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Sugarcane Variety Census: Florida 2001[1]

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This annual variety census of the Florida sugarcane industry for the 2001-2002 harvest season is the latest in a series of annual reports. Mill managers and independent growers supplied data for all of Florida's sugarcane acreage. As a result, the census contains much descriptive and useful information for the Florida sugarcane industry.

The census primarily reflects variety preferences of Florida sugarcane growers as it categorizes their crop as plant cane, first ratoon, second ratoon, third ratoon, and fourth ratoon and older. Also, the census reports percentages of organic and sand soils and comparative use of the successive and regular planting systems as well as variety preferences for these soils and planting systems.

A total of 466,494 acres of sugarcane were grown for sugar and seed for the 2001-2002 crop. This represents an increase of 12,098 acres compared to the 454,396 acres grown in the 2000-2001 season. Originally, Glaz (2000) reported only 438,400 acres of sugarcane were grown in Florida in 2000, but that total has since been revised. There has been a general upward trend in total sugarcane acreage in Florida since 1977, with most of the increase having occurred by 1990, but there has been a recent increase.

Of Florida's 2001-2002 sugarcane, 30.6 percent was plant cane and 69.4 percent was ratoon cane. This is a moderate change from the percentages of 28.5 for plant-cane and 71.5 for ratoon-cane reported last year (Glaz, 2000). Of this year's total acres, 27.5 percent was first ratoon, 28.0 percent second ratoon, 10.8 percent third ratoon, and 3.1 percent was fourth ratoon or older. These compared with 1999-2000 percentages of 34.3, 27.8, 7.4, and 2.0, respectively (Glaz, 2000). During 1999-2001, Florida growers have transitioned more sugarcane into the third and fourth ratoon crops. The higher percentage of third and fourth ratoon crops is an indication that some varieties are maintaining production at acceptable levels into later ratoons on more land than was the case for older varieties.

Florida growers reported growing 35 varieties of sugarcane for the second consecutive year. Ten principal varieties each covered at least 1.0 percent of the total cane area (Table 1). All varieties reported in

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this census came from one of two variety development programs. The United States Sugar Corporation of Clewiston, Florida developed the varieties identified by a "CL" prefix. A cooperative program based at Canal Point, Florida of the United States Department of Agriculture's Agricultural Research Service, the Florida Sugar Cane League, Inc., and the Institute of Food and Agricultural Sciences of the University of Florida developed the varieties identified by a "CP" prefix. The group labeled as "All others" represented varieties that each made up less than 1.0 percent of the total acreage. "Other CLs" were unspecified varieties that growers reported as CL in origin.

The most widely-grown variety in Florida this year was CP 80-1743 with 25.1 percent of the total cane area (Table 1). This is the third consecutive year that CP 80-1743 was the most widely grown variety (Table 2). The continued use of CP 80-1743 as a widely used variety appears likely, because its plant-cane area increased by 5.1 percent, a greater percentage increase than any other variety (Table 3). CP 80-1743 has high tonnage and sugar concentration yields. Also, growers are apparently pleased with ratoon crop yields of CP 80-1743; it comprised 40.9 percent of the sugarcane in fourth ratoon and older, although down from 50.8 percent of this category from last year, this is still a substantial proportion of the older ratoon sugarcane in Florida (Glaz, 2000 and Table 1). Concerns about CP 80-1743 include its susceptibility to leaf scald, its tendency to form growth cracks, and its sugar losses during the last half of the harvest season. After severe freezes during the previous harvest season, Florida growers placed high priority on harvesting their remaining fields of CP 80-1743 due to its known susceptibility to freezing temperatures. It is not known how much higher the percent acreage of CP 80-1743 can rise before a damaging freeze such as that of last year would result in major sugar losses in CP 80-1743.

CP 72-2086, the most widely grown variety in 1994 (Glaz, 1994), maintained its second-place ranking for the seventh consecutive year with 13.8 percent of Florida's sugarcane (Tables 1 and 2). Sugarcane mosaic was discovered in several commercial fields of CP 72-2086 in the summer of 1996, the year of its highest percentage (Table 2). Since then, use of CP 72-2086 has declined moderately but steadily from 18.0 percent in 1996 to 13.8 percent this year (Table 2). However, this decline in acreage may change. After a decline in plant-cane use of 3.5 percent last year (Glaz 2000), this year the amount of CP 72-2086 as plant-cane increased by 3.5 percent (Table 3).

After two years as the fourth-place variety, CP 78-1628 moved up to third place this year (Tables 1 and 2). However, the 2.2 percent increase in acreage that helped CP 78-1628 move to third place was composed of a 3.8 percent increase in ratoon acreage, and a 1.8 percent decline in plant-cane acreage (Table 3). The decline in plant cane use suggests that land planted to CP 78-1628 may have peaked or may begin to decline. CP 78-1628 was the most widely grown variety on sand soils the past two years (Glaz, 2000) and it repeated this distinction again this year with more than double the acres of any other variety on sand soils (Table 4).

CP 88-1762 was the fourth-place variety this year (Table 1) with 6.2 percent of the acreage. It classified as a principal variety for the first time only two years ago in 1999. At that time it made an uncustomarily large acreage increase for a new variety from 0.8 percent in 1998 to 2.0 percent in 1999 (Table 2). It moved from ninth place in 1999 to seventh place last year (Glaz, 2000). The plant-cane acreage of CP 88-1762 increased by 3.1 percent last year (Glaz 2000), and increased again by 2.2 percent this year (Table 3).

CP 80-1827, the fifth-place variety this year, was the number one variety in Florida from 1995 through 1998 (Tables 1 and 2). Two years ago, it declined in area by 4.2 percent and in ranking from first to third place with 14.0 percent of the acreage (Glaz, 1999). This year, CP 80-1827 declined in ranking from third to fifth place, and had a further reduction in acreage of 4.8 percent (Table 3). With its percent declines of 3.4 in plant-cane acreage and 4.1 in ratoon acreage, CP 80-1827 had larger declines in these categories than any other variety for the second consecutive year (Glaz, 2000 and Table 3). Probably the major reasons for its decline are its susceptibility to sugarcane rust and its moderately

low sugar concentration. As recently as 1998, CP 80-1827 had its highest percentage acreage of 18.2 percent (more than triple its current acreage), and more plant-cane acreage than any other variety (Glaz, 1998).

CP 84-1198 moved up from eighth place last year with 3.8 percent of the total acreage (Glaz, 2000) to sixth place this year with 4.8 percent of the total acreage (Table 1). This improvement in rank follows three consecutive years in eighth place for CP 84-1198 (Table 2). Some growers report that to avoid unacceptable reductions in ratoon yields, CP 84-1198 needs special attention while mechanically harvesting. Similarly, CP 84-1198 is poorly adapted to cutting seed cane mechanically. Its advantages are its high sugar concentration and tonnage yields. Its consistently small expansions each year since 1994 suggest that growers are steadily, but cautiously expanding CP 84-1198 (Table 2).

CP 89-2143 moved up from twelfth place last year to seventh place this year with 3.5 percent of the total acreage (Tables 1 and 2). It may continue to increase in use at even faster rates based on its increase in plant-cane acreage this year of 4.8 percent (Table 3). This was the greatest percentage increase of plant-cane acreage of any variety except CP 80-1743. CP 89-2143 has high yields of cane tonnage and sugar content. Growers also found during the 2000-2001 harvest season that it had excellent freeze tolerance. This freeze tolerance was also quantified in experimental plots by Shine Jr. et al. (2001).

CP 73-1547 was the eighth most widely grown variety this year (Table 1) following two years as the sixth-place variety (Table 2). Growers reduced their overall acres by 0.8 percent and their plant-cane acres of CP 73-1547 by 2.7 percent this year (Table 3). This follows a decline of 1.3 percent in plant-cane last year (Glaz, 2000). These declines are probably due to the susceptibility of CP 73-1547 to sugarcane rust. CP 73-1547 remained the second most widely grown variety on sand soils, but it was nearly 18 percentage points lower than CP 78-1628 (Table 4).

After two consecutive years as the fifth-place variety, CL 61-620 dropped to ninth place this year (Tables 1 and 2). Use of CL 61-620 has declined each year since 1994 when it had 15.0 percent of the acreage (Table 2). This year, its plant-cane acreage declined 2.2 percent (Table 3). In 1992 and 1993, CL 61-620 was the most widely grown variety in Florida (Glaz, 1994).

CP 70-1133 was the tenth-place variety this year (Table 1). Its use, which has dropped annually since 1992, continued to drop by 0.9 percentage points this year (Table 2). CP 70-1133 is used as the reference variety in the cooperative variety selection program at Canal Point (Glaz et al. 2001); and it was the most widely grown variety in Florida from 1982 through 1984 (Glaz and Donovan, 1984). Last year, CP 70-1133 was grown on 9.7 percent of Florida's sand soils (Glaz, 2000). This year, it increased moderately in percentage use on sand soils to 11.4, but this was substantially less than the 30.1 percent of the sand acres grown with CP 78-1628 (Table 4). The moderate increase in acreage on sand soils of CP 70-1133 was surprising based on its rust susceptibility which has been identified for several years.

Of the 25 varieties grouped as "all others," CL 73-239, CP 57-603, CP 65-357, CP 70-1527, CP 74-2005, CP 81-1384, CP 82-1592, CP 88-1834, and CP 89-2376 all had no acres as plant cane this year. The absence of plant cane for a variety indicates that its commercial use may soon stop. One variety that was released for commercial use in Florida was no longer grown for the first time this year, CL 72-321. A major attribute of CL 72-321 was that it generally remained erect up to the time of harvest; it reached 2.1 percent of the acreage in 1995.

Growers classified nearly all of their land as having either organic or sand soil. They reported that 78.5 percent of their soils were organic and 21.5 percent were sand. These percentages were nearly the same as last year's 78.3 percent reported for organic and 21.3 percent for sand soils (Glaz, 2000).

To officially classify these soils as organic or sand, one would determine the percentage organic matter by weight. A soil with at least 20 percent organic matter would be organic and one with less than 20 percent organic matter would be a sand soil. This report relies on individual growers to use their own criteria to classify their soils. Most classifications are probably correct because in Florida, most organic soils used for sugarcane have

much more than 20% organic matter and most sand soils used for sugarcane have far less than 20% organic matter. However, sugarcane in Florida is grown on an unknown amount of transitional soils that would require a weighed analysis for proper determination.

Growers have had variety preferences according to soil in the past, but these preferences became more distinct this year (Table 4). Only CP 78-1628 and CP 84-1198 were used substantially on both soil types. Otherwise, CP 88-1762, CP 89-2143, and CL 61-620 were used almost exclusively on organic soils. CP 80-1743, CP 72-2086, and CP 80-1827 were used on small amounts of sand acres compared to their organic-soil acres; in summary they were used primarily on organic soils. Conversely, CP 73-1547 and CP 70-1133 were used primarily on sand soils.

All plant-cane acres were categorized as of the regular or successive planting system. In the regular system, growers do not plant sugarcane after a final-ratoon harvest until the following planting season. Growers often plant at least one other crop, such as sweet corn, rice, or radishes before the next sugarcane crop planted in this regular system. In the successive planting system, growers plant sugarcane several weeks after a final-ratoon sugarcane harvest.

Of the 142,748 plant-cane acres, 71,507 (50.1 percent) were regular planted and 71,242 (49.9 percent) were successively planted (Table 5). These figures are a moderate change from the 51.3 percent regular and 48.7 percent successive figures reported in the 2000 census (Glaz, 1999). In seven of the past eight previous years, Florida sugarcane growers had increased their regular relative to successive planting ratios of the previous year.

Unlike the distinct variety preferences growers had for soil type, most of the varieties were relatively evenly distributed between the two planting systems (Table 5). A minor exception was CP 80-1743 which was planted more in the successive than the regular system. Growers are generally cautious when comparing yields among varieties to check whether they were planted in mostly the regular or successive system because regular plant cane generally yields more tonnage than successively planted fields (Glaz and Ulloa, 1995).

The three most widely grown varieties accounted for 50.6 percent of Florida's 2001 sugarcane, a moderate increase over the 46.2 percent reported last year (Table 6). This may mark the beginning of a new trend of less variety diversification in Florida, because this was the first year after ten consecutive years that the three most widely grown varieties exceeded 50 percent of the acreage. This was the fifth consecutive year that CP 80-1743 and CP 72-2086 were among the three most widely grown sugarcane varieties in Florida, and the first year among the last eight years that CP 80-1827 has not been among the top three varieties. CP 72-2086 has been among these three most widely grown varieties since 1992.

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Table 1. Percentage of 2001 Florida sugarcane planted to each of 12 varieties that comprised at least one percent of the total acreage.

Variety	Total cane grown	Plant cane	First-ratoon cane	Second-ratoon cane	Third-ratoon cane	Fourth-ratoon cane
CP 80-1743	25.1	27.4	22.1	21.8	30.1	40.9
CP 72-2086	13.8	14.6	15.5	14.4	8.3	4.0
Other CLs	11.7	9.5	11.5	12.0	17.8	11.8
CP 78-1628	11.5	11.1	13.9	10.7	10.0	5.8
CP 88-1762	6.2	9.3	7.0	4.3	1.9	0.8
CP 80-1827	5.1	1.7	5.2	7.8	7.2	6.1
CP 84-1198	4.8	6.4	6.0	3.6	1.6	1.2
CP 89-2143	3.5	7.7	2.9	1.0	0.4	0.0
CP 73-1547	3.3	2.9	3.3	4.1	3.1	2.2
CL 61-620	2.9	1.3	3.2	4.4	2.7	2.9
CP 70-1133	2.8	1.1	2.4	3.7	5.4	6.5
All Others	9.3	7.0	7.0	12.2	11.5	17.8
Total acres	466,499	142,748	128,286	130,618	50,383	14,462

Table 2. Annual percentages from 1992 through 2000 for each of 10 varieties that comprised at least one percent of Florida's 2001 sugarcane acreage.

Variety	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CP 80-1743	1.2	2.7	5.2	7.1	10.7	12.0	14.4	17.8	22.1	25.1
CP 72-2086	13.6	13.6	15.5	15.5	18.0	17.1	16.3	14.6	14.2	13.8
CP 78-1628	0.4	0.7	1.0	1.9	2.6	5.0	5.9	7.9	9.3	11.5
CP 88-1762	0.0	0.0	0.0	0.0	0.0	0.2	0.8	2.0	4.1	6.2
CP 84-1198	5.7	8.3	13.1	16.1	18.2	17.5	18.2	14.0	9.9	5.1
CP 84-1198	0.0	0.0	0.1	0.5	1.0	1.5	2.2	2.9	3.8	4.8
CP 89-2143	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	3.5
CP 73-1547	5.5	8.7	9.8	8.9	7.8	7.8	6.7	5.4	4.1	3.3
CL 61-620	14.8	14.8	15.0	13.0	11.1	10.2	7.6	6.2	4.7	2.9
CP 70-1133	13.1	12.2	9.9	7.8	6.4	5.9	4.9	4.7	3.7	2.8

Table 3. Percentages of 2000 and 2001 acreages for each of 10 varieties that comprised at least one percent of Florida's 2001 sugarcane acreage.

Variety	Combined plant and ratoon cane			Plant cane only			Ratoon cane only		
	2000	2001	Change	2000	2001	Change	2000	2001	Change
CP 80-1743	22.1	25.1	+3.0	22.3	27.4	+5.1	22.0	24.2	+2.2
CP 72-2086	14.2	13.8	-0.4	11.1	14.6	+3.5	13.2	13.5	+0.3
CP 78-1628	9.3	11.5	+2.2	12.9	11.1	-1.8	7.9	11.7	+3.8
CP 88-1762	4.1	6.2	+2.1	7.1	9.3	+2.2	2.9	4.8	+1.9
CP 80-1827	9.9	5.1	-4.8	5.1	1.7	-3.4	10.7	6.6	-4.1

Table 3. Percentages of 2000 and 2001 acreages for each of 10 varieties that comprised at least one percent of Florida's 2001 sugarcane acreage.

Variety	Combined plant and ratoon cane			Plant cane only			Ratoon cane only		
	2000	2001	Change	2000	2001	Change	2000	2001	Change
CP 84-1198	3.8	4.8	+1.0	6.4	6.0	-0.4	2.8	4.1	+1.3
CP 89-2143	1.2	3.5	+2.3	2.9	7.7	+4.8	0.5	1.6	+1.1
CP 73-1547	4.1	3.3	-0.8	3.0	1.3	-2.7	4.5	3.6	-0.9
CL 61-620	4.7	2.9	-1.8	3.5	1.3	-2.2	5.2	3.6	-1.6
CP 70-1133	3.7	2.8	-0.9	2.5	1.1	-1.4	4.1	3.6	-0.5

Table 4. Actual and percentage acreage grown on organic and sand soils of each of 10 varieties that comprised at least one percent of Florida's 2001 sugarcane.

Variety	Organic soil		Sand soil	
	Acres	Percent	Acres	Percent
CP 80-1743	112,797	30.8	4,298	4.3
CP 72-2086	60,283	16.5	3,861	3.9
Other CLs	44,114	12.0	10,636	10.6
CP 78-1628	23,645	6.5	30,097	30.1
CP 88-1762	27,370	7.5	1,581	1.6
CP 80-1827	18,893	5.2	5,113	5.1
CP 84-1198	17,241	4.7	5,264	5.3
CP 89-2143	16,085	4.4	188	0.2
CP 73-1547	3,162	0.9	12,340	12.3
CL 61-620	14,487	4.0	109	0.1
CP 70-1133	1,670	0.5	11,434	11.4
All others	26,861	7.3	15,183	15.2
Total	366,387	100.0	100,097	100.0

Table 5. Actual and percentage acreages in regular and successive planting systems for each of 10 varieties that comprised at least one percent of Florida's 2001 sugarcane.

Variety	Regular System		Successive system	
	Acres	Percent	Acres	Percent
CP 80-1743	14,887	20.9	24,092	33.8
CP 72-2086	10,801	15.1	10,092	14.2
Other CLs	7,924	11.1	5,706	8.0
CP 78-1628	8,228	11.5	7,667	10.8
CP 88-1762	7,025	9.8	6,313	8.9
CP 80-1827	1,136	1.6	1,359	1.9
CP 84-1198	4,700	6.6	4,446	6.2
CP 89-2143	6,348	8.9	4,656	6.5
CP 73-1547	2,594	3.6	1,539	2.2
CL 61-620	1,317	1.8	529	0.7
CP 70-1133	1,062	1.5	571	0.8

Table 6. Percentage of the total sugarcane acreage of the three most widely grown varieties in Florida each of ten years since 1992.

Year	Percent	Variety Rank		
		First	Second	Third
1992	42.1	CL 61-620	CP 72-1210	CP 72-2086
1993	40.6	CL 61-620	CP 72-2086	CP 70-1133
1994	43.6	CP 72-2086	CL 61-620	CP 80-1827
1995	44.6	CP 80-1827	CP 72-2086	CL 61-620
1996	47.3	CP 80-1827	CP 72-2086	CL 61-620
1997	46.6	CP 80-1827	CP 72-2086	CP 80-1743
1998	48.9	CP 80-1827	CP 72-2086	CP 80-1743
1999	46.4	CP 80-1743	CP 72-2086	CP 80-1827
2000	46.2	CP 80-1743	CP 72-2086	CP 80-1827
2001	50.6	CP 80-1743	CP 72-2086	CP 78-1628