FORAGE SUITABILITY GROUP

Loamy and Clayey Soils on Rises and Knolls of Mesic Uplands

FSG No.: G152AA321FL

Major Land Resource Area (MLRA 152A):

Eastern Gulf Coast Flatwoods

Map Unit List

Dothan loamy sand, 0 to 2 percent slopes

Dothan loamy 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. Irrigation is not recommended in these soils, and 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 sorghums, 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, pH6.0-7.5)
- 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 higher than FSG G152AA211 even during short term dry periods due to greater clay content in surface layer and higher seasonal water table (between 3 to 5 feet). This will be particularly noticeable in the spring.

Production of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed should practical most years for all classes of livestock throughout the MLRA. Additionally, overseeding annual ryegrass on a bahiagrass pasture is recommended for this

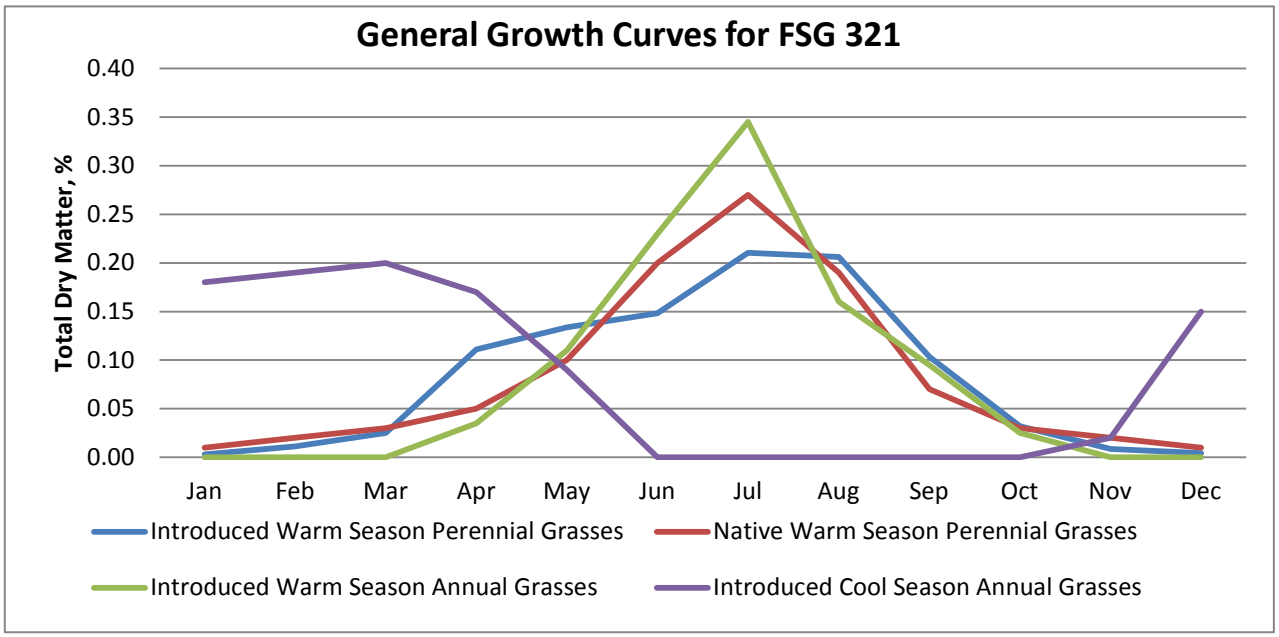
forage suitability group. If irrigation is available, forage production should be consistently at the upper end listed.

For similar reasons, cool season clovers and other cool season legumes planted in a prepared seedbed, should be considered on this FSG. Grazing management and fertilization 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 several clover species. White and red clovers are short-term perennials in Florida, but function more like annuals. Other species, like crimson clover, reseed well if the are managed properly. 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]‡	4,400	12,100	2.8	7.7
Bahiagrass, Pensacola (100-200 lb /A)[5,6,7]	4,100	11,300	2.6	7.1
Bahiagrass, Tifton 9 (100-200 lb N/A)[5,6,7]	6,800	12,800	4.3	8.1
Bermudagrass, Tifton 85 (100-200 lb N/A)[5,6,7]	6,300	13,000	4	8.3
Bermudagrass, Florakirk (100-200 lb N)[2,5,6,7]	6,300	12,500	4.2	7.9
Bermudagrass, Coastal (100-200 lb N/A)[5,6,7,10]	3,600	12,000	2.5	7.6
Eastern Gamagrass, Pete (100-300 lb N/A)[5,6,7]	4,000	7,500	2.5	4.7
Big Bluestem (100-300 lb N/acre)[5,6,7]	900	2,000	0.6	1.2
Ryegrass (120 lb N/A)[3,4]	3,500	8,000	2.2	5.1
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre)[1]	6,000	8,000	3.8	5.1
Pearl Millet (200 lb N/acre)[5,6,7]	8,000	11,100	5.1	7
Sorghum - Sudangrass (200 lb N/acre)[5,6,7]	10,000	13,000	6.3	8.2
Rhizoma Perennial Peanut[2]	3,500	6,300	2.2	4
Alfalfa[8,9]	9,000	13,000	5.7	8.2
Cool-Season Clovers, overseeded on bahiagrass[4,6,7]	300	1,200	0.2	0.7
Cool-Season Clovers, prepared seedbed[4,6]	1,300	4,000	0.8	2.6
Alyceclover[4]	1,500	3,500	0.9	2.3
Hairy Indigo[4]	2,000	6,000	1.3	3.7

†Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.
‡Superscript numbers refer to references.



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, nearly level to gently sloping, moderately well drained or well drained soils formed in loamy and/or clayey marine deposits. These soils occur on summits and shoulders 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 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): averages 53.7 (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 5 percent

Surface Texture: Loamy sand, loamy fine sand, sandy loam, fine sandy loam, or their gravelly analogs

Sand Content of Surface Layer: 56 to 88 percent

Clay Content of Surface Layer: 5 to 20 percent

Organic Matter Content of Surface Layer: 0.5 to 5 percent

Cation Exchange Capacity of Surface Layer (meq/100g): 0.5 to 5.4

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 0.4 to 5.7

Bulk Density of Surface Layer (g/cc): 1.4 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): 0.4 to 1.0 inch per inch

Depth to Finer Textured Material: Less than 20 inches

Depth to Bedrock: Greater than 80 inches.

Drainage Class (Agronomic): Moderately well, well

Depth to Seasonal High Water Table (during wet periods): 3 to 5 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	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 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. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Florida Cooperative Extension Service, SS-AGR-46.
2. Dunavin, L.S. 1996. Fertility trials with Florakirk bermudagrass and chicory and harvest date trial with Florigraze rhizoma peanut. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF96-4.
3. --------. 1997. Cool-season forage trials, 1996-1997. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF97-5.
4. --------, and C.G. Chambliss. 2000. Cool-season forage variety trials, WFREC, Jay, FL 1999-2000. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, SS-AGR-85.
5. --------, and D.W. Gorbet. 2000. Variety and Other Trials of several forage grasses and legumes, temperate corn and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF00-03.
6. -------. 2001. Variety and other trials of several forage grasses and legumes, temperate corn and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, WF01-03.
7. -------. 2002. Variety and other trials of several forage grasses and legumes and grain sorghum. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, West Florida Research and Education Center Research Report, 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. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, Jay, Agricultural Research and Education Center Research Report, WF91-2.
9. --------. 1993. Variety trials of warm-season perennial grasses, grain sorghum, summer annual grasses, alfalfa, and summer legumes. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, Jay, Agricultural Research and Education Center Research Report, WF93-2.
10. Rhoads, F.M., and R.L. Stanley, Jr. 1989. Coastal bermudagrass yield, soil-pH, and ammonium sulfate-nitrate rates. Gainesville, FL, USA: University of Florida, Institute of Food and Agricultural Sciences, Agriculture Experiment Station, North Florida Research and Education Center-Quincy Research Report 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**
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