

## Sugarcane Variety Census: Florida 2003<sup>1</sup>

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This annual variety census of the Florida sugarcane industry for the 2003-2004 harvest season is the latest in a series of annual reports. Mill managers and independent growers supplied data for 99.4% 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, and it categorizes their crop as plant cane, first ratoon, second ratoon, third ratoon, and fourth ratoon or older. The census also reports percentages of organic versus sand soils, planting in regular versus successive systems, and planting by manual versus mechanical systems. Variety preferences for these soils and planting systems are also quantified.

A total of 439,338 acres of sugarcane were reported for sugar and seed for the 2003-2004 crop. This represents a decrease of 18,031 acres compared to the 457,369 acres grown in the 2002-2003 season.

(The total for this year was estimated by including the small percentage of sugarcane area not reported.) The total sugarcane acreage reported this year reduces Florida's sugarcane area to a level similar to that of four years ago. Florida's total sugarcane acres from 1976 through 1987 increased from about 300,000 to 450,000. There have been some fluctuations since 1987, but the Florida sugarcane acreage has generally been near 450,000. The drop in sugarcane area this year is the largest drop on record. This decline resulted from the institution of marketing allotments on the U.S. sugar industry and the conversion of land from sugarcane production to public water storage as part of the Comprehensive Everglades Restoration Plan.

Plant cane represented 31.7 percent and ratoon cane 68.3 percent of Florida's 2003-2004 sugarcane crop. This is similar to percentages of 31.5 for plant cane and 68.5 for ratoon cane reported last year (Glaz and Vonderwell, 2003). The distribution of ratoon cane was 31.7 percent as first ratoon, 24.4 percent second ratoon, 8.6 percent third ratoon, and 3.6 percent as fourth ratoon or older of the total acreage

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reported this year. These compared with 2002-2003 percentages of 29.9, 24.2, 11.1, and 3.4, respectively (Glaz and Vonderwell, 2003). The annual percentages in plant cane through fourth ratoon and older from 2001 through 2003 show that since 2001, Florida sugarcane growers moderately increased the percentages of their crop in plant cane and first ratoon at the expense of the second and third ratoons.

Florida growers reported growing 70 varieties of sugarcane this year. Ten principal varieties each covered at least 1.0 percent of the total cane area (Table 1). All varieties reported in this census were associated with one of two breeding programs. The United States Sugar Corporation of Clewiston, Florida developed 39 varieties identified by a "CL" prefix. A cooperative program based at Canal Point, Florida developed 31 varieties identified by a "CP" prefix. The United States Department of Agriculture, Agricultural Research Service; the Florida Sugar Cane League, Inc.; and the University of Florida, Institute of Food and Agricultural Sciences contributed to the cooperative program at Canal Point. The group labeled as "All others" represented varieties that each made up less than 1.0 percent of the total acreage.

The most widely-grown variety in Florida this year was CP 80-1743 with 28.7 percent of the total cane area (Table 1). This is the fifth consecutive year that CP 80-1743 was the most widely grown variety, and its use has increased each of these years (Table 2). Last year, a decrease of 1.0 percent in the plant-cane acreage of CP 80-1743 suggested that its use in Florida had reached a maximum (Glaz and Vonderwell, 2003). However, plant-cane acreage of CP 80-1743 increased by 7.1 percent this year, more than that of any other variety, suggesting that use of CP 80-1743 will continue to increase (Table 3). CP 80-1743 has high yields of tonnage and sugar concentration. Growers are apparently pleased with ratoon yields of CP 80-1743 since it comprised 52.5 percent of the sugarcane in fourth ratoon and older (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. The juice quality of CP 80-1743 deteriorates rapidly after severe freezes. Therefore, Florida growers place a high priority on

harvesting their remaining fields of CP 80-1743 after severe freezes.

CP 78-1628 was in second place this year for the second consecutive year (Table 1). CP 78-1628 comprised 12.3 percent of the total acreage, a drop of 0.4 percent compared to last year (Table 2). This decrease was due to a decrease of 1.2 percent in plant-cane acreage for CP 78-1628 (Table 3). Also, sand-land growers reduced their use of CP 78-1628 from 31,045 acres last year to 28,514 acres this year, although its percentage use on sand soils increased from 31.5 last year to 36.4 percent this year (Glaz and Vonderwell, 2003 and Table 4). The reduced percentages of CP 78-1628 are due to the decrease in sugarcane grown on sand soils in Florida this year. CP 78-1628 has been the most widely grown variety on sand soils the past five years. CP 78-1628 is used as a reference variety on sand soils in both the CL and CP variety development programs.

CP 88-1762 was the third-place variety this year following two consecutive years as the fourth-place variety (Tables 1 and 2). CP 88-1762 was grown on 11.4 percent of the total acreage this year. It was classified as a principal variety for the first time only four years ago in 1999. At that time it made an unusually large acreage increase for a new variety from 0.8 percent in 1998 to 2.0 percent in 1999 (Table 2). Further increases in the use of CP 88-1762 are expected because its plant-cane acreage was 3.2 percent higher this year than last year (Table 3).

CP 89-2143 was in twelfth place in the 2000 census, and two years ago, it was in seventh place with 3.5 percent of the total acreage (Glaz, 2000 and Table 2). Last year, CP 89-2143 climbed to fifth place with 7.4 percent of the total acreage (Glaz and Vonderwell, 2003). This year, CP 89-2143 continued its climb by finishing in fourth place with 10.7 percent of the total acreage (Table 1). The increased use of CP 89-2143 by 3.3 percent was the largest percentage increase in overall use of all principal varieties this year (Table 3). The plant-cane acreage of CP 89-2143 dropped by 0.8 percent this year following an increase last year of 5.4 percent (Glaz and Vonderwell, 2003). CP 89-2143 has high yields of cane tonnage and sugar content throughout the harvest season. 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. (2002). CP 89-2143 is used as a reference variety on organic soils in the CL and CP variety development programs. The 2002-2003 Clewiston Sugar Festival Award for highest yield at a "sand land" location was won by Russell Kilpatrick Farm with a field of CP 89-2143.

CP 72-2086 was the most widely grown variety in 1994 (Glaz, 1995), then the second-most widely grown variety for seven years, and last year the third most widely grown variety (Table 2). This year, CP 72-2086 dropped to fifth place with 9.1 percent of the acreage, compared with 11.3 percent last year, the largest percentage drop among principal varieties. Sugarcane mosaic was discovered in several fields of CP 72-2086 in one region of Florida's sugarcane in 1996, the year of its highest percentage use (Table 2). Since 1996, use of CP 72-2086 has declined from 18.0 percent to 9.1 percent this year (Table 2). The decline of 2.2 percent this year for CP 72-2086 is similar to its decline last year of 2.5 percent (Glaz and Vonderwell, 2003). This downward trend for CP 72-2086 may be leveling off because the plant-cane percentage of CP 72-2086 dropped by only 0.9 percent this year, compared with 5.6 percent last year. A factor that may contribute to the decline in use of CP 72-2086 is that it is susceptible to pineapple disease. Growers in Florida have managed this susceptibility by chopping planted stalks of CP 72-2086 into long rather than short sections. However, mechanical planters are becoming more widely utilized in Florida, and these planters generally leave shorter rather than longer planted stalk sections. CP 72-2086 is used as one of two reference varieties on organic and sand soils of the cooperative variety development program at Canal Point.

For the third consecutive year, CP 84-1198 was the sixth place variety (Table 2). However, this is the first year since 1994 that the percentage acreage of CP 84-1198 has declined (Table 2). Also, the 1.4 percent reduction in plant-cane acreage of CP 84-1198 was the largest reduction in plant cane among principal varieties (Table 3). Growers report that, to avoid unacceptable reductions in ratoon yields, CP 84-1198 needs special attention during its

mechanical harvest. Similarly, it is difficult to mechanically cut seed cane of CP 84-1198. Its advantages are its high sugar concentration and tonnage yields, drought tolerance, and wide adaptability. CP 84-1198 is used as a reference variety in the United States Sugar Corporation variety development program at Clewiston.

CL 77-797 was the seventh most widely grown variety with 4.8 percent of the total cane area (Table 1). This is the first year that specific data has been available for this variety. It increased in use from 1994 until 2000 when it was planted on 6.3 percent of Florida's sugarcane acreage (Table 2). Use of CL 77-797 has been declining gradually since 2000, but its decline in plant-cane acreage of only 0.3 percent this year suggests that this short-term decline may have ended (Table 2). CL 77-797 is used as a reference variety in the United States Sugar Corporation variety development program at Clewiston. The 2002-2003 Clewiston Sugar Festival Award for highest yield at a "cold muck" location was won by United States Sugar Corp. Bryant Farm with a field of CL 77-797.

CP 73-1547 was the eighth most widely grown variety this year with 2.3 percent of the total cane area (Table 1). Last year, CP 73-1547 was the seventh-place variety with 2.8 percent of the acreage (Glaz and Vonderwell, 2003). CP 73-1547 has declined moderately in percent acreage since 1994 (Table 2). These declines are probably due to yield losses resulting from the susceptibility of CP 73-1547 to sugarcane rust and lower ratoon yields on sand compared with CP 78-1628. CP 73-1547 remained the second most widely grown variety on sand soils, but its percent acreage on sand soil was 25.9 percentage points lower than that of CP 78-1628, the variety most used on sand soils (Table 4).

CL 61-620 was the ninth-place variety this year and CP 70-1133 was the tenth place variety (Table 1). This was a reversal of rankings for these two varieties compared with last year. It was caused by the greater decline in acreage of CP 70-1133 compared with CL 61-620 (Table 3). The percentage use of CL 61-620 has declined annually since 1994. However, its decline by 0.5 percentage points this year (Table 3) was less than its decline of 1.2

percentage points last year (Table 2). CP 70-1133 was the most widely grown variety in Florida from 1982 through 1984 (Glaz and Donovan, 1984). Last year, CP 70-1133 was grown on 8.6 percent of Florida's sand soils (Glaz and Vonderwell, 2003). This year, it declined to 5.7 percent of the sand acres (Table 4). The continued decline of CP 70-1133 is expected due to its rust susceptibility, low sugar concentration, and difficulty in harvesting on organic soils.

This year was the first year since 1990 that CP 80-1827 has not been a principal variety in Florida. CP 80-1827 was the number one variety in Florida from 1995 through 1998 (Glaz and Vonderwell, 2003). Probably the major reasons for its decline are yield losses due to its susceptibility to sugarcane rust and its moderately low sugar concentration relative to recently released varieties.

Among the varieties grouped as "all others," CL 69-886, CL 73-239, CP 65-357, CP 70-1527, CP 80-1557, CP 85-1308, CP 88-1508, CP 89-1509, CP 89-2377, and CP 92-1641 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. The only varieties that were released for commercial use in Florida and no longer grown for the first time this year were CP 85-1491 and CP 94-1340.

Growers classified all of their soil as either organic or sand. They reported that 82.1 percent of their soils were organic and 17.9 percent were sand (Table 4). These percentages were moderately different from the 78.4 percent for organic and the 21.6 percent for sand soils reported last year (Glaz and Vonderwell, 2003).

To classify a soil as organic or mineral, one would determine the percentage organic matter by weight. A soil with at least 20 percent organic matter would generally be organic and one with less than 20 percent organic matter would be a mineral soil. Most organic soils used for sugarcane in Florida have much more than 20% organic matter and most sand soils used for sugarcane have far less than 20% organic matter. However, some sugarcane in Florida is grown on soils that would require a weighed analysis for proper determination.

Growers had variety preferences according to soil this year (Table 4). The only varieties for which at least 2,500 acres were grown on both soil types were CP 80-1743, CP 78-1628, CP 84-1198, and CL 77-797. Otherwise, CP 88-1762, CP 89-2143, and CP 72-2086 were grown almost exclusively on organic soils, and CL 61-620 was grown only on organic soils for the second consecutive year. CP 73-1547 and CP 70-1133 were used primarily on sand soils. CP 78-1628 was a major variety on organic soils (7.0 percent), but it was overwhelmingly the most popular variety on sand soils (36.4 percent).

All plant-cane acres were categorized as planted in a "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, snap beans, leafy vegetables, or radishes before the next sugarcane crop planted in this regular system. In the successive planting system, sugarcane is planted several weeks after a final-ratoon sugarcane harvest.

Of the 138,367 plant-cane acres classified by planting system, 61,214 (44.2 percent) were regular planted and 77,153 (55.8 percent) were successively planted (Table 5). These figures are a moderate shift back to regular planting compared with the 39.4 percent regular and 60.6 percent successive figures reported in the 2002 census (Glaz and Vonderwell, 2003). From 1992 until there was a substantial decline in regular planting last year, regular planting had generally been increasing relative to successive planting.

Several varieties had their plant cane approximately split between successive and regular planting (Table 5). Two exceptions that were favored in successive planting were CP 80-1743 and CL 77-797. Other exceptions were CP 73-1547, CL 61-620, and CP 70-1133 which were planted primarily in the regular system.

Florida growers have been analyzing and improving mechanical planting systems in recent years. This year, data were collected from 98,489 of the total 139,211 (70.7 percent) plant-cane acres to quantify the percentage use of manual versus mechanical planting (Table 6). If these 98,489 acres

are representative of the Florida industry, then manual planting is still used on approximately 67 percent of land planted by Florida growers and mechanical planting was used on approximately 33 percent of the land planted last year in Florida. Varieties that were not used extensively in mechanical planting were CP 88-1762, CP 89-2143, CP 72-2086, and CL 61-620. CL 77-797, CP 73-1547, and CP 70-1133 had more land planted mechanically than manually. As noted previously, the probable reason that CP 72-2086 is not planted mechanically is its susceptibility to pineapple disease. Much of the sugarcane planted mechanically was on sand rather than organic soils. Therefore, variety choice for soil type may have had substantial influence on the distribution of varieties between mechanical or hand planting.

The three most widely grown varieties accounted for 52.4 percent of Florida's 2003 sugarcane, a moderate increase compared with the 50.5 percent reported last year (Table 7). The lack of a substantial change in this figure indicates that Florida growers maintained a similar level of variety diversification during the past two growing seasons. However, the 52.4 percent of the acreage planted to the top three varieties for this year is the highest percentage of this ten-year reporting period. This was the seventh consecutive year that CP 80-1743 was among the three most widely grown sugarcane varieties in Florida, and the third consecutive year for CP 78-1628.

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**Table 1.** Percentages of 2003 Florida sugarcane planted to each of 10 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 and older
Percent						
CP 80-1743	28.7	33.5	25.8	24.4	24.0	52.5
CP 78-1628	12.3	11.7	13.3	11.4	13.4	12.0
CP 88-1762	11.4	13.4	10.4	11.2	10.4	6.0
CP 89-2143	10.7	12.3	13.5	9.1	3.8	1.5
CP 72-2086	9.1	8.1	8.8	12.5	5.9	4.6
CP 84-1198	4.8	4.1	5.2	6.5	2.9	1.1
CP 77-797	4.8	4.7	4.7	4.2	7.7	3.2
CP 73-1547	2.3	1.3	1.8	2.9	6.3	2.8
CP 61-620	1.2	0.6	0.9	1.5	4.1	0.7
CP 70-1133	1.1	0.6	0.7	1.2	2.5	5.1
All others	13.5	9.8	14.8	15.1	19.0	10.6
Total acres	436,706	138,364	138,337	106,585	37,709	15,709

**Table 3.** Percentages of 2002 and 2003 acreages for each of 10 varieties that comprised at least one percent of Florida's 2003 sugarcane acreage.

Variety	Combined plant and ratoon cane			Plant Cane Only			Ratoon Cane only		
	2002	2003	Change	2002	2003	Change	2002	2003	Change
CP 80-1743	26.5	28.7	+2.2	26.4	33.5	+7.1	26.5	26.5	-0.1
CP 78-1628	12.7	12.3	-0.4	12.9	11.7	-1.2	12.6	12.6	+0.0
CP 88-1762	8.6	11.4	+2.8	10.2	13.4	+3.2	7.8	10.4	+2.6
CP 89-2143	7.4	10.7	+3.3	13.1	12.3	-0.8	4.7	10.0	+5.3
CP 72-2086	11.3	9.1	-2.2	9.0	8.1	-0.9	12.4	9.6	-2.8
CP 84-1198	5.1	4.8	-0.3	5.5	4.1	-1.4	4.9	5.2	+0.2
CL 77-797	6.1	4.8	-1.3	5.0	4.7	-0.3	5.5	4.8	-0.7
CP 73-1547	2.8	2.3	-0.5	1.8	1.3	-0.5	3.3	2.8	-0.5
CL 61-620	1.7	1.2	-0.5	0.9	0.6	-0.3	2.0	1.5	-0.5
CP 70-1133	2.0	1.1	-0.9	1.1	0.6	-0.5	2.4	1.4	-1.1

**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 2003 sugarcane.

Variety	Regular System		Successive System	
	Acres	Percent	Acres	Percent
CP 80-1743	15,302	25.0	30,984	40.2
CP 78-1628	8,729	14.3	7,408	9.6
CP 88-1762	7,832	12.8	10,712	13.9
CP 89-2143	8,198	13.4	8,756	11.3
CP 72-2086	4,896	8.0	6,318	8.2
CP 84-1198	2,598	4.2	3,092	4.0
CL 77-797	2,406	3.9	4,137	5.4
CP 73-1547	1,736	2.8	82	0.1
CL 61-620	645	1.1	222	0.3
CP 70-1133	677	1.1	141	0.2
All others	8,195	13.4	5,301	6.9
Total	61,214	100.0	77,153	100.0

**Table 7.** Percentage of the total sugarcane acreage of the 3 most widely grown varieties in Florida in each of 10 years since 1994.

Year	Percent	Variety Rank		
		First	Second	Third
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
2002	50.5	CP 80-1743	CP 78-1628	CP 72-2086
2003	52.4	CP 80-1743	CP 78-1628	CP 88-1762