

FORAGE SUITABILITY GROUP

Sandy Over Loamy, Loamy and Clayey Soils on Rises and Knoll of Hydric Uplands

FSG No.: G154XB441FL

Major Land Resource Area (MLRA 154): South-Central Florida Ridge

Map Unit List

- Bivans sand, 2 to 5 percent slopes
- Blichton fine sand, 0 to 2 percent slopes
- Blichton fine sand, 2 to 5 percent slopes
- Blichton loamy fine sand, 0 to 2 percent slopes
- Blichton sand, 0 to 2 percent slopes
- Blichton sand, 2 to 5 percent slopes
- Fellowship gravelly loamy sand, gravelly subsoil
- Fellowship loamy sand, 2 to 5 percent slopes
- Flemington fine sandy loam, 0 to 2 percent slopes
- Flemington fine sandy loam, 2 to 5 percent slopes
- Flemington loamy sand, 0 to 2 percent slopes
- Flemington loamy sand, 2 to 5 percent slopes
- Flemington Variant fine sand, 2 to 5 percent
- Wacahoota gravelly sand, gravelly subsoil variant,

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. Irrigation is not recommended in these soils, and 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*)
- Stargrass (*Cynodon nlemfuensis*, adapted on these soils only south of I-4)
- Limpograss (*Hemarthria altissima*)

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*, northern half of MLRA)
- Purple Bluestem (*Andropogon glomeratus* var. *glaucopsis*)
- Yellow Indiangrass (*Sorghastrum nutans*, northern half of MLRA)
- 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)
- Carpon desmodium (*Desmodium heterocarpon*)

Annual Species:

Grasses

Warm season

- Browntop Millet (*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 and Forbs

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*)

Seasonal and Total Production Estimates

Production on in this FSG would be expected to be similar to but less variable than FSG G154XB141FL most times of the year due to loam and/or clay in the subsoil. The water table will perch above the loamy layer and seepage slopes will be present on sites with slopes >2%.

For this FSG, use of cool season forages such as annual ryegrass, oats, and wheat planted in a prepared seedbed is dependent upon the location in the MLRA. Forage production is usually at the middle to lower end of the production range due to limited and sporadic rainfall during fall and winter months, particularly in the southern half of this MLRA. Additionally in the southern portion of the MLRA, warm temperatures persisting into the fall and returning quickly in the spring greatly shorten the production period for cool season forages. Thus in the southern portion of the MLRA, cool season forages generally will only produce sufficient winter grazing in years with average and above average rainfall (El Niño winters) for specialized management uses such as creep grazing, early weaning, or purebred operations. While in more northerly locations in the MLRA, planting winter annual forages for use as a winter feed supply for the whole cow herd may be practical most years due to better winter rainfall. Overseeding annual ryegrass on a bahiagrass pasture also is not recommended in the southern end of this MLRA, due to excessive competition from bahiagrass for soil moisture, but may be an option in the northern portions of the MLRA.

Similarly winter legumes are less productive the further south in the MLRA the site is located. White clover, berseem clover, and ball clover are the only winter legume recommended for this FSG due to its 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, which is normally considered a perennial species, functions more as an annual in Florida and thus is heavily dependent upon reseeding to persist. Due to bloat issue, white clover should be used only in mixtures unless bloat preventative treatments are fed.

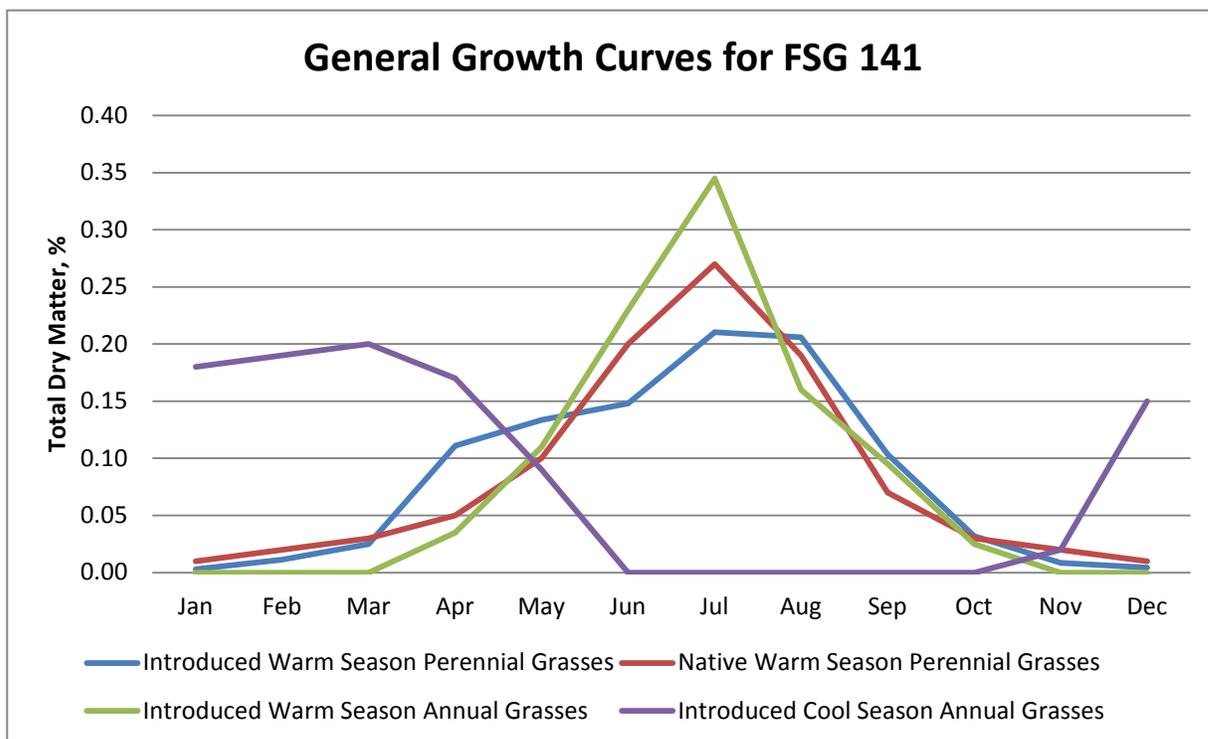
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses may be delayed in the spring due to low rainfall. Often production of perennial species also dips during the April/May dry period. Once normal summer rainfall begins, plant production should resume. Warm season legumes such as aescynomene and carpon desmodium 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. Improved grass varieties such as stargrass and limpograss may also be grown on these soils although stargrass is generally limited to the part of the MLRA south of the US I-4 corridor. Limpograss should be limited to soils where drainage has not been altered.

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} #	3,750	6,600	2.4
Bahiagrass (60 lb N/acre) ¹³	8,750	11,000	5.6	7.1
Carpon desmodium/Bahiagrass ⁶	8,125	9,350	5.2	6.0
White Clover/Bahiagrass ¹²	7,500	8,800	4.8	5.6
Bermudagrass, (200 lb N/acre) ⁸	12,500	15,400	8.0	9.9
Stargrass (≈400 lb N/acre) ¹¹	13,750	16,500	8.8	10.6
Limpograss (≈400 lb N/acre) ^{4, 11}	10,000	14,300	6.4	9.2
Rhizome Perennial Peanut ⁹	10,000	15,400	6.4	9.9
Pearl Millet (225 to 300 lb N/acre) ^{1, 3}	7,500	13,200	4.8	8.5
Sorghum X Sudangrass (225 to 300 lb N/acre) ^{1, 3}	12,500	26,400	8.0	16.9
Aeschynomene ⁷	2,500	3,300	1.6	2.1
Hairy Indigo ⁵	2,500	3,300	1.6	2.1
Annual Ryegrass ^{2, 10}	2,500	7,700	1.6	4.9

†Production data based on 25% increase in lower and 10% increase in upper range values for FSG G154XB141FL.

‡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 (Jiggs)	0.01	0.01	0.02	0.13	0.14	0.13	0.21	0.22	0.09	0.02	0.01	0.01
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
Stargrass		0.01	0.02	0.06	0.14	0.15	0.19	0.19	0.11	0.09	0.03	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			
Carpon Desmodium/Bahiagrass		0.01	0.03	0.14	0.16	0.15	0.15	0.13	0.10	0.06	0.03	0.03
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, poorly drained soils formed in sandy over loamy, loamy, or clayey marine deposits. These soils are on flats, summits, and shoulders of marine terraces. Diagnostic horizon is an argillic horizon above 40 inches. The organic matter content of the surface layer is dominantly low or medium. Unless limed, the reaction in the surface layer ranges from extremely acid to moderately acid.

Climatic Features

Freeze-free period (>28° F 9 years in 10 at least): averages 316 d (range 278-365 d)

Length of growing season (>32° F 9 years in 10 at least): averages 285 d (range 243-365 d)

Annual minimum temperature (° F in month of January): average 50.2 (range 45.2-59.2)

USDA Plant Hardiness Zone:
 9a (20-25° F, Ocala)
 9b (25-30° F, Orlando)

Mean annual precipitation (inches): averages 51.09 (range 47.70-67.03)

Soil Properties

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

Surface Texture: Fine sand, sand, loamy sand, loamy fine sand, or their gravelly analogs

Sand Content of Surface Layer: 70 to 95 percent

Clay Content of Surface Layer: 3 to 15 percent

Organic Matter Content of Surface Layer: 0.5 to 6 percent

Cation Exchange Capacity of Surface Layer (meq/100g): Not available

Effective Cation Exchange Capacity of Surface Layer (meq/100g): 1.3 to 7.1

Bulk Density of Surface Layer (g/cc): 1.3 to 1.53

Saturated Hydraulic Conductivity of Surface Layer: Rapid

Soil Reaction of Surface Layer: 3.5 to 6.0 (unless limed)

Available Water Capacity (0 to 30 inches): 0.4 to 1.1 inch per inch

Depth to Finer Textured Material: Less than 40 inches

Depth to Bedrock: Greater than 80 inches

Drainage Class (Agronomic): Poorly

Depth to Seasonal High Water Table (during wet periods): 0 to 1 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	3.04	2.89	3.69	2.40	3.52	6.86	7.17	7.36	6.22	2.79	2.38	2.47
Avg Min	48.1	49.6	54.4	58.5	65.0	70.7	72.3	72.5	71.0	61.0	56.6	51.0
Avg Temp	60.0	61.5	66.4	68.6	76.6	80.8	81.8	81.8	80.4	74.2	67.5	61.5
Avg Max	70.8	72.9	77.9	82.4	87.7	90.6	91.7	91.4	89.5	84.0	77.9	72.2

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

FSG Documentation

Inventory Data References:

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State Correlation:

Forage Suitability Group Approval:



Greg Hendricks, State Resource Conservationist



Tom Weber, State Soil Conservationist

Appendix 1: Climate Station Locations		
COOP ID (FL=08)	Location	County
945	Bradenton	Manatee
6414	Ocala	Marion
6628	Orlando Intl. Air.	Orange
7851	St. Leo	Pasco
7886	St. Petersburg	Pinellas
8824	Tarpon Springs	Pinellas
478	Bartow	Polk
4707	Lake Alfred Exp Stn	Polk
4797	Lakeland	Polk
5973	Mountain Lake	Polk
9707	Winter Haven	Polk
1978	Crescent City	Putnam
2915	Federal Point	Putnam
6753	Palatka	Putnam
7982	Sanford Orlando	Seminole
1163	Bushnell	Sumter
2229	Deland	Volusia