FORAGE SUITABILITY GROUP

Loamy and Clayey Soils on Ridges and Side Slopes of Mesic Uplands

FSG No.: G138XA312FL

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

Map Unit List

Orangeburg loamy fine sand, 2 to 5 percent slopes

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*)

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*)
- Chalky Bluestem (*Andropogon virginicus* var. *glaucus*)
- Splitbeard Bluestem (*Andropogon ternarius*)
- 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)

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

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

Cool season

- White Clover (*Trifolium repens*, pH 6.0-7.5)
- Red Clover (*Trifolium pratense*, pH 6.0 – 8.0)
- Crimson Clover (*Trifolium incarnatum*)
- Arrowleaf Clover (*Trifolium vesiculosum*)
- Austrian Winter Pea (*Pisum sativum*, pH 6.0-7.5)
- Hairy Vetch (*Vicia villosa*)
- Medics (*Medicago* spp., pH 5.5-8.0)
- Alfalfa (*Medicago sativa*, pH 6.5-7.5)

Seasonal and Total Production Estimates

Warm season grass production should be similar to FSG G138XA311FL during times of normal summer rainfall, but dry periods will effect plant growth more quickly due to less infiltration associated with steeper slope. This will be particularly noticeable in the spring.

For this forage suitability group with a depth to permanent water >6 ft, use of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed should be similar to FSG G138XA322FL only during years of above average rainfall (El Niño winters). Overseeding annual ryegrass on a bahiagrass pasture also is recommended for this forage suitability group although planting may be delayed due to dry soil conditions in the fall. If irrigation is available, see FSG G138XA322 for production information.

Clovers planted in a prepared seedbed, should be considered on this FSG although as with cool season grasses, yields will be lower than on FSG G138XA311FL due to reduced infiltration. Grazing management and fertiliza-

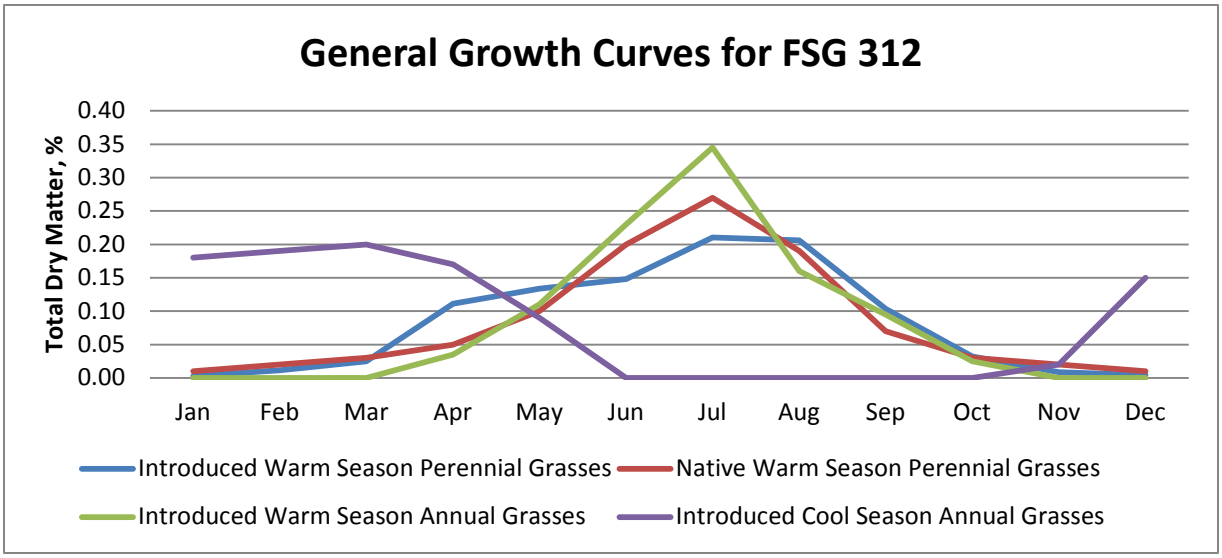
tion need to favor the legume component for persistence, productivity, and seed production when natural reseeding of annual species is desired. Grazing management for seed production also is important for white clover and red clover, normally considered perennial species, which function more as annuals in Florida and s are 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. Once normal summer rainfall begins, plant production should resume. Warm season legumes such as hairy indigo or alyceclover can be planted in a prepared seedbed. They also can 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.

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, Argentine (100-200 lb N/A)[5,6,7]#	3,950	9,800	2.5	6.3
Bahiagrass, Pensacola (100-200 lb N/A)[5,6,7]	3,700	9,150	2.4	5.9
Bahiagrass, Tifton 9 (100-200 lb N/A)[5,6,7]	6,100	10,300	3.9	6.6
Bermudagrass, Tifton 85 (100-200 lb N/A)[5,6,7]	5,650	10,550	3.6	6.8
Bermudagrass, Florakirk (100-200 lb N)[2,5,6,7]	5,900	10,150	3.8	6.5
Bermudagrass, Coastal (100-200 lb N/A)[5,6,7,10]	3,250	9,700	2.1	6.2
Eastern Gamagrass, Pete (100-300 lb N/A)[5,6,7]	3,600	6,100	2.3	3.9
Big Bluestem (100-300 lb N/acre)[5,6,7]	800	1,600	0.5	1.0
Ryegrass (120 lb N/A)[3,4]	3,200	6,500	2.0	4.2
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre)[1]	5,400	6,500	3.5	4.2
Pearl Millet (200 lb N/acre)[5,6,7]	7,200	9,000	4.6	5.8
Sorghum - Sudangrass (200 lb N/acre)[5,6,7]	9,000	10,500	5.8	6.8
Rhizoma Perennial Peanut[2]	3,150	5,100	2.0	3.3
Alfalfa[8,9]	8,100	10530	5.2	6.8
Cool-Season Clovers, overseeded on bahiagrass[4,6,7]	300	950	0.2	0.6
Cool-Season Clovers, prepared seedbed[4,6]	1,200	3,250	0.8	2.1
Alyceclover[4]	1,350	2,850	0.9	1.8
Hairy Indigo[4]	1,800	4,850	1.2	3.1

†Production data based on 10% reduction from FSG G138XA311FL due to slope.
‡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
Bermudagrass (Coastal)	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, sloping well drained soils formed in loamy and/or clayey marine deposits. These soils occur on shoulders and back slopes of marine terraces. Diagnostic subsurface horizon is an argillic horizon above 20 inches. 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 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: 5 to 8 percent

Surface Texture: Dominantly loamy sand, loamy fine sand, sandy loam or fine sandy loam. A few members are loam or clay.

Sand Content of Surface Layer: 32 to 87 percent

Clay Content of Surface Layer: 5 to 42 percent

Organic Matter Content of Surface Layer: 0.5 to 4 percent

Cation Exchange Capacity of Surface Layer (meq/100g): 1.2 to 13.6

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.3 to 7.8

Bulk Density of Surface Layer (g/cc): 1.35 to 1.65

Saturated Hydraulic Conductivity of Surface Layer: Moderate to rapid

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

Available Water Capacity (0 to 30 inches): 0.3 to 1.1 inch per inch

Depth to Finer Textured Material: Less than 20 inches

Depth to Bedrock: Greater than 80 inches.

Drainage Class (Agronomic): Well

Depth to Seasonal High Water Table (during wet periods): Greater 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	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

Inventory Data References:

1. Barnett, R.D., D.L. Wright, A.R. Soffes Blount, and R.L. Stanley. 1997. Small Grain Production Recommendations for the 1997-98 Growing Season. Univ. Florida, IFAS, Florida Coop. Ext. Ser. SS-AGR-46.
2. Dunavin, LS. 1996. Fertility Trials with Florakirk Bermudagrass and Chicory and Harvest Date Trial with Florigraze Rhizoma Peanut. Univ. Florida, IFAS, Agric. Exp. Stn., WFREC Res. Rep. WF96-4.
3. --------. 1997. Cool-Season Forage Trials, 1996-1997. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF97-5.
4. --------, and C.G. Chambliss. 2000. Cool-Season Forage Variety Trials, WFREC, Jay, FL 1999-2000. Univ. Florida, IFAS, Florida Exp. Stn. SS-AGR-85.
5. --------, and D.W. Gorbet. 2000. Variety and Other Trials of Several Forage Grasses and Legumes, Temperate Corn and Grain Sorghum. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF 00-03.
6. -------. 2001. Variety and Other Trials of Several Forage Grasses and Legumes, Temperate Corn and Grain Sorghum. Univ. Florida, IFAS, Agric. Exp. Stn., WFREC Res. Rep. WFREC Res. Rep. WF01-03.
7. -------. 2002. Variety and Other Trials of Several Forage Grasses and Legumes and Grain Sorghum. Univ. Florida, IFAS, Florida Agric. Exp. Stn., WFREC Res. Rep. WF02-03.
8. --------, H.A. Peacock, and D.W. Gorbet. 1991. Variety Trials of Warm-Season Perennial Grasses, Grain Sorghum, Millet and Sorghum X Sudangrass Hybrids, and Alfalfa, 1990. Univ. Florida, IFAS, Florida Agric. Exp. Stn., Jay, AREC Res. Rep. WF91-2.
9. --------. 1993. Variety Trials of Warm-Season Perennial Grasses, Grain Sorghum, Summer Annual Grasses, Alfalfa, and Summer Legumes. Univ. Florida, IFAS, Florida Agric. Exp. Stn., Jay AREC Res. Rep. Jay, AREC Res. Rep. WF93-2.
10. Rhoads, F.M., and R.L. Stanley, Jr. 1989. Coastal Bermudagrass Yield, Soil-pH, and Ammonium Sulfate-Nitrate Rates. Univ. Florida, IFAS, Florida Agric. Exp. Stn., NFREC-Quincy Res. Rep. 89-9.

State Correlation: (NA)

Forage Suitability Group Approval:

Greg Hendricks, State Resource Conservationist

Tom Weber, State Soil Scientist

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