

## FORAGE SUITABILITY GROUP

### Sandy Soils on Rises and Knolls of Mesic Uplands

FSG No.: G154XB131FL

**Major Land Resource Area (MLRA 154):** South-Central Florida Ridge

#### Soil Series List

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

Adamsville	Pomello
Cassia	Redlevel
Chipley	Satellite
Electra	Seffner
Electra, variant	Sparr
Narcoossee	Zolfo
Newnan	

#### 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 heterocarpum*)

#### 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*)

##### 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 G154XB111FL due to increased available water during the growing season, but lower than FSG G154XB141FL 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 generally will 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.

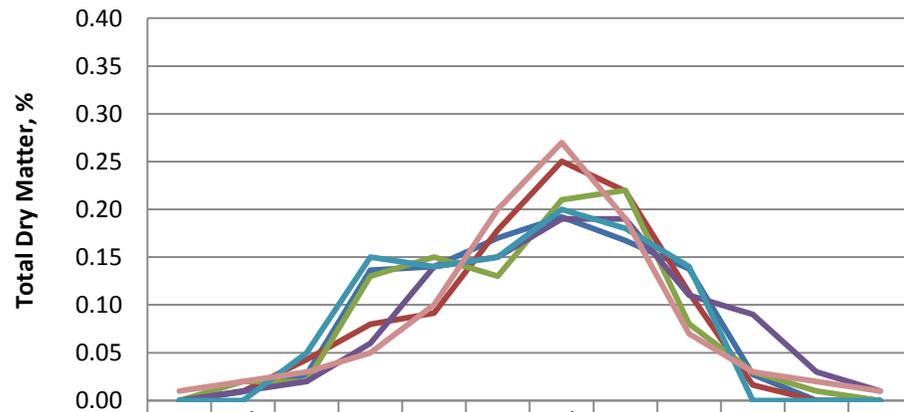
Expected Range in Dry Matter Production and Animal Unit Months (AUM) for Different Forages†				
Forage	Range in Dry matter, lbs/acre		Range in AUM/acre‡	
Bahiagrass (0 lb N/acre) <sup>10,11</sup> #	2,250	4,500	1.4	2.9
Bahiagrass (60 lb N/acre) <sup>11</sup>	5,250	7,500	3.4	4.8
Carpon desmodium/Bahiagrass <sup>5</sup>	4,900	6,400	3.1	4.1
Bermudagrass, (200 lb N/acre) <sup>6</sup>	10,000	14,000	6.3	8.9
Stargrass (≈400 lb N/acre) <sup>9</sup>	8,250	11,250	5.3	7.2
Rhizome Perennial Peanut <sup>7</sup>	8,000	14,000	5.1	8.9
Pearl Millet (225 to 300 lb N/acre) <sup>1,3</sup>	6,000	12,000	3.8	7.6
Sorghum X Sudangrass (225 to 300 lb N/acre) <sup>1,3</sup>	10,000	24,000	6.3	15.2
Hairy Indigo <sup>4</sup>	1,500	2,250	1.0	1.4
Annual Ryegrass <sup>2,8</sup>	1,500	5,250	1.0	3.4

†Production based on 25% decrease from FSG G154XB141FL except for bermudagrass, rhizoma perennial peanut, and warm season annuals.

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

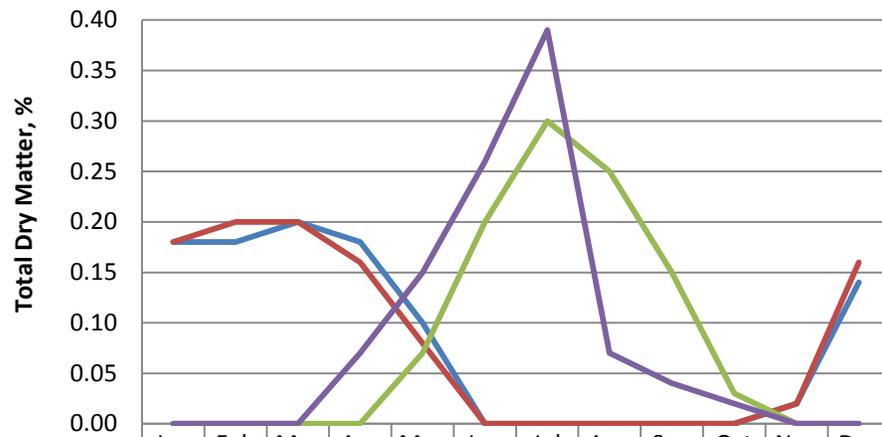
#Superscript numbers refer to references.

### Growth Curves and Dry Matter Distribution for Perennial Species in FSG 131



— 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

### Growth Curves and Dry Matter Distribution for Annual Species in FSG 131



— 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 316 d (range 278-365 d)

**Length of growing season (>32° F 9 years in 10 at least):** averages 285 d (range 243-365 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)

**Mean annual precipitation (inches):** averages 51.09 (range 47.70-67.03)

## 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

**Depth 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
<b>Precip avg</b>	3.04	2.89	3.69	2.40	3.52	6.86	7.17	7.36	6.22	2.79	2.38	2.47
<b>Avg Min</b>	48.1	49.6	54.4	58.5	65.0	70.7	72.3	72.5	71.0	61.0	56.6	51.0
<b>Avg Temp</b>	60.0	61.5	66.4	68.6	76.6	80.8	81.8	81.8	80.4	74.2	67.5	61.5
<b>Avg Max</b>	70.8	72.9	77.9	82.4	87.7	90.6	91.7	91.4	89.5	84.0	77.9	72.2

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

## FSG Documentation

### Inventory Data References:

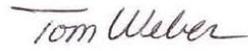
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**State Correlation:** (NA)

**Forage Suitability Group Approval:**



Greg Hendricks, State Resource Conservationist



Tom Weber, State Soil Scientist

<b>Appendix 1: Map Unit List</b>	
Adamsville fine sand	Pomello fine sand, 0 to 5 percent slopes
Adamsville sand, 0 to 5 percent slopes	Pomello sand
Adamsville fine sand, bouldery subsurface	Pomello sand, 0 to 5 percent slopes
Cassia fine sand, 0 to 5 percent slopes	Redlevel fine sand
Cassia sand	Satellite sand
Chipley sand	Seffner fine sand
Electra fine sand	Seffner sand
Electra fine sand, bouldery subsurface	Sparr fine sand
Electra sand, 0 to 5 percent slopes	Sparr fine sand, 0 to 5 percent slopes
Electra variant fine sand, 0 to 5 percent slopes	Sparr fine sand, 5 to 8 percent slopes
Narcoossee fine sand	Sparr fine sand, bouldery subsurface, 0 to 5 percent slopes
Narcoossee sand	Sparr sand, 0 to 5 percent slopes
Newnan fine sand, 0 to 5 percent slopes	Zolfo fine sand
Newnan sand	Zolfo sand
Pomello fine sand	

<b>Appendix 2: Climate Station Locations</b>		
<b>COOP ID (FL=08)</b>	<b>Location</b>	<b>County</b>
945	Bradenton	Manatee
6414	Ocala	Marion
6628	Orlando Intl. Air.	Orange
7851	St. Leo	Pasco
7886	St. Petersburg	Pinellas
8824	Tarpon Springs	Pinellas
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
7982	Sanford Orlando	Seminole
1163	Bushnell	Sumter
2229	Deland	Volusia