

# FLORICO STARGRASS

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Florico stargrass was released to commercial growers cooperatively by the Florida Agricultural Experiment Station, Institute of Food and Agricultural Sciences University of Florida, Puerto Rico Agricultural Experiment Station; and USDA, ARS, TARS (Puerto Rico).

NOTE: Bulletin 233 (12) presents numerous detailed data on the performance of Florico in Puerto Rico. Florico stargrass was evaluated as Puerto Rico Plant Introduction (PI) 2341 and is known as star in Puerto Rico.

## SUMMARY

**Description.** - 'Florico' stargrass (*Cynodon nlemfuensis* Vandyerst var. *nlemfuensis* 'Florico') is a dark green pubescent (covered with hairs) perennial grass with long robust stolons that are similar to 'Ona' stargrass.

**Adaptability.** - Well adapted to many south-Florida flatwoods soils, but will not tolerate long periods of flooding. Is not recommended north of a line between Brooksville and Orlando because of cool temperatures.

**Planting.** - Propagated by vegetative material, with few or no seeds produced.

**Fertilization.** - Florico stargrass has a high fertility requirement equal to other bermudagrasses and stargrasses.

**Production.** - Forage dry matter yield harvested at a 5-week interval averaged about 6.6 t/A annually.

**Forage Quality.** - Digestibility of this grass is quite similar to Pangola digitgrass.

**Insects.** - Susceptible to armyworms (*Spodoptera frugiperda* (J.E. Smith) ) and grass loopers (*Mocis latipes* (Guene'e) ).

**Disease.** - Under certain conditions during August and September 1983, foliar blight caused by (*Rhizoctonia solani* Kuhn, AG-1) was observed on this grass.

**Nematodes.** - Florico stargrass plants were found to support ectoparasitic nematodes such as stubby-root and sheath species.

## IMPORTANT CHARACTERISTICS

### Advantage

1. Two-year daily gain of 1.2 lb and 720 lb liveweight gain/A at a stocking rate of 3 yearling steers/A.
2. Digestibility about 2% to 3% higher than Ona stargrass.
3. Dry matter yields generally higher than Ona stargrass at Ona and Immokalee.
4. Generally more persistent than Ona stargrass.
5. Makes excellent growth in late fall and spring with adequate moisture and fertility.
6. Nutritious when harvested or grazed every 4 to 5 weeks.
7. Rapid establishment from vegetative cuttings.
8. Hay cures rapidly during favorable weather conditions.

### Disadvantage

1. Requires a higher fertility program than bahiagrass, limpograss or digitgrass.
2. Forage quality drops rapidly after 5 weeks of regrowth and following a heavy frost.
3. Top growth killed easily by frost.
4. High HCN-p for about a 4-week period following heavy N fertilization (100lb/A) anytime during the growing season.
5. Should not be grown north of Orlando in Florida or where temperatures drop below 20° to 25°F (-6.7° to -3.9°C).
6. Vegetatively propagated from stem cuttings.
7. Produces little forage during drought stress period of April and early May. Refer to Bulletin 233 (12) for response to tropical conditions.

## INTRODUCTION

'Florico' stargrass (*Cynodon nlemfuensis* Vanderyst var. *nlemfuensis*, 'Florico' Puerto Rico PI 2341) is a dark green pubescent perennial grass well adapted to many south Florida flatwoods soils. The tropical nature of this stargrass limits its productivity and persistence to the southern two-thirds of peninsular Florida (south of Orlando). Florico stargrass spreads rapidly from vegetative planting when established in a well prepared seed bed. When adequate moisture and fertility are available, a dense, solid stand of grass 24 inches high can be obtained in 90 days. When this grass is planted into a clean seed bed void of common bermudagrass (*C. dactylon* (L.)

Pers.) and rotationally grazed at plant heights of 12 to 28 inches to a stubble height of 6 to 10 inches persistence is good. This management treatment allows Florico to compete well with common bermudagrass.

Florico stargrass is responsive to high rates of fertilization, therefore an intensive grazing program must be followed to obtain maximum utilization and return from the forage. The combination of high yields and high digestibility of this grass result in excellent animal performance. Allowing Florico to grow 7 or more weeks before harvest or grazing, results in low quality, mature forage, with beef and dairy cattle rejecting many of the mature stems. Forage production from this grass in the spring (April and May) is generally limited due to drought stress conditions in Florida. However the grass continues to produce forage during the cool period of November and early December if adequate fertility is available. Ecological conditions in the tropics may result in variations in this performance pattern. The hydrocyanic acid potential (HCN-p) is higher under heavy nitrogen (N) fertilization especially at a young physiological stage, however, no detrimental effect on grazing cattle at Ona have been attributed to this grass. Insect problems appear to be limited to armyworms (*Spodoptera frugiperda* (J.E. Smith) ) and grass loopers (*Mocis latipes* (Guene'e) ). In August and September of 1983 a foliar blight caused by (*Rhizoctonia solani* Kuhn, AG-1) was observed on this grass in small plots adjacent to other stargrasses and bermudagrasses. The ectoparasitic nematodes stubby-root (*Paratrichodorus* spp.) and sheath (*Hemicycliophora* spp.) were both found to be supported by this grass.

Florico stargrass has many similar characteristics to 'Ona' stargrass (*C. nlemfuensis* Vanderyst var. *nlemfuensis*) released in 1979. However, after 15 years of research in Florida and 25 years in Puerto Rico, Florico was selected because of its higher digestibility and better persistence than Ona stargrass, and excellent average daily gain (ADG) and carrying capacity.

## ORIGIN

In 1957 the plant breeding department of the University of Puerto Rico, Mayaguez Campus introduced this strain of stargrass from Kenya, Africa, as (*Cynodon plectostachyus* (K. Schum.) Pilg). The grass was assigned Puerto Rico Plant Introduction (PR PI) number 2341. Field tests conducted at Gurabo, Puerto Rico, by Sotomayor-Rios et al. (10) showed that dry matter and protein yields of PR PI 2341 were superior to most other grasses tested. Presently PR PI 2341 is grown extensively over Puerto Rico and is considered to be one of the most outstanding forages with great pasture potential for Puerto Rico (1). In the early 1970s Dr. Jack R. Harlan, University of Illinois, advised the Puerto Rican researchers that the correct scientific name of the grass is *C. nlemfuensis* Vanderyst var. *nlemfuensis* (6).

In 1972, Dr. Antonio Sotomayor-Rios brought several sprigs of PR PI 2341 to Dr. E. M. Hodges, Agricultural Research and Education Center, Ona, Florida. After several years of propagation and growth in a nursery the grass was established in a mob-grazing study at Ona in 1975. The grass was then re-established in 1980 to study grazing management and animal performance.

## DESCRIPTION

Florico stargrass is a long-lived, perennial member of the genus *Cynodon*. It is a stoloniferous, tufted grass with erect stems which lack rhizomes. It forms a moderately dense sod in a mature stand with coarse stems 1.2 to 2.7 mm in diameter, reaching heights of 24 to 34 inches. Leaf sheaths have scattered to dense hairs. Ligules consist of a membrane to 0.8 mm long, fringed with hairs to 0.1 mm long. Leaf blades are 2 to 6 mm wide and 2.8 to 9.2 inches long, stiff, with scattered hairs on both surfaces. The inflorescence (seedhead) of 4 to 6 spike-like branches 2.4

to 4.2 inches long, is arranged in a whorl at the tip. Spikelets are 2.6 to 3.0 mm long. The inflorescence and vegetation is distinctly purplish-red in color. Inflorescence production is profuse in spring and fall in south-central Florida. Few if any seeds are produced, and propagation is entirely vegetative. Florico can be differentiated from Ona and McCaleb stargrasses by its hairiness and dark green-purplish color. However, to be certain of its identity, planting sprigs must be obtained from a known source.

## RESEARCH

### Forage Yield and Quality

#### Northcentral and Northwest Florida

Plots of Florico stargrass were planted at Jay, Quincy, Gainesville, and Brooksville during the summer of 1986. At each location Florico stargrass was compared with commercial standard varieties 'Tifton 44,' 'Coastal,' and 'Tifton 78' (*C. dactylon*) bermudagrass presently grown in that region of the state.

In the fall of 1986 and spring of 1987, one year after planting, Florico stargrass established slowly and produced low dry matter (DM) yields at three of the four locations. Florico stargrass at the Gainesville location established well and yielded 6.3 t DM/A one year after planting (Table 1). However, even at the Gainesville location Florico yielded only 77% and 81% of the standards 'Coastcross 1' (*C. dactylon*) and Coastal bermudagrasses, respectively. Slow establishment and lower DM yields than many of the commercial standards may be due to cool temperatures in the northern part of Florida. Since long-term records revealed temperatures at most of the above locations fall below 20 °F (- 6.7 °C) at least once every 2 years, it is concluded that Florico provides no advantage for growers in northcentral or northwest Florida.

**Table 1. Dry matter (DM) yields, crude protein and in vitro organic matter digestion (IVOMD) of *Cynodon* grasses one year after establishment at Gainesville, 1987.**

Grass entry	Total seasonal yield	Crude protein	IVOMD
	tons DM/acre	%	%
Coastal bermudagrass	7.8	10.7	57.3
Tifton 44 bermudagrass	5.7	10.8	61.0

Tifton 78 bermudagrass	6.9	12.3	62.3
Grazer bermudagrass	5.8	11.7	67.2
Coastcross-1 bermudagrass	8.2	10.6	63.2
Florico stargrass	6.3	12.3	65.8

### SFREC, Immokalee

Florico stargrass tested at the South Florida Research and Education Center (SFREC) had a 4-year average yield of 4.7 t/A DM (8). This yield was about equal to Florona and about 52% higher than Ona stargrass (Table 2). 'Floralta' limpograss (*Hemarthria altissima* (Poir.) Stapf and C. E. Hubb.) produced highest DM yields at Immokalee averaging 68% more oven dry forage than Florico stargrass.

Crude protein (CP) concentration of Florico forage analyzed during the spring, summer, fall, and winter of 1982 was generally higher than Floralta limpograss (Table 2) (8). Floralta was higher in *in vitro* organic matter digestion (IVOMD) than Florico (Table 2) with the biggest difference between the two grasses occurring during winter and spring. Data from this experiment indicate Florico had no advantage over Floralta limpograss (except CP concentration) in the Immokalee area. However, it would be desirable for commercial growers in southwest Florida to make small plantings of this grass on their farms to test Florico's adaptability to their particular soil condition.

### AES, Puerto Rico, and USDA, ARS, TARS (Puerto Rico)

Florico stargrass has been propagated intensely in Puerto Rico since 1961. Numerous studies have been conducted during the past 25 years comparing Florico with 'Pangolagrass' (*Digitaria decumbens* Stent.), limpograss, 'paragrass' (*Brachiaria mutica* (Forssk) Stapf), 'molasses grass' (*Melinis minutiflora* Beauv.), 'guineagrass' (*Panicum maximum* Jacq.), 'napiergrass' (*Pennisetum purpureum* Schumach.), 'congograss' (*Brachiaria ruaiziensis* Germain and Evrard) and so forth.

In a highly fertilized clipping study (320-110-215 lb/A/yr N-P2O5-K2O) Sotomayor-Rios et al. (11) tested nine brachiarias, nine digitgrasses and Florico for yield, CP and percentage DM under three harvest intervals. Results indicated that Florico was among the highest producers of DM yield (6.5 t/A/yr), CP (14.0%) and percentage DM (29.5%) when harvested at the 30-day interval. Delaying harvest frequency to a 45-day interval resulted in highest DM yield (9.7 t/A) for Florico compared with all 19 grasses, with a CP and percentage DM of 10.3 and 32.5, respectively. A further delay in harvest frequency to 60 days resulted in an additional DM yield increase for Florico of 13% above the 45-day interval, with a CP content of 9.2%.

In a grazing study comparing Florico stargrass, congograss, and Pangola digitgrass, Caro-Costas et al. (4) reported that Florico stargrass produced greater weight gains (1274 lb/A/yr) and had a higher stocking rate (the equivalent of 2.91 600-lb steers/A) than did congograss or Pangolagrass which were similar in both respects averaging 879 lb/A weight gain and a stocking rate equivalent

of 2.21 600-lb steers/A (Table 3). The highly fertilized (300-100-200 lb/A N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O) Florico produced highest average daily gain per head (1.29 lb) as compared to Pangola (1.18 lb). Apparent DM digestibility of Florico stargrass averaged 56.2% which was 5.1 percentage units higher than Pangolagrass (Table 3). Similar results were obtained in another study (Caro-Costas et al.) (3) comparing Pangola and Florico on a different soil type.

Grazing Florico stargrass after 14, 21, or 28 days regrowth did not significantly affect total gain per acre, daily gain, or stocking rate of Holstein heifers over a 3-year period, provided an 8-inch stubble was maintained (Caro-Costas and Vicente-Chandler (5) ) (Table 4). On the average this well-fertilized stargrass carried the equivalent of 2.1 600-lb steers/A/yr and produced 1070 lb/A/yr of liveweight gain. These animals gained an average of 1.15 lb/day. Today Florico is recognized as an outstanding forage grass in Puerto Rico and has become very popular among farmers.

**Table 2. Dry matter (DM) yield over 4 years of clipping, crude protein (1982) and in vitro organic matter digestion (IVOMD) (1982) of grass entries tested at Immokalee.**

Grass entry	Year					Season (1982)							
	1981	1982	1983	1984	Avg	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
	Yield, tons DM/acre					Crude protein, %				IVOMD, %			
Floralta limpgrass	10.5	9.0	7.0	5.1	7.9	7.8	9.9	6.1	4.6	54	63	56	54
Florona stargrass	6.7	6.6	4.0	1.8	4.8	10.8	11.0	7.9	6.9	43	63	47	42
Florico stargrass	5.3	6.9	4.1	2.3	4.7	8.4	10.9	8.3	6.1	46	64	54	47
Ona stargrass	4.4	4.5	3.4	0.0	3.1	b	10.1	7.6	6.3	b	62	48	46
Taiwan digitgrass	5.4	6.2	4.8	2.8	4.8	b	9.8	7.2	6.0	b	65	52	49
Survenola digitgrass	a	4.5	3.9	2.0	2.6	8.1	10.4	6.5	7.8	49	69	57	50

Source: Modified from Kalmbacher et al., (1987).

(a) 1981, entry not established.

(b) Entries had not resumed growth.

**Table 3. Productivity of heavily fertilized, intensively managed perennial grass pastures in Puerto Rico.**

Grass	Gain in weight yearly	Average daily gain/steer(a)	Stocking rate 600-lb steers	Forage consumed by grazing cattle yearly	Apparent DM digestibility of consumed forage
	lb/A	lb	steers/acre	lb DM/A	%
Florico	1274	1.29	2.91	16,044	56.2

Pangola	913	1.18	2.26	13,687	51.1
Congo	845	1.04	2.17	11,978	56.1
LSD (0.05)	263	0.11	0.36	2,772	NS
Source: Modified from Caro-Costas et al., (1976).					
(a) For tester cattle which remained on the pastures throughout the year.					

<b>Table 4. Effect of three grazing intervals on weight gains and stocking rate of Florico stargrass over a 3-year period, Corozal, P.R.</b>			
Grazing interval	Weight gains	Stocking rate	Average daily gain/steer
days	lb/A/yr	600-lb steers/A	lb
14	1109	2.06	1.14
21	1106	2.21	1.19
28	991	2.06	1.12
LSD (0.05)	NS	NS	NS
Source: Modified from Caro-Costas and Vicente-Chandler (1981).			

### AREC, Ona

**Mob-grazing.**--In 1975 Florico stargrass was established in a mob-grazing experiment to study the effect of the grazing animal on DM yield, forage quality and persistence (9). Each grass was grazed at 2-,3-,4-,5- and 7-week intervals from May through November over a 3-year period, and fertilized with 220 lb/A N/yr, 50 lb/A P<sub>2</sub>O<sub>5</sub> and 100 lb/A K<sub>2</sub>O. An increase in DM yield of Florico stargrass was obtained (3.4 t/A to 9.1 t/A) as grazing frequency was reduced from 2- to 7-week intervals (Table 5). Dry matter yield averaged across grazing frequencies was similar to Ona stargrass (5.6 t/A).

**Table 5. Dry matter (DM) yields of grasses grazed at five frequencies, Ona, 1976-1978.**

Grass entry	Grazing frequency (weeks)				
	2	3	4	5	7
	tons DM/acre				
Florico stargrass	3.4	4.3	4.8	6.6	9.1
McCaleb stargrass	3.9	4.7	4.2	5.7	8.0
Florona stargrass	4.5	5.4	5.1	6.6	8.9
Ona stargrass	4.4	4.9	3.8	6.7	7.6
Pensacola bahiagrass	4.5	4.1	3.5	4.4	4.7

Crude protein and IVOMD of Florico stargrass declined as grazing frequency was delayed from 2 weeks (18% CP and 68% IVOMD) to 7 weeks (8% CP and 53% IVOMD) for June grazed forage (2) (Table 6). When Florico stargrass was grazed in August, CP dropped from 19% for the 2-week grazing frequency to 9% for the 7-week frequency. Values for IVOMD dropped from 63% to 55% for the same delay (2 to 7 weeks) in grazing frequency during September.

**Table 6. Crude protein (CP) and in vitro organic matter digestion (IVOMD) of several grasses grazed in June at different frequencies in a mob-grazing study, Ona, 1976-1977.**

Grass entry	Grazing frequency (weeks)					
	2	3	4	5	7	Avg
	%CP					
Florico stargrass	18	16	13	12	8	13
McCaleb stargrass	17	13	12	11	8	12
Ona stargrass	17	14	13	11	8	13

Pangola digitgrass	15	15	11	13	8	12
Pensacola bahiagrass	14	13	11	10	7	11
	IVOMD					
Florico stargrass	68	67	60	59	53	61
McCaleb stargrass	61	61	55	54	46	55
Ona stargrass	64	61	55	52	45	55
Pangola digitgrass	68	68	59	60	53	61
Pensacola bahiagrass	57	57	52	52	47	53

The CP content of Florico was generally similar to that of Ona stargrass, however IVOMD was about 3 percentage units higher. Data from this study indicate that the quality of Florico stargrass is about equal to Pangola digitgrass when grazing frequency of Florico is 7 weeks or less.

**Grazing management.** - In another experiment at Ona, Florico stargrass was compared with Ona stargrass over a 3-year period in a grazing management study. Five stubble heights (2, 4, 6, 8 and 10 inches) and five plant heights above the stubble (0, 6, 12, 18 and 24 inches) were studied in various combinations for DM yield, quality, and persistence. Both grasses produced about the same DM yield and had similar CP concentration; however, IVOMD of Florico stargrass was about 3 percentage units higher than that of Ona stargrass, regardless of the combination of stubble height and plant height above the stubble. However, plant height had a major effect on forage yield and quality; therefore, stargrass pastures should be grazed when plant height above the stubble ranges between 6 to 18 inches.

The stubble height to which stargrass was grazed had a major influence on weed (common bermudagrass) ground cover. Grazing Florico stargrass to a stubble of 4 inches or less resulted in the highest ground cover of weeds. Allowing a stubble height of 6 to 10 inches, resulted in the lowest ground cover of weeds in Florico stargrass. This plant height of 6 to 18 inches and stubble height of 6 to 10 inches should provide excellent persistence, producing good yields of high quality forage.

**Small pasture grazing.** - A replicated grazing study using Florico and Florona stargrass was conducted from May to December over a 2-year period. Pastures were fertilized annually with 175-47-95 lb/A N-P2O5-K2O, plus 18 lb/A of a micronutrient mix IPI 303 (IPI 303 contains the following elemental content: Iron, 18%; Zinc, 7.0%; Manganese, 7.5%; Copper, 3.0%; Boron, 3.0%; and Molybdenum, 0.2%). Nitrogen was applied in four uniform applications (March, May, July, and September). The P2O5, K2O, and micronutrients were applied once annually in January. Each pasture was divided into three equal parts, allowing 2 weeks grazing and 4 weeks regrowth. The stocking rate was four yearling steers per 1.25 acre, with an initial shrunk weight of 466 lb in 1986 and 543 lb in 1987. Mineral supplement (Guaranteed analysis of mineral supplement: Ca > 12.0%, P > 12.0%, NaCl > 25.0%, Fe > 1.0%, Cu > 0.13%, Co > 0.03%, Mn > 0.05%, Zn > 0.10%, F < 0.18%, Vit. A 200,000 U.S.P. units/lb.) was provided to cattle in each pasture throughout the grazing study. Florico stargrass provided adequate grazing for about 208 days, with an average gain of 1.2 lb/day (Personal communication from Mr. Asamoah Larbi, University of Florida, 1988.). Florico stargrass had a 2-year average carrying capacity of 598 steer days/A with a total liveweight gain per acre of 720 lb (Table 7). Performance of cattle

grazing Florico stargrass was better than that reported by Hodges et al (7) for Ona stargrass which averaged 1.0 lb daily gain and 524 lb/A beef gain.

<b>Table 7. Average daily gain, carrying capacity, and liveweight gain per acre on three <i>Cynodon</i> grasses averaged over 2 years, AREC, Ona, 1986 and 1987.</b>			
Grass	Average daily gain	Carrying capacity	Total liveweight gain
	(lb/day)	(steer days/A)	(lb/A)
Florico	1.2	598	720
Florona	0.9	636	590
Callie hybrid(a)	0.8	556	461

(a) Experimental entry, not released to commercial growers.

## **PRODUCTION AND MANAGEMENT**

### **Establishment**

Florico stargrass is established vegetatively from stolons (runners) or mature stem pieces. When placed in a moist, firm seed bed, nodes sprout in 5 to 10 days. This is accomplished by distributing freshly harvested planting material (1000 lb/A) on clean cultivated soil. The plant material is covered by disking 2 to 4 inches deep or by covering about 75% of each stem with soil, followed by an *extremely* firm packing. Freshly harvested planting material must be disked into the seed bed immediately after distribution to prevent drying.

To successfully establish this stargrass, the seed bed must be clean (free of common bermudagrass and all other vegetation) and moist. If the history of a field indicates common bermudagrass as a problem, the planting rate should be increased to 1500 lb/A.

Approximately 7 to 10 days after establishment when signs of vegetative growth appear, the newly planted area should be sprayed with 1 lb/A Weedmaster in 20 to 30 gal/A of water to control annual sedges (water-grass) and broadleaf weeds.

### **Lime and Fertilizer**

Soil test results should be used in determining fertilizer and lime requirements. The stargrass fertilization program should be divided into two parts - establishment fertilization and maintenance fertilization.

## **Establishment fertilization**

Since most mineral soils in south Florida are low in plant nutrients, Florico stargrass needs to be fertilized soon after planting. When new tillers (shoots) are approximately 1 to 3 inches tall, fertilize with about 35-35-35 lb/A N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O, respectively plus micronutrients if needed. About 30 days after the initial application of fertilizer, plants should receive an additional 30 lb/A N when surface water has drained down and fields are not saturated. This establishment fertilizer should not replace the normal fall application. This stargrass tends to grow well within a pH range of 5.5 to 6.5 with available calcium at 1000 lb/A.

## **Maintenance fertilization**

All stargrasses require a high fertility level. Under an intensive grazing program, established Florico stargrass should receive at least 56-28-56 lb/A N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O, respectively, (unless otherwise indicated by soil test) three times per year. If the stargrass is going to be harvested for hay about 70-70-70 lb/A N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O, respectively, should be applied 4 to 6 weeks before each cutting. If micronutrients have not been applied within 3 to 4 years, or the stargrass is planted on new land (recently developed from the native condition) about 20 lb/A IPI 303 or equivalent may be required.

## **Management and Utilization**

Clipping and grazing studies have demonstrated that Florico stargrass should be allowed a rest period of 4 to 5 weeks between grazing or clipping. If the rest period is shorter, forage quality increases, but persistence of the stand decreases. If the rest period is increased to 7 weeks, persistence could improve, but quality (CP and IVOMD) is relatively low.

## **Hay**

Making Florico stargrass hay must be both timely and intensive to produce a good quality product. If 7 weeks or more are allowed between hay harvests, quality will be low and cattle may reject considerable amounts. Commercial growers must manage all stargrasses on a timely basis, harvesting forage after 4 to 5 weeks regrowth. Florico stargrass cut for hay should be allowed a 4 to 6 inch stubble for good persistence. A spring (May to June) harvest of hay can be made, provided cattle are removed by April 1 and the grass is fertilized for hay as indicated above. Since this grass will make substantial growth from September through November, cattle can be removed September 1, heavy fertilization can be applied (provided there is no surface water on fields) and the grass can be harvested for hay mid-October. All dates and rates of fertilizer may require adjustment to meet weather and soil fertility variables.

## **Grazing**

Florico stargrass has persisted well under grazing provided a stubble height of 6 to 10 inches is maintained. If continued heavy grazing pressure (short stubble) is allowed, plants will die and the sward will be opened to invasion by broadleaf weeds and common bermudagrass. Therefore, a stubble height of 6 to 10 inches is one of the most important factors affecting stargrass persistence. However, since plant height above the stubble has a major effect on forage yield and quality, plants should be grazed when plant height ranges between 6 and 18 inches above the stubble.

## PLANTING MATERIAL DISTRIBUTION

Information regarding planting material of Florico stargrass can be obtained from the following offices:

Florida Foundation Seed Producers, Inc.  
P.O.Box 309  
Greenwood, Florida 33443

Agricultural Research and Education Center  
3401 Experiment Station  
Ona, Florida 33865

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