

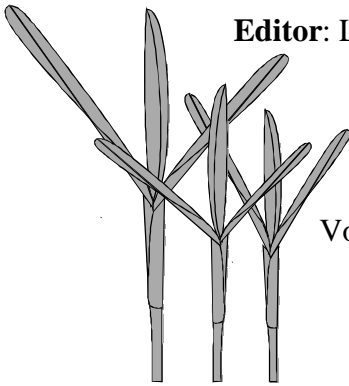


UNIVERSITY OF
FLORIDA

Cooperative Extension

Service

Institute of Food and Agricultural Sciences



Editor: Loretta N. Satterthwaite

Dean, Cooperative Extension: Christine T. Waddill

TURF DOLLARS & SENSE

Volume 11, Number 2

April-June 1999

Production and Harvesting Practices of Florida's Sod Industry in 1996

J.J. Haydu¹, L.N. Satterthwaite² and J.L. Cisar³

*This is the first in a three-part series excerpted from the authors' **An Economic and Agronomic Profile of Florida's Sod Industry in 1996**, Economic Information Report EI 98-7, Univ. of Fla., Insti. Food and Agric. Sci., Food and Res. Econ. Dept., Fla. Agr. Exp. Sta., Fla. Coop. Ext. Serv. 1998. 23 pp.*

INTRODUCTION

Florida is the fourth most populous state (14.5 million in 1995) and has a growth rate of nearly 2 percent annually (1996 Florida Statistical Abstract). Due, in part, to these two factors, sod has become an increasingly important component of Florida's urban landscapes. However, the same warm weather that has drawn people to Florida is also both a boon and a bane to turfgrass management — precipitating ideal conditions for vigorous growth, but also providing an environment conducive to the proliferation of pests and diseases. The affinity homeowners have for green lawns, combined with the need for high-level maintenance, has resulted in a very large, robust and economically important turfgrass industry.

Demand for sod can be roughly estimated by examining the number of new housing starts. The University of Florida's Bureau of Economic and Busi-

ness Research (1997) estimated 610.3 thousand housing starts between 1996–2000, averaging 122 thousand annually. Assuming 0.33 acres per household (which includes both individual lot and “common areas”), this figure translates into 40,000 acres of sod required annually for new housing starts. An additional 34 percent of sod not included in this calculation is targeted for other outlets such as golf courses, commercial and non-profit institutions, and the re-sodding market for existing homes; this makes the total annual demand nearly 54,000 acres statewide.

In late 1997, a University of Florida survey on sod production and marketing was completed. The purpose of the study was to provide current agronomic and economic information on this important agricultural sector to sod industry personnel, University researchers and specialists, and state policy makers. The report begins with a discussion of the methodology employed in the survey and then examines research findings in the areas of production, employment, marketing, product quality/price information and perceived firm- and industry-level problems.

Results of the 1997 survey indicate that 52 growers produced nearly 40,000 acres of sod in 1996. However,

¹ Professor and ² Senior Statistician, Central Florida Research and Education Center and ³ Professor and Turfgrass Coordinator, Ft. Lauderdale Research and Education Center, University of Florida, Institute of Food and Agricultural Sciences.

since the survey responses did not represent total industry production, but an actual 54% survey response rate, responses were expanded for industry-wide estimates where appropriate. [Editors note: For infor-

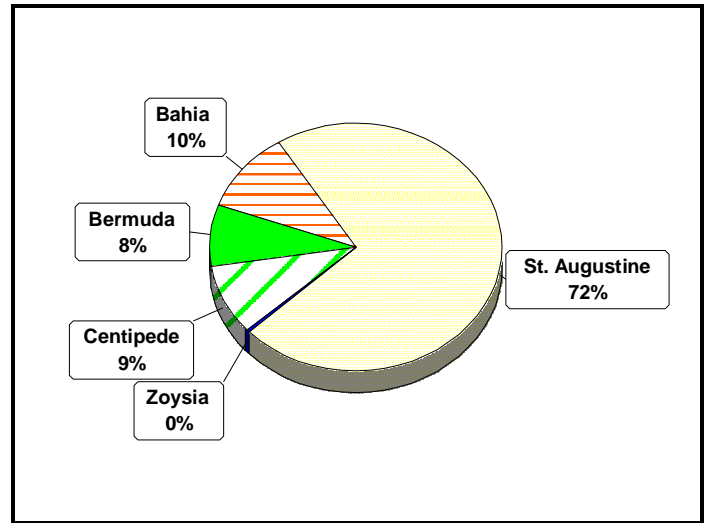


Figure 1. Types of grasses grown in Florida in 1996 — shown as a percent of total production.

mation on procedures used to expand survey responses to industry-wide estimates, see the original publication from which this series is excerpted.]

SURVEY RESULTS AND DISCUSSION

Acres Grown and Harvested

Information on Florida sod production by grass type is shown graphically in Figure 1 and data are presented in terms of total (expanded) acreage, farm size, soil type and grass varieties in Table 1.

Table 1. Total (expanded) acres of sod grown in Florida, by farm size (small: 0–499; medium: 500–999; large: 1,000–1,999; very large: $\geq 2,000$), soil type (sand vs. muck) and grass variety, 1996 data.

Farm size/ Soil type	Acres (expanded) in production					Total	Percent
	St. Augustine	Bahia	Bermuda	Centipede	Zoysia		
Small							
Muck	1,088	0	66	0	0	1,154	
Sand	4,941	1,145	1,471	2,810	98	10,465	
Subtotal	6,029	1,145	1,537	2,810	98	11,619	22%
Medium							
Muck	2,445	0	0	0	0	2,445	
Sand	4,838	0	1,666	2,059	140	8,703	
Subtotal	7,283	0	1,666	2,059	140	11,148	21%
Large							

Muck	6,514	220	0	0	0	6,734	
Sand	4,412	1,812	303	0	22	6,549	
Subtotal	10,926	2,032	303	0	22	13,283	25%
<hr/>							
Very large							
Muck	9,200	153	657	0	0	10,010	
Sand	4,820	2,160	0	10	0	6,990	
Subtotal	14,020	2,313	657	10	0	17,000	32%
<hr/>							
Totals							
Muck	19,247	373	723	0	0	20,343	38%
Sand	19,011	5,117	3,440	4,879	260	32,707	62%
Total	38,258	5,490	4,163	4,879	260	53,050	
Percent	72%	10%	8%	9%	0%	100%	100%

Total sod produced in Florida in 1996 was estimated to be 53,050 acres. Of this total, 72% (38,258 acres) consisted of St. Augustinegrass, ten percent (5,490 acres) constituted bahiagrass, centipedegrass followed closely at nine percent (4,879 acres), while bermudagrass represented 8 percent (4,163 acres) and expanded acres of zoysiagrass were nearly insignificant at one-half of 1 percent (260 acres). This information suggests that St. Augustinegrass has become more important over the past 10 years because in 1987 this grass was estimated to comprise only 56 percent of total production (Haydu and Cisar, 1992).

Distribution of production acres by farm size — defined as: small = 0–499 acres; medium = 500–999 acres; large = 1,000–1,999 acres; and very large = \geq 2,000 acres — is also shown in Table 1. At fifty-seven percent, large (25 percent) and very large (32 percent) farms formed the majority of industry output. Medium-sized growers contributed 21 percent and the smallest growers provided 22 percent of statewide production.

Sod is grown on either sand (mineral) soils or “muck” (organic) soils. Of the roughly 53 thousand acres, 62 percent was produced on sand with the remainder (38 percent) located on muck soils. The latter are typically found in southern Florida’s Everglades Agricultural Area (EAA) and the low-lying fields surrounding Lake Apopka in the central portion of the state. Small- and medium-sized farms were generally situated on sand soils (90% of acreage for small and 78% for medium), whereas the larger two farm sizes were located on muck lands (51% for large and 59% for very large). A rough placement of sod farms in the state was obtained by asking survey respondents to note in

which of seven map regions, roughly based on telephone area codes (combined in some instances), their farms were located. Unexpanded acreage located by this procedure is shown in Figure 2 and suggests that the majority of production occurs in southern Florida.

In terms of grass varieties cultivated, the proportion planted in St. Augustinegrass appears to increase with farm size — 52 percent of total production for small farms, 65 percent for medium-sized farms, and 82 percent for each of the larger two categories. A possible explanation for this relationship is that big farms with their large volumes and competitive prices tend to dominate the extensive market for new housing construction, which includes sales to both developers and landscape contractors. Huge quantities of sod are

required to cover common areas and roadsides, as well as the lawns for numerous single- or multiple-family dwellings. Smaller producers tend toward diversifying production and serving several markets simultaneously, thereby reducing risk to the firm.

Acres of sod harvested in 1996 by grass type and farm size are presented in Table 2. The information in this table sheds light onto three areas — firm-level efficiencies in production and sales, market conditions impacting demand, and the (total) wholesale value of the industry. First, knowledge of acres harvested is useful for calculating the turnover rate or the relationship between sod sales and sod inventory (the ratio of harvested to produced acres) for a given year. Production efficiency is related to two factors, net area stocked per acre (gross area minus areas taken up by roads, drainage ditches/canals and grass left in ribbons for re-propagation) and the amount sold relative to the amount produced as influenced by market demand. Strictly from a technical standpoint, net production area per acre should be relatively constant from year-to-year, except during extended periods of high rainfall that could impair harvesting activities. Muck soils tend to retain water, which can make the ground too soft for the operation of heavy harvesting equipment. Second, market demand also influences quantities harvested in a given year. During periods of strong demand, the total

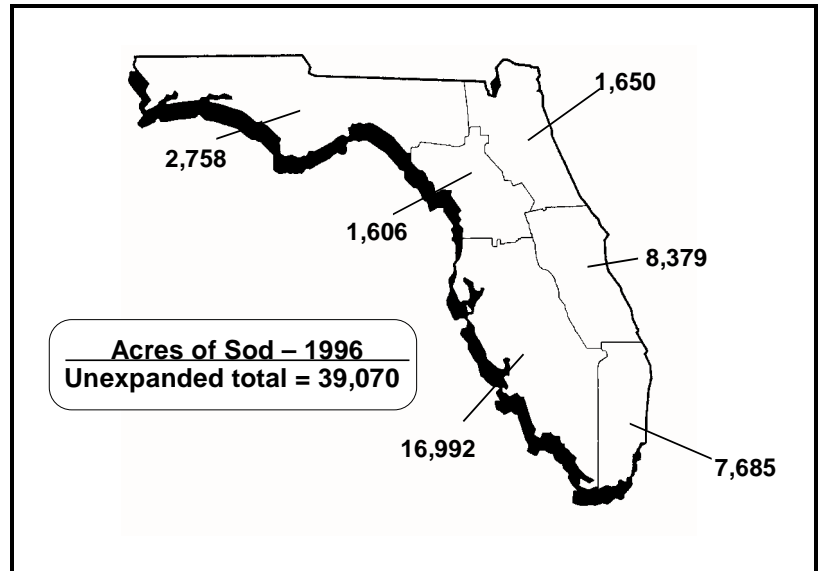


Figure 2. Reported acres (from survey respondents only) of 1996 sod production in various regions in Florida.

Table 2. Acres of sod harvested in Florida by farm size and grass variety, 1996 data.

Farm size	Acres Harvested					Total
	St. Augustine	Bahia	Bermuda	Centipede	Zoysia	
Small	4,362	766	1,335	1,554	51	8,068
Medium	5,789	0	1,622	779	60	8,250
Large	7,555	1,510	217	0	19	9,301
Very large	11,461	741	477	7	0	12,686
Total	29,167	3,017	3,651	2,340	130	38,305
Harvested Percent of Production	76%	55%	88%	48%	50%	72% ^a

^a Total percent of production (72%) is weighted. It was calculated by multiplying the percent of production harvested for each type of grass by the percent of total production planted in that particular type of grass [e.g. St. Augustine = .76 of production acreage is harvested × .72 of total production acreage (see Table 1) = 55%] and adding the resultant percentages.

net area should be harvested and sold. Demand for sod is linked closely with housing starts, which is impacted by the general condition of the local and regional economies. New developments constitute roughly three-quarters of Florida's total sod market (Haydu and Cisar, 1992). The supply of sod is the other side of the equation affecting demand and price. The greater the difference between supply and demand, the higher the potential price and the more incentive producers have to maximize their turnover rates. In periods of high supply and low demand, the opposite situation would occur. Third, because sod must be sold immediately after harvest due to perishability, acres harvested also represent farm gate sales (producers will not cut their sod unless a sale has been firmly established) that in turn can be used to estimate the wholesale value of the industry (to be discussed in part 2 of this series).

maximize harvested acres to reduce unit costs and increase profitability

Since sod requires year-round maintenance and care, farmers should strive to maximize harvested acres to reduce unit costs and increase profitability. For example, an inability to sell sod that has reached a marketable stage increases expenses through costs imposed by routine maintenance — such as fertilization, weed and pest control, irrigation and mowing. This is particularly true for St. Augustinegrass, which is susceptible to root decline (Turgeon, 1985). This root “die-back” adversely affects the visual quality of St. Augustinegrass and, therefore, the grass is generally not sold until new root growth begins in the spring, implying a 3- to 4-month dormancy period. Consequently, sound management practices would encourage a timely and thorough harvesting of mature sod fields to avoid unnecessary maintenance costs.

In this study, 72% of all sod grown was harvested; however, the percentage of each grass type harvested varied widely. Centipedegrass was harvested at the lowest rate, 48% of production, while bermudagrass was harvested at 88% of production, probably due to the method of harvesting¹. The largest farms tend to

focus on grasses that have the highest harvest rates — St. Augustinegrass (76%), bahiagrass (55%) and bermudagrass (88%) — while 20% of the harvest of the smallest farms are grasses that are harvested at lower percentages — centipedegrass (48%) and zoysiagrass (50%). The reasons for these size-related patterns were not addressed by the survey.

Harvest ratios for all size farms are nearly equal (Table 3). From conversations with industry leaders, a 75 percent harvest rate is considered reasonable from an efficiency standpoint.

¹ Unlike St. Augustinegrass, bermudagrass is commonly clear-cut because it is able to re-establish from rhizomes as well as stolons (McCarty and Cisar, 1989).

Table 3. Acres of sod planted and harvested, by farm size and per farm, and ratio of sod harvested to sod planted, 1996 data.

Farm size	Acres planted in 1996		Acres harvested in 1996		Acres harvested/ Acres planted
	Total	Per farm	Total	Per farm	
Small	11,619	176	8,068	122	0.69
Medium	11,148	697	8,250	516	0.74
Large	13,283	1,476	9,301	1,033	0.70
Very large	17,000	4,250	12,686	3,172	0.75
Average	13,263	260	9,576	188	0.72

St. Augustinegrass is the most widely used grass (76% of total harvest) in Florida and, consequently, the most economically important for the industry. A varietal breakdown of St. Augustinegrass is presented as a pie chart in Figure 3. Floratam was the most dominant variety produced in 1996, comprising 80 percent (30,415 acres) of total production. Far down the scale, Bitterblue was the second most popular

variety representing just 8 percent (3,053), followed by Floralawn with 5 percent (2,065 acres) and Palmetto with 4 percent (1,359 acres). The remaining St. Augustinegrass varieties — Common, Delmar, FX-10, Raleigh and other — comprised 3 percent, with Raleigh being the only named variety accounting for over 1 percent of this total, as shown in Table 4.

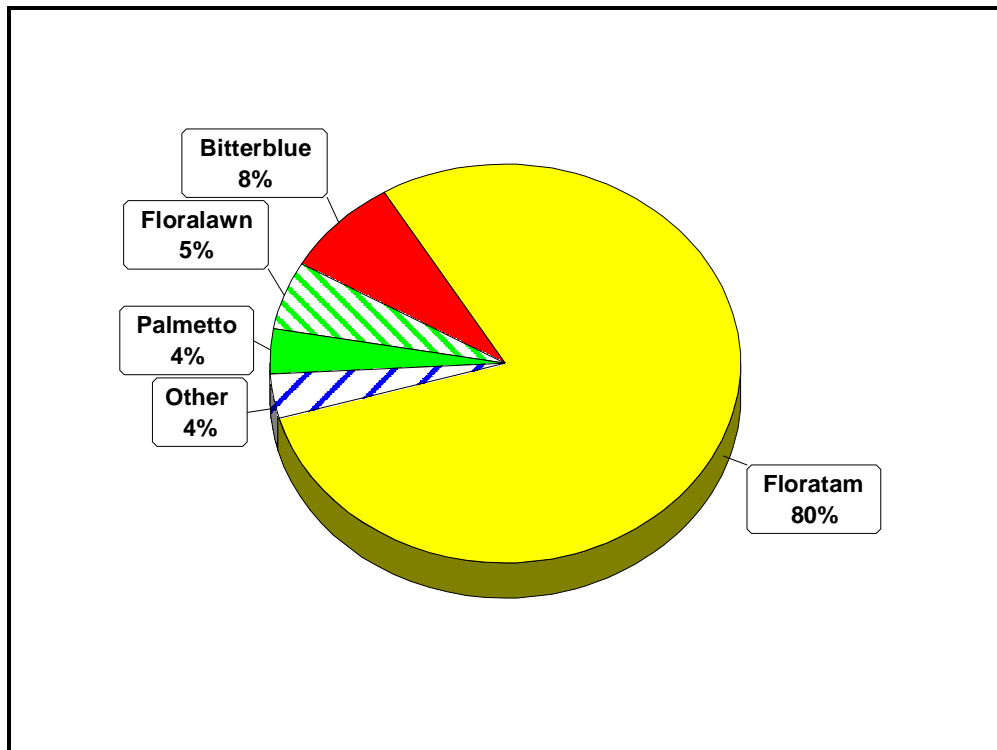


Figure 3. Top four St. Augustinegrass types grown in Florida in 1996 — shown as a percent of total St. Augustinegrass production. Other includes Raleigh, a mix of other unspecified grass types, Common and Delmar (tied) and FX-10 — in descending order of acres in production.

Table 4. St. Augustinegrass production, presented by farm size and grass varieties, 1996 data.

Farm size	St. Augustinegrass acres in production								
	Bitterblue	Common	Delmar	Floralawn	Floratam	FX-10	Palmetto	Raleigh	Other
Small	575	0	224	26	4,386	11	494	194	119
Medium	1,515	0	20	124	4,841	0	295	276	210
Large	505	0	0	1,915	7,958	0	547	0	0
Very large	458	240	0	0	13,230	0	23	0	92
Total	3,053	240	244	2,065	30,415	11	1,359	470	421

An interesting question is why Floratam continues to hold such a commanding grip on the market? Are other varieties that much inferior? In a recent market study of sod buyers (developers, landscape firms, sod layers and retail nurseries – unpublished data), respondents stated that although many of the other grasses were good varieties, replacing a “tried and true” product that was considered to be an industry standard was unlikely to occur. This reluctance stems from the high initial investment absorbed by the buyer (purchase and installation cost) in addition to numerous risks associated with the landscaping business. For instance, in a new housing development project, landscaping is the final activity in a long list of tasks — obtaining permits, site preparation, installing water and sewer, constructing roads and building the homes. And within the landscaping segment — which includes activities such as land preparation, installing irrigation and drainage systems, and establishing landscape plant material — sod laying is positioned at the end of the project. With all these numerous activities, delays are common. As a result, the initiation of landscaping gets pushed back further and further, making planning largely ineffectual. Hence, from a landscaper’s perspective, the considerable risk and uncertainty surrounding this process mitigates incentives to switch to other varieties. For instance, since landscapers must frequently wait until the last minute to purchase sod, they face the likelihood of not being able to obtain it when needed. There is also the potential risk of product losses — once cut, sod is perishable and requires constant watering during the month-long establishment phase. Changing to another variety only adds additional risks, such as the prospect that the grass will develop insect or disease problems

and have to be replaced, thereby, eliminating any potential profit.

This leads to a hard to break positive feedback cycle in which the producer grows Floratam because it is in demand and the buyers ask for Floratam because it is more readily available. Only a well-tested product, proven to be superior, is likely to ever break this cycle.

LITERATURE CITED

- Bureau of Economic and Business Research. 1997. *1996 Florida Statistical Abstract*, Thirtieth Edition. Susan S. Floyd, Ed. University of Florida.
- Haydu, J.J. and J.L. Cisar. 1992. An economic and agronomic profile of Florida’s turfgrass sod industry. *Economics Report ER92-1*, Food & Res. Econ. Dept, IFAS, UF.
- McCarty, L.B. and J.L. Cisar. 1989. *Basic Guidelines for Sod Production in Florida*. Florida Coop. Ext. Serv., Bulletin 260, IFAS, UF.
- Turgeon, A.J. 1985. *Turfgrass Management*. Reston Publishing Co., Reston VA.

Next issue: Part 2 of this series — discussion of the sod industry value and marketing findings from the survey.