

FORAGE SUITABILITY GROUP

Sandy Soils, on Flats on Mesic and Hydric Lowlands

FSG No.: G152AA141FL

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.

Chaires	Osier
Chaires low	Pelham
Clara	Placid
EauGallie	Plummer
Holopaw	Pompano
Immokalee	Pottsburg
Leon	Rutlege
Lynn Haven	Sapelo
Meadowbrook	Scranton
Meadowbrook slough	Scranton slough
Myakka	Smyrna

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*)
- Limpograss (*Hemarthria altissima*)

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*,)
- Purple Bluestem (*Andropogon glomeratus* var. *glaucoptis*)
- Yellow Indiangrass (*Sorghastrum nutans*)
- Lopsided Indiangrass (*Sorghastrum secundum*)
- Switchgrass (*Panicum virgatum*)

Legumes

Warm season (Introduced)

- 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

- 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

This soil group is the widest and most utilized for improved pastures in South Florida and is often referred to as a "Flatwoods" or "Prairie" soil. Surface and subsurface texture is predominantly fine sand or sandy soils with moderate water holding capacity, and a seasonal high water table ranging from 0 - 1 foot during wet periods. Soils are generally flat with a slope no greater than 5%, with very brief ponding following large seasonal rainfall events on some soils in this series. The ponding usually lasts less than 14 days with minimum to no negative impacts on production of adapted forage species. Total production of all forage species is expected to be higher than other groups due to increased available water during the growing season.

Planting winter annual forages for use as a winter feed supply for the whole cow herd may be practical most years in this MLRA. Overseeding annual ryegrass on a bahiagrass pasture also is an option.

White clover, berseem clover, and ball clover are the only winter legumes recommended for this FSG due to their better tolerance to saturated soil conditions. Grazing management and fertilization need to favor the legume component for persistence. Even then, reseeding every other year may be necessary. White clover normally considered a perennial species, functions more as an annual in Florida and is heavily dependent upon reseeding to persist. Due to bloat issue, clover should be used only in mixtures unless bloat preventative treatments are fed.

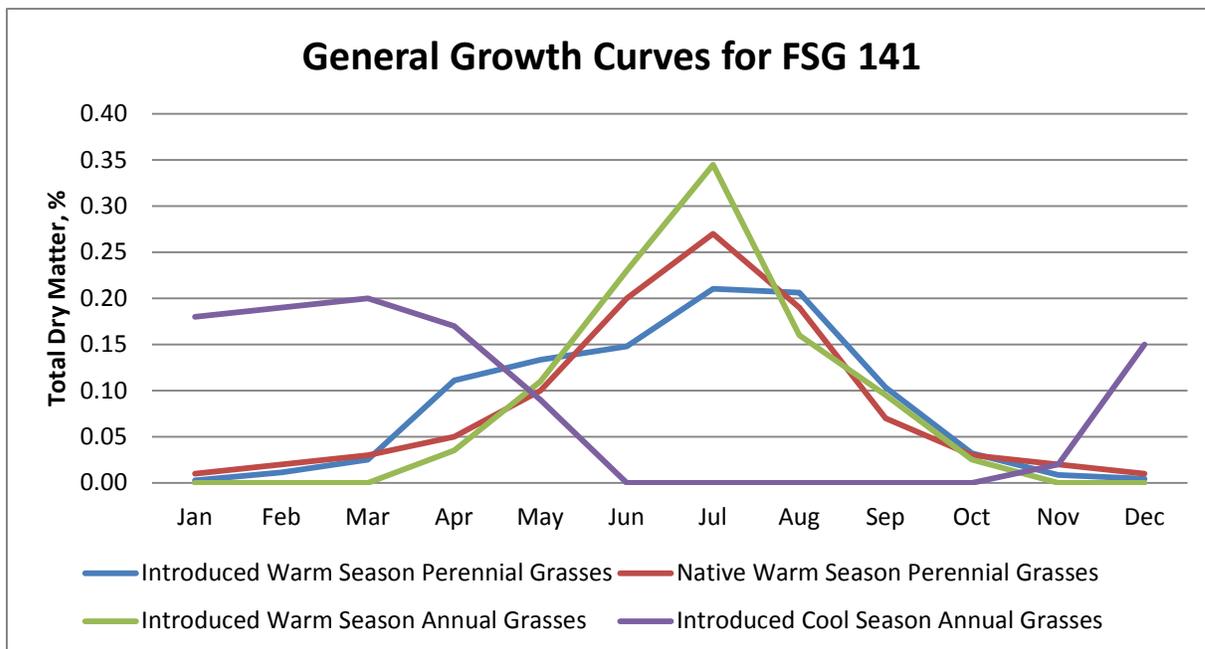
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses may be delayed in the spring due to low rainfall. Often production of perennial species also dips during the April/May dry period. Once normal summer rainfall begins, plant production should resume. 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 on 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) ^{12,13‡}	3,000	6,000	1.9	3.8
Bahiagrass (60 lb N/acre) ¹³	7,000	10,000	4.5	6.4
White Clover/Bahiagrass ¹²	6,000	8,000	3.8	5.1
Bermudagrass, (200 lb N/acre) ⁸	10,000	14,000	6.4	9.0
Limpograss (≈400 lb N/acre) ^{5,11}	8,000	13,000	5.1	8.3
Rhizome Perennial Peanut ⁹	8,000	14,000	5.1	9.0
Pearl Millet (225 to 300 lb N/acre) ^{1,4}	6,000	12,000	3.8	7.7
Sorghum X Sudangrass (225 to 300 lb N/acre) ^{1,4}	10,000	24,000	6.4	15.4
Small Grains (oat, wheat, etc.; 120 lb N/acre) ^{3#}	4,200	5,600	2.7	3.6
Annual Ryegrass ^{2,10}	2,000	7,000	1.3	4.5
Aeschynomene ⁷	2,000	3,000	1.3	1.9
Hairy Indigo ⁶	2,000	3,000	1.3	1.9

†Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.

‡Superscript numbers refer to references.

#Production data based on 30% reduction yield range of FSG G152AA321FL.



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
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 in sandy marine deposits. These soils are on flats, slight depressions, or interfluvies. These soils have 40 inches to greater than 80 inches of fine sand or sand. Diagnostic subsurface horizons are either a spodic horizon within 30 inches, an argillic horizon below 40 inches or both. Some soils lack a diagnostic subsurface horizon. A few members have either a mollic or umbric horizon. The organic matter content of the surface layer is dominantly medium or 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 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 S: 0 to 2 percent, but ranges to 5 percent

Surface Texture: Fine sand, sand, loamy fine sand

Sand Content of Surface Layer: 86 to 99 percent

Clay Content of Surface Layer: 0.4 and 7 percent

Organic Matter Content of Surface Layer: 0.5 to 6 percent, a few members may range up to 10 percent

Cation Exchange Capacity of Surface Layer (meq/100g):
 0.1 to 6.5

Effective Cation Exchange Capacity of Surface (meq/100g): 0.1 to 11.2

Bulk Density of Surface Layer (g/cc): 1.2 to 1.6

Saturated Hydraulic Conductivity of Surface: Rapid or very rapid

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

Available Water Capacity (0 to 30 inches): 0.2 to 2.5 inch per inch

Depth to Finer Textured: 40 to more than 80 inches

Depth to Bedrock: Dominantly more than 80 inches. A few 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 foot

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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State Correlation: (NA)

Forage Suitability Group Approval:



Greg Hendricks, State Resource Conservationist



Tom Weber, State Soil Scientist

Appendix 1: Map Unit List	
Chaires fine sand	Meadowbrook-Chaires complex
Chaires fine sand, limestone substratum	Myakka sand
Chaires fine sand, rarely flooded	Myakka, limestone substratum-Immokalee complex
Chaires sand	Osier fine sand
Chaires, limestone substratum-Leon complex	Osier sand
Chaires, limestone substratum-Meadowbrook complex	Pelham loamy fine sand
Chaires, limestone substratum-Meadowbrook, limestone substratum, complex, rarely flooded	Placid fine sand
Chaires, low-Meadowbrook complex	Plummer fine sand
Clara and Osier fine sands	Plummer fine sand
EauGallie-Holopaw complex, limestone substratum	Plummer sand
Holopaw fine sand	Plummer sand, 0 to 5 percent slopes
Immokalee fine sand	Plummer, Sapelo, and Pottsburg soils
Immokalee, limestone substratum-Janney complex	Pottsburg fine sand
Leon fine sand	Pottsburg sand
Leon fine sand, rarely flooded	Rutlege fine sand
Leon sand	Sapelo fine sand
Lynn Haven fine sand	Sapelo sand
Lynn Haven sand	Scranton fine sand
Meadowbrook fine sand	Scranton sand
Meadowbrook sand	Scranton sand, slough
Meadowbrook sand, slough	Smyrna fine sand

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