FORAGE SUITABILITY GROUP

Sandy Over Loamy Soils on Rises and Knoll of Mesic Uplands

FSG No.: G154XB231FL

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

Map Unit List

Jumper fine sand, 0 to 5 percent slopes
Lochloosa fine sand
Lochloosa fine sand, 0 to 2 percent slopes
Lochloosa fine sand, 0 to 5 percent slopes
Lochloosa fine sand, 2 to 5 percent slopes
Lochloosa fine sand, 5 to 8 percent slopes
Lochloosa sand
Nobleton fine sand, 0 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*)
- Stargrass (*Cynodon nlemfuensis*, adapted on these soils only south of I-4*)*

Warm season (Native)

- Big Bluestem (*Andropogon gerardii*, northern half of MLRA)
- 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 (*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

- Alyceclover (*Alysicarpus vaginalis*)
- Hairy Indigo (*Indigofera hirsuta*)
- Cow Pea (*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*)

Seasonal and Total Production Estimates

Although seasonal and total forage production may be limited during low rainfall periods, degree and duration of drought effects should be less than for FSG G154XB131 due relatively shallow, loamy subsoils in this group. Soils in this group have moderate water holding capacity and a seasonal high water table ranging from 1 - 3 foot during wet periods. Irrigation is commonly used for crop production on these soils and can be found on old abandoned crop land converted to improved pastures; however, increases in yield's related to irrigation are not well documented for these soils.

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, this FSG will generally 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. Overseeding annual ryegrass on a bahiagrass pasture may be a reasonable option most years, particularly in the northern portion of the MLRA.

White clover is reasonably adapted throughout the MLRA on this FSG, while crimson clover and red clover are reasonably well adapted to this FSG in the northern end of the MLRA. Grazing management and fertilization need to favor the legume component for persistence. Even then, reseeding every other year may be necessary. White clover and red clover, which are normally considered perennial species, function more as annuals in Florida and thus also are heavily dependent upon reseeding to persist. Due to bloat issue, clovers should be used only in mixture, overseeded onto warm season grasses, or when a bloat preventative supplement is fed.

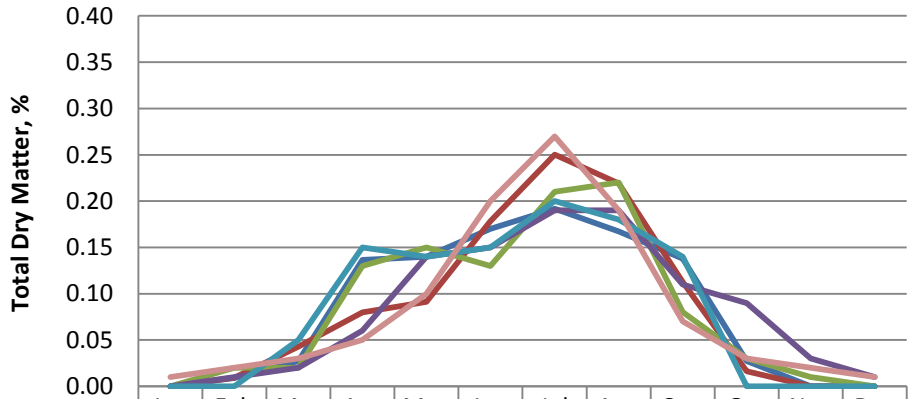
Initial growth of perennial warm season grasses and legumes or establishment of warm season annual grasses or legumes may be delayed in the spring due to low rainfall. Often production of perennial species also dips during the April/May dry period. Once normal summer rainfall begins, plant production should resume. Carpon desmodium can also be oversown onto bahiagrass stands in this forage suitability group, although root knot nematodes may limit the production of the legume after a few years. Annual legumes such as hairy indigo or alyceclover can be oversown on bahiagrass stands 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 (0 lb N/acre) [10,11]#	2,800	4,500	1.8	2.9
Bahiagrass (60 lb N/acre)[11]	6,550	7,500	4.2	4.8
Carpon desmodium/Bahiagrass[5]	6,100	6,400	3.9	4.1
Bermudagrass, (200 lb N/acre)[6]	12,500	14,000	8.0	6.7
Stargrass (≈400 lb N/acre)[9]	10,300	11,250	6.6	7.2
Rhizome Perennial Peanut[7]	10,000	14,000	6.4	6.7
Pearl Millet (225 to 300 lb N/acre)[1,3]	7,500	12,000	4.8	5.8
Sorghum X Sudangrass (225 to 300 lb N/acre)[1,3]	12,500	24,000	8.0	11.5
Hairy Indigo[4]	1,900	2,250	1.2	1.4
Annual Ryegrass[2,8]	1,900	5,250	1.2	3.4

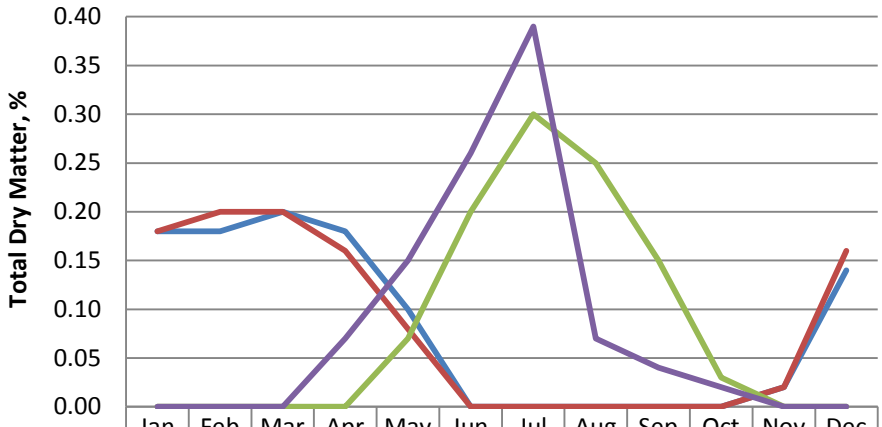
† Production data based on 25% increase in lower range values for FSG G154XB131FL.
‡Animal Unit Month based on 50% grazing efficiency and 2.6% intake per day.
#Superscript numbers refer to references.

Growth Curves and Dry Matter Distribution for Perennial Species in FSG 231



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahiagrass (Pensacola)	0.00	0.01	0.03	0.14	0.14	0.17	0.19	0.17	0.14	0.03	0	0
Bahiagrass (Argentine)	0.00	0.01	0.04	0.08	0.09	0.18	0.25	0.22	0.11	0.02	0	0
Bermudagrass (Tifton 85)	0	0.02	0.02	0.13	0.15	0.13	0.21	0.22	0.08	0.03	0.01	0.00
Stargrass	0.00	0.01	0.02	0.06	0.14	0.15	0.19	0.19	0.11	0.09	0.03	0.01
Rhizoma Perennial Peanut	0.00	0.00	0.05	0.15	0.14	0.15	0.20	0.18	0.14	0	0	0
Native Warm Season Perennial Grasses	0.01	0.02	0.03	0.05	0.1	0.2	0.27	0.19	0.07	0.03	0.02	0.01

Growth Curves and Dry Matter Distribution for Annual Species in FSG 231



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Annual Ryegrass	0.18	0.18	0.2	0.18	0.1	0	0	0	0	0	0.02	0.14
Smallgrains	0.18	0.2	0.2	0.16	0.08	0	0	0	0	0	0.02	0.16
Sorghum-Sudangrass	0	0	0	0	0.07	0.2	0.3	0.25	0.15	0.03	0	0
Millet (Pearl and Browntop)	0	0	0	0.07	0.15	0.26	0.39	0.07	0.04	0.02	0	0

Physiographic Features

Dominantly very deep, nearly level to sloping, somewhat poorly drained or moderately well drained soils formed in 20 to 40 inches of sandy marine deposits over loamy marine deposits. These soils occur on summits, shoulders, and back slopes of marine terraces. Diagnostic subsurface horizon is an argillic horizon. 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 slightly 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 0 to 8 percent

Surface Texture: Fine sand, sand, Loamy fine sand, loamy sand

Sand Content of Surface Layer: 79 to 97 percent

Clay Content of Surface Layer: 0.8 to 10 percent

Organic Matter Content of Surface Layer: 0.5 to 4 percent

Cation Exchange Capacity of Surface Layer (meq/100g): 1.1 to 5.5

Effective Cation Exchange Capacity of Surface (meq/100g): 0.2 to 3.4

Bulk Density of Surface (g/cc): 1.38 to 1.58

Saturated Hydraulic Conductivity of Surface Layer: Rapid

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

Available Water Capacity (0 to 30 inches): 0.4 to 1.5 inch per inch

Depth to Finer Textured Material: 20 to 40 inches

Depth to Bedrock: Greater than 80 inches. A few members have bedrock between 40 and 80 inches.

Drainage Class (Agronomic): Somewhat poorly, moderately well

Depth to Season High Water Table (during wet periods): 1 to 3 feet below the surface

Flooding: None. A few members are 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	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

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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: 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