13	0.15	0.13	0.21	0.22	0.08	0.03	0.01	0.00
Stargrass	0.00	0.01	0.02	0.06	0.14	0.15	0.19	0.19	0.11	0.09	0.03	0.01
Rhizoma Perennial Peanut	0.00	0.00	0.05	0.15	0.14	0.15	0.20	0.18	0.14	0	0	0
Native Warm Season Perennial Grasses	0.01	0.02	0.03	0.05	0.1	0.2	0.27	0.19	0.07	0.03	0.02	0.01



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Ryegrass	0.18	0.18	0.2	0.18	0.1	0	0	0	0	0	0.02	0.14
Smallgrains	0.18	0.2	0.2	0.16	0.08	0	0	0	0	0	0.02	0.16
Sorghum-Sudangrass	0	0	0	0	0.07	0.2	0.3	0.25	0.15	0.03	0	0
Millet (Pearl and Browntop)	0	0	0	0.07	0.15	0.26	0.39	0.07	0.04	0.02	0	0

Physiographic Features

Dominantly very deep, nearly level to sloping, somewhat poorly drained or moderately well drained soils formed in sandy marine deposits. These soils occur on flats, summits, and shoulders of marine terraces. These soils have 40 inches to greater than 80 inches of fine sand or sand. Diagnostic subsurface horizon is either an argillic or spodic horizon below 40 inches 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 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 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 sand

Sand Content of Surface Layer: 81 to 98 percent

Clay Content of Surface Layer: 0.2 to 8 percent

Organic Matter Content of Surface Layer: 0.5 to 5.0

Cation Exchange Capacity of Surface Layer (meq/100g): 0.1 to 7.6

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.1 to 7.9

Bulk Density of Surface Layer (g/cc): 1.25 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 1.5 inch per inch

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

Dept to Bedrock: Dominantly greater than 80 inches. A few members have bedrock between 40 and 80 inches.

Drainage Class (Agronomic): Somewhat poorly, Moderately well

Depth to Seasonal High Water Table (during wet periods): 1.0 to 3.0 feet

Flooding: None. A few members are rarely or very rarely 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	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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State Correlation: (NA)

Forage Suitability Group Approval:

Greg Hendricks, State Resource Conservationist

Tom Weber, State Soil Scientist

Appendix 1: Map Unit List	
Adamsville fine sand	Placid variant fine sand
Adamsville fine sand, 0 to 3 percent slopes	Pomello fine sand
Adamsville fine sand, organic substratum	Pomello fine sand, 0 to 2 percent slopes
Adamsville sand	Pomello fine sand, 0 to 5 percent slopes
Adamsville variant fine sand	Pomello sand, 0 to 5 percent slopes
Adamsville variant fine sand, 0 to 5 percent slopes	Satellite fine sand
Adamsville variant sand	Satellite sand
Adamsville-Sparr fine sands	Seffner fine sand
Bimini sand	Sparr fine sand
Cassia fine sand	Sparr fine sand, 0 to 5 percent slopes
Electra fine sand	Sparr sand, 0 to 5 percent slopes
Electra fine sand, 0 to 5 percent slopes	Turnbull variant sand
Electra sand	Zolfo fine sand
Narcoossee fine sand	Zolfo fine sand, 0 to 2 percent slopes
Narcoossee fine sand, shelly substratum	Zolfo fine sand, 2 to 5 percent slopes
Newnan fine sand	

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