FORAGE SUITABILITY GROUP

Sandy Over Loamy Soils on Flats of Hydric or Mesic Lowlands

FSG No.: G138XA241FL

Major Land Resource Area (MLRA 138): North-Central Florida Ridge

Map Unit List

Goldhead fine sand, 0 to 5 percent slopes
Mascotte fine sand
Mascotte sand
Pelham fine sand
Pelham sand

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. Consult with state extension service for current cultivar recommendations (http://agronomy.ifas.ufl.edu/foragesofflorida/).

Perennial Species:

Grasses

Warm season (Introduced)

- Bahiagrass (*Paspalum notatum*, pH 5.0 – 6.5)
- Bermudagrass (*Cynodon dactylon*)
- Limpograss (*Hemarthria altissima*)

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*)
- Purple Bluestem (*Andropogon glomeratus* var. *glaucopsis*)
- Yellow Indiangrass (*Sorghastrum nutans*)
- Lopsided Indiangrass (*Sorghastrum secundum*)
- Switchgrass (*Panicum virgatum*)
- Eastern Gamagrass (*Tripsacum dactyloides*)

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 sorghums, sudangrass, and their hybrids)

Cool season

- Ryegrass, annual (*Lolium perenne* ssp. *multi-florum*; =*L. multiflorum*)
- Oat (*Avena sativa*)
- Rye (*Secale cereale*)
- Wheat (*Triticum aestivum*)
- Triticale (x *Triticosecale*)

Legumes

Warm season

- Aeschynomene (*Aeschynomene americana*)
- Hairy Indigo (*Indigofera hirsuta*)

Cool season

- White Clover (*Trifolium repens*, pH 6.0-7.5)
- Berseem Clover (*Trifolium alexandrinum*, pH 6.5-8.0)
- Ball Clover (*Trifolium nigrescens*, pH >6.5)

Seasonal and Total Production Estimates

Soils in this FSG are similar to FSG G138XA141FL in all characteristics except the presence of a loamy sand subsoil at 20 to 40 inches. Total production of warm season forage species is expected to be more consistent than for FSG G138XA141FL. Better production can be expected during the spring due to better water holding capacity of the subsoil.

For this FSG, use of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed can be more productive than FSG G138XA141FL due to the better water holding capacity of the subsoil and better winter rainfall. Planting winter annual forages for use as a winter feed supply for the whole cow herd should be practical most years. In years of above average winter rainfall (El Niño winters), cool season annual grass forage growth may be limited on this FSG due to saturated soil conditions. Overseeding annual ryegrass on a bahiagrass pasture also should be practical in this MLRA.

For similar reasons, winter legumes should be more productive, but relatively few winter legumes are adapted to the potentially saturated soils. Grazing management and fertilization need to favor the legume component for persistence, productivity, and seed production when natural reseeding is desired. Grazing management for seed production also is important for white clover, which is weak a perennial in Florida and heavily dependent upon reseeding to persist. Due to bloat issue, clovers should be used only in mixtures with cool season grasses, overseeded on bahiagrass pastures, or when a bloat preventative supplement is fed.

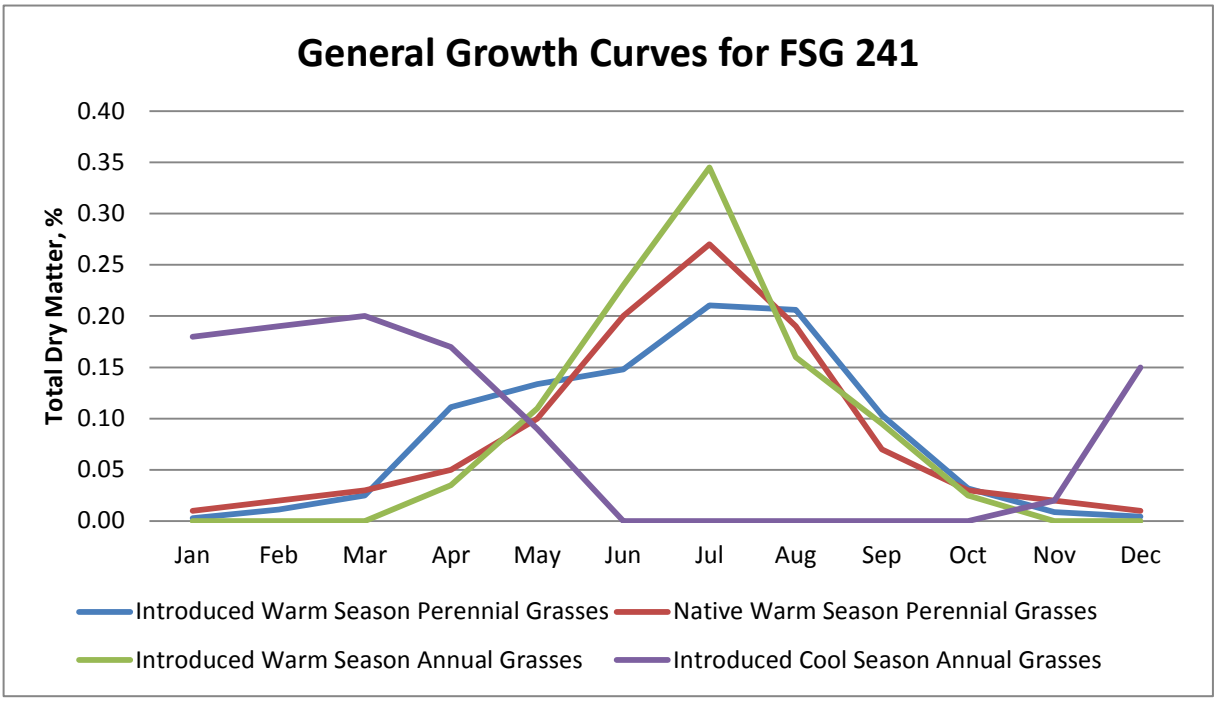
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses may be delayed in the spring due to low rainfall. Better water holding capacity of the subsoil should mitigate the effects of the typical April/May dry period. Once normal summer rainfall begins, plant production should resume. Warm season legumes such as aeschynomene can also be oversown onto warm season grasses in this forage suitability group, 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. Only bermudagrass cultivars known to be tolerant of saturated soil conditions should be used in this FSG.

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) [15,16]#	3,300	6,000	2.1	3.8
Bahiagrass (60 lb N/acre)[16]	7,700	10,000	4.9	6.4
White clover/bahiagrass[15]	6,600	8,000	4.2	5.1
Bermudagrass, (200 lb N/acre)[12]	11,000	14,000	7.1	9.0
Limpograss (≈400 lb N/acre)[9,14]	8,800	13,000	5.6	8.3
Eastern Gamagrass, Pete (100-300 lb N/A)[5,6,7]	4,000	6,750	2.5	4.3
Big Bluestem (100-300 lb N/acre)[5,6,7]	900	1,800	0.6	1.2
Rhizoma Perennial Peanut[13]	8,800	14,000	5.6	9.0
Pearl Millet (225 to 300 lb N/acre)[1,8]	6,600	12,000	4.2	7.7
Sorghum X Sudangrass (225 to 300 lb N/acre)[1,8]	11,000	24,000	7.1	15.4
Ryegrass (120 lb N/A)[3,4]	3,500	7,200	2.2	4.6
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre)[2]	6,000	7,200	3.8	4.6
Aeschynomene[11]	2,200	3,000	1.4	1.9
Hairy Indigo[10]	2,200	3,000	1.4	1.9
Cool-Season Clovers, overseeded on bahiagrass[4,6,7]	300	1,080	0.2	0.7
Cool-Season Clovers, prepared seedbed[4,6]	1,300	3,600	0.8	2.3

†Production data based on 10% increase in lower range values for FSG G138XA141FL for introduced warm season species and production similar to FSG G138XA231 for warm season natives and cool season species.
‡Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.
#Superscript numbers refer to references.

Production Curves:



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
Limpograss	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
Eastern Gamagrass	0.01	0.02	0.04	0.16	0.18	0.2	0.16	0.13	0.06	0.02	0.01	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			
White clover/Argentine Bahiagrass	0.01	0.02	0.07	0.14	0.17	0.21	0.18	0.12	0.09	0.02		
Cool Season Annual Grasses												
Annual Ryegrass	0.18	0.18	0.2	0.18	0.1						0.02	0.14
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 very deep, nearly level, poorly drained or very poorly drained soils formed 20 to 40 inches of sandy marine deposits over loamy or clayey marine deposits. These soils are on flats, slight depressions, or interfluves of marine terraces. Diagnostic subsurface horizon is an argillic horizon. The organic matter content of the surface layer is dominantly low to high. 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 270 d (range 266-278 d)

Length of growing season (>32° F 9 years in 10 at least): averages 234 d (range 225-247 d)

Annual minimum temperature (° F in month of January): averages 41.1 (range 38.6-43.5)

USDA Plant Hardiness Zone:
8b (15-20° F, Jacksonville)
8a (10-15° F, Glen St. Mary)

Mean annual precipitation (inches): averages 54.40 (range 52.24-59.65)

Soil Properties

Percent Slope: Dominantly 0 to 2 percent, but ranges to 5 percent

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

Sand Content of Surface Layer: 82 to 98 percent

Clay Content of Surface Layer: 0.3 to 10 percent

Organic Matter Content of Surface Layer: 0.5 to 12 percent

Cation Exchange Capacity of Surface Layer (meq/100g): 1.4 to 9.9

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.3 to 4.9

Bulk Density of Surface Layer (g/cc): 1.25 to 1.6

Saturated Hydraulic Conductivity of Surface Layer: Rapid

Soil Reaction of Surface Layer: 3.5 to 6.5 (unless limed). A few members have a pH between 6.5 and 8.4.

Available Water Capacity (0 to 30 inches): 0.3 to 2.4 inch per inch

Depth to Finer Textured Material: 20 to 40 inches

Depth to Bedrock: Dominantly greater than 80 inches. Some members have bedrock at less than 80 inches.

Drainage Class (Agronomic): Poorly, Very poorly

Depth to Seasonal High Water Table (during wet periods): 0 to 1 feet below the surface

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	4.89	3.82	5.09	3.28	3.27	6.23	6.84	7.12	4.86	2.98	2.69	3.34
Avg Min	41.1	43.6	49.4	54.3	62.0	68.5	71.1	70.8	67.9	57.7	50.0	43.2
Avg Temp	55.1	56.3	62.3	67.5	74.4	79.6	81.6	81.2	78.4	69.8	62.4	55.4
Avg Max	65.7	68.9	75.2	80.5	86.8	90.7	92.0	91.5	88.9	82.1	74.7	67.6

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

FSG Documentation

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State Correlation: (NA)

Forage Suitability Group Approval:

Greg Hendricks, State Resource Conservationist

Tom Weber, State Soil Scientist

FL NRCS
December 2012

Appendix 1: Climate Station Locations		
COOP ID (FL=08)	**Location**	**County**
4731	Lake City	Columbia
4394	Jasper	Hamilton
5539	Mayo	LaFayette
9120	Usher Tower	Levy
5275	Madison	Madison
5099	Live Oak	Suwannee