FORAGE SUITABILITY GROUP

Sandy Soils on Rises and Knolls of Mesic Uplands

FSG No.: G152AA131FL

Major Land Resource Area (MLRA 152A):

Eastern Gulf Coast Flatwoods

Soil Series List

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

Adamsville	Lutterloh
Albany	Mandarin
Cassia	Ridgewood
Chipley	Sparr
Hurricane	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. 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)

- Big Bluestem (*Andropogon gerardii*)
- Yellow Indiangrass (*Sorghastrum nutans*)
- 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)

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 G152AA111FL due to increased available water during the growing season, but lower than FSG G152AA141FL due to lower water availability at other times of the year.

Production of cool season forage planted in a prepared seedbed is usually at the middle to lower end of the production range due to droughty nature of the soils in this FSG. Generally cool season forages 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 for this FSG, due to excessive competition from bahiagrass for soil moisture and substantial moisture requirement from ryegrass. If irrigation is used, see FSG G152AA331FL spe-

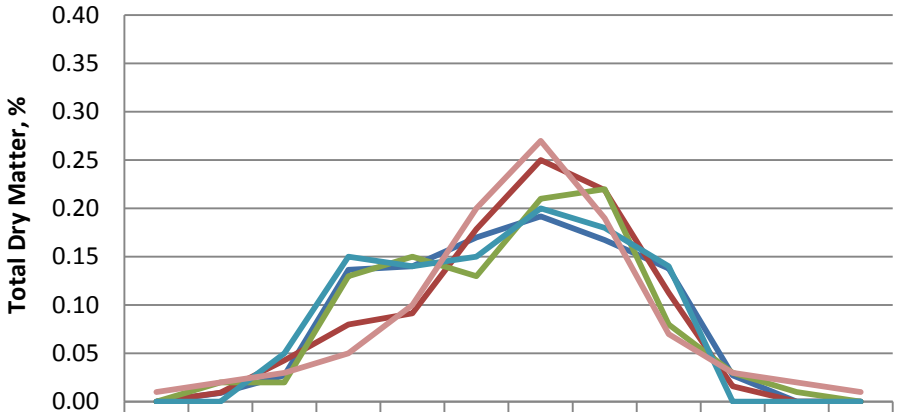
cies list and production information although yields will be at the lower end of the range listed.

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. 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) [9,10]#	2,250	4,500	1.4	2.9
Bahiagrass (60 lb N/acre)[10]	5,250	7,500	3.4	4.8
Bermudagrass, (200 lb N/acre)[6]	10,000	14,000	6.3	8.9
Rhizoma Perennial Peanut[7]	8,000	14,000	5.1	8.9
Pearl Millet (225 to 300 lb N/acre)[1,4]	6,000	12,000	3.8	7.6
Sorghum X Sudangrass (225 to 300 lb N/acre)[1,4]	10,000	24,000	6.3	15.2
Small Grains (oat, wheat, etc.; 120 lb N/acre)[3]	3,780	5,040	2.4	3.2
Annual Ryegrass[2,8]	1,500	5,250	1.0	3.4
Hairy Indigo[5]	1,500	2,250	1.0	1.4

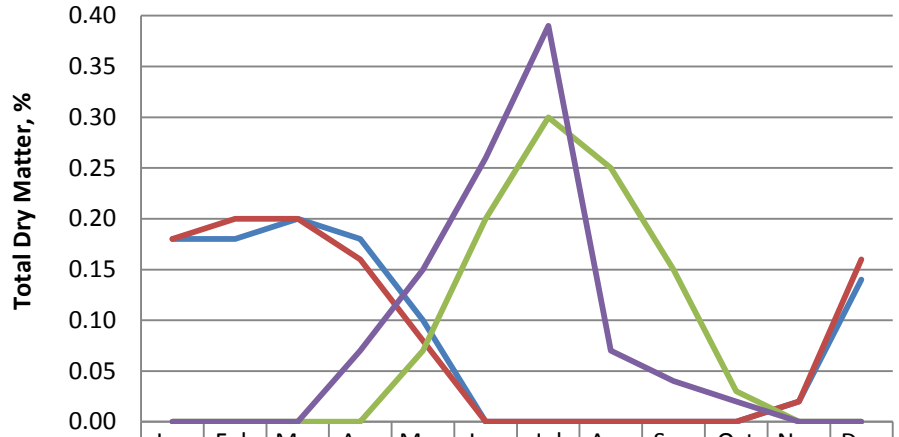
†Production data based on 25% decrease for all warm season forages except for bermudagrass, rhizoma perennial peanut, and warm season annual grasses and 10% decrease for small grains from FSG G152AA141FL.
‡Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.
#Superscript numbers refer to references.

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



	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
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



	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 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): average s53.7 (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: 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	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 2)

FSG Documentation

Inventory Data References:

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10. Sumner S., W. Wayne, J. Selph, J. Southwell, V. Hoge, P. Hogue, E. Jennings, P. Miller, and T. Seawright.1991. Fertilization of established bahiagrass pasture in Florida. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station. Cir. 916. 23 p. Available at: http://rcrec-ona.ifas.ufl.edu/pdf/publications/fertilization-established-bahia-pasture-FL.pdf. Accessed 17 December 2012.

State Correlation: (NA)

Forage Suitability Group Approval:

Greg Hendricks, State Resource Conservationist

Tom Weber, State Soil Scientist

FL NRCS
December 2012

Appendix 1. Map Unit List

Adamsville fine sand, 0 to 5 percent slopes	Lutterloh-Ridgewood complex, 0 to 3 percent slopes
Albany fine sand	Mandarin fine sand
Albany sand	Mandarin sand
Albany sand, 0 to 2 percent slopes	Mandarin-Hurricane complex, 0 to 3 percent slopes
Albany sand, 0 to 5 percent slopes	Mandarin-Lutterloh, limestone substratum complex
Albany sand, 2 to 5 percent slopes	Melvina-Mandarin complex, 0 to 3 percent slopes
Albany-Ridgewood complex	Ridgewood fine sand
Albany-Ridgewood complex, 0 to 5 percent slopes	Ridgewood fine sand, 0 to 3 percent slopes
Cassia-Pomello complex	Ridgewood fine sand, 0 to 5 percent slopes
Chipley sand, 0 to 5 percent slopes	Ridgewood sand, 0 to 5 percent slopes
Chipley sand, 5 to 8 percent slopes	Ridgewood sand, rarely flooded
Hurricane and Chipley soils, 0 to 3 percent slopes	Ridgewood-Hurricane complex, 0 to 5 percent slopes
Hurricane fine sand, 0 to 3 percent slopes	Sparr fine sand
Hurricane sand	Zolfo sand
Hurricane sand, 0 to 5 percent slopes	Ridgewood fine sand, 0 to 3 percent slopes
Lutterloh fine sand, limestone substratum	

Appendix 2: 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