

FORAGE SUITABILITY GROUP

Loamy and Clayey Soils on Knolls and Ridges of Mesic Uplands

FSG No.: G133AA311FL

Major Land Resource Area (MLRA 133A):

Southern Coastal Plain

Soil Series List

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

Bama	Kalmia
Cowarts	Maxton
Esto	Nankin
Faceville	Orangeburg
Greenville	Red Bay
Gritney	Shubuta

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 G133AA321 during times of normal summer rainfall, but dry periods will effect plant growth more quickly due to greater depth to permanent water table. This will be particularly noticeable in the spring.

For this FSG, cool season forages such as annual ryegrass, oats, and wheat planted should be practical most years although lower water holding capacity means that production will more often be at the lower end of FSG G133AA321. 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 G133AA321 for production information.

Due to the clay and loam content of the soils in this FSG, cool season legumes should be relatively productive. Clovers 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 perennial clover species. White clover and red clover are short term perennial species in Florida, but function more like annuals, and seed production is important for stand persistence. 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.

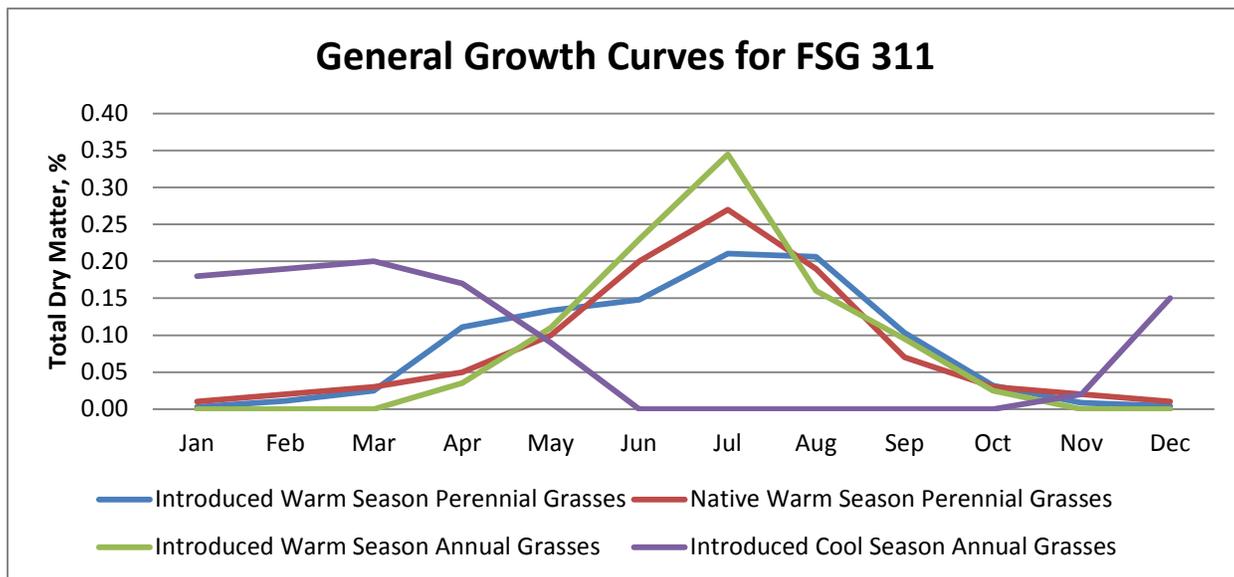
Expected Range in Dry Matter Production and Animal Unit Months (AUM) for Different Forages†				
Forage	Range in Dry Matter, lbs/acre		Range in AUM/acre‡	
Bahiagrass, Argentine (100-200 lb N/A) ^{5,6,7,#}	4,400	10,900	2.8	7.0
Bahiagrass, Pensacola (100-200 lb N/A) ^{5,6,7}	4,100	10,150	2.6	6.5
Bahiagrass, Tifton 9 (100-200 lb N/A) ^{5,6,7}	6,800	11,500	4.4	7.4
Bermudagrass, Tifton 85 (100-200 lb N/A) ^{5,6,7}	6,270	11,700	4.0	7.5
Bermudagrass, Florakirk (100-200 lb N) ^{2,5,6,7}	6,570	11,300	4.2	7.2
Bermudagrass, Coastal (100-200 lb N/A) ^{5,6,7,10}	3,600	10,800	2.3	6.9
Eastern Gamagrass, Pete (100-300 lb N/A) ^{5,6,7}	4,000	6,750	2.6	4.3
Big Bluestem (100-300 lb N/acre) ^{5,6,7}	870	1,800	0.6	1.2
Ryegrass (120 lb N/A) ^{3,4}	3,530	7,200	2.3	4.6
Small Grain Forage (oat, wheat, etc.; 120 lb N/acre) ¹	6,000	7,200	3.8	4.6
Pearl Millet (200 lb N/acre) ^{5,6,7}	8,000	10,000	5.1	6.4
Sorghum - Sudangrass (200 lb N/acre) ^{5,6,7}	10,000	11,700	6.4	7.5
Rhizoma Perennial Peanut ²	3,500	5,650	2.2	3.6
Alfalfa ^{8,9}	9,000	11,700	5.8	7.5
Cool-Season Clovers, overseeded on bahiagrass ^{4,6,7}	300	1,100	0.2	0.7
Cool-Season Clovers, prepared seedbed ^{4,6}	1,330	3,600	0.9	2.3
Alyceclover ⁴	1,500	3,150	1.0	2.0
Hairy Indigo ⁴	2,000	5,400	1.3	3.5

†Production data based on 10% reduction in upper yield range of FSG G133AA321FL.

‡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, nearly level or gently sloping, well drained soils formed in loamy and/or clayey marine deposits. These soils occur on summits, 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 255 d (range 243-273 d)

Length of growing season (>32° F 9 years in 10 at least): averages 224 d (range 205-247 d)

Annual minimum temperature (° F in month of January):
 averages 38.2 (range 36.7-39.7)

USDA Plant Hardiness Zone:
 8b (15-20° F, Tallahassee)

Mean annual precipitation (inches):
 averages 62.14 (range 53.18-69.48)

Group Soil Properties (Statewide)

Percent Slope: 0 to 5 percent

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

Sand Content of Surface Layer: 32 to 95 percent

Clay Content of Surface Layer: 4 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 1.68

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. A few members have bedrock between 40 and 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	4.80	6.37	3.78	4.45	6.36	7.04	6.32	5.24	3.31	4.16	4.09	4.80
Avg Min	38.2	40.8	46.9	99.8	60.8	67.8	70.7	70.3	66.4	54.6	46.5	41.3
Avg Temp	51.6	54.9	61.2	67.0	74.4	80.2	82.1	81.8	78.7	69.9	61.5	54.4
Avg Max	62.2	66.1	72.5	78.7	85.3	90.1	91.5	91.0	88.0	80.3	71.9	64.5

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

FSG Documentation

Inventory Data References:

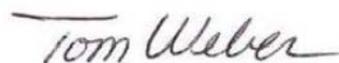
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10. Rhoads, F.M., and R.L. Stanley, Jr. 1989. Coastal Bermudagrass Yield, Soil-pH, and Ammonium Sulfate-Nitrate Rates. Univ. Florida, IFAS, Florida Agric. Exp. Stn., NFREC-Quincy Res. Rep. 89-9.

State Correlation: Pending

Forage Suitability Group Approval:



Rosalind Moore, Acting State Resource Conservationist



Tom Weber, State Soil Scientist

Appendix 1. Map Unit List

Bama fine sandy loam, 0 to 2 percent slopes	Maxton loamy fine sand
Bama fine sandy loam, 2 to 5 percent slopes	Maxton loamy fine sand, 2 to 5 percent slopes
Cowarts loamy fine sand, 2 to 5 percent slopes	Nankin-Cowarts complex, 2 to 5 percent slopes, eroded
Cowarts-Nankin complex, 2 to 5 percent slopes	Orangeburg fine sandy loam, 2 to 5 percent slopes
Esto fine sandy loam, 2 to 5 percent slopes	Orangeburg loamy sand, 0 to 2 percent slopes
Esto loam, 2 to 5 percent slopes	Orangeburg sandy loam, 0 to 2 percent slopes
Esto loamy sand, 2 to 5 percent slopes	Orangeburg sandy loam, 1 to 5 percent slopes
Faceville fine sandy loam, 2 to 5 percent slopes	Orangeburg sandy loam, 2 to 5 percent slopes
Faceville loamy fine sand, 2 to 5 percent slopes	Red Bay fine sandy loam, 0 to 2 percent slopes
Faceville sandy loam, 2 to 5 percent slopes	Red Bay fine sandy loam, 2 to 5 percent slopes
Greenville fine sandy loam, 2 to 5 percent slopes	Red Bay sandy loam, 0 to 2 percent slopes
Gritney loamy sand, 2 to 5 percent slopes	Red Bay sandy loam, 2 to 5 percent slopes
Kalmia loamy fine sand, 2 to 5 percent slopes	Shubuta fine sandy loam, 2 to 5 percent slopes

Appendix 2: Climate Station Locations		
COOP ID (FL=08)	Location	County
1544	Chipley	Washington
1986	Crestview	Okaloosa
2220	De Funiak Springs	Walton
3230	Fountain	Bay
5275	Madison	Madison
5793	Milton Exp. Stn.	Santa Rosa
5879	Monticello	Jefferson
6240	Niceville	Okaloosa
7429	Quincy	Gadsden
8758	Tallahassee Mun. Air.	Leon