

Sugarcane Variety Census: Florida 2006

This annual variety census of the Florida sugarcane industry for the 2006-2007 harvest season is the latest in a series of annual reports. Mill managers and independent growers supplied the data for this report. The official sugarcane acreage in Florida is reported by the USDA-National Agricultural Statistics Service (NASS). The total acreage estimated by this variety census is usually similar to the official acreage reported by NASS. 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 and older. The census also reports, percentages of organic versus sand soils, planting in fallow versus successive systems, and planting by manual versus mechanical systems with variety preferences.

A total of 401,723 acres of sugarcane were reported for sugar and seed production for the 2006-2007 crop (Table 1). This represents a decrease of 2,869 acres compared with the reported 404,592 acres grown in the 2005-2006 season (Glaz, 2006). Florida's sugarcane acreage increased from about 300,000 to 425,000 from 1976 through 1987 (Fig. 1). From 1987 through 2001 there were minor fluctuations, but the Florida sugarcane acreage generally was near 450,000. During the past three years, there have been approximately 400,000 acres of sugarcane in Florida. These declines in sugarcane acreage resulted from the institution of marketing allotments on the U.S. sugar industry, the conversion of land from sugarcane production to public water storage as part of the Comprehensive Everglades Restoration Plan, and perhaps a reduction in stalks suitable for planting due to bud damage caused by hurricanes in the 2004-2005 and

2005-2006 planting seasons.

Plant cane represented 33.4% and ratoon cane 66.6% of Florida's 2006-2007 sugarcane crop. This compares with percentages of 29.8 for plant cane and 70.2 for ratoon cane reported last year (Glaz, 2006). Poor seed-cane quality after Hurricanes Frances and Jeanne in 2004 and the perceived need to reduce acreage due to marketing allotments caused the low plant-cane acreage last year. The distribution of ratoon cane was 28.6% as first ratoon, 24.4% second ratoon, 10.6% third ratoon, and 3.1% as fourth ratoon or older of the total acreage reported this year. These compared with 2005-2006 percentages of 30.3, 27.2, 9.0, and 3.7, respectively. Changes in percentages of plant-cane through fourth-ratoon acreages during the past 3 years are shown in Fig. 2.

Florida growers reported growing 29 sugarcane varieties this year. Last year, 28 varieties were reported. Eight principal varieties each covered at least 1.0% of the total cane area

(Table 1). The group labeled as "All others" represents varieties that each made up less than 1.0% of the total acreage. All varieties reported in this census were associated with one of two breeding programs. The United States Sugar Corp. of Clewiston, Florida developed varieties identified by a "CL" prefix. A cooperative program based at Canal Point, Florida developed varieties identified by a "CP" prefix. The United States Department of Agriculture, Agricultural Research Service; the University of Florida, Institute of Food and Agricultural Sciences; and the Florida Sugar Cane League, Inc. participated in this cooperative program at Canal Point. Current and historical census information for each of the eight principal varieties and for several classified as 'all others' is provided in the following sections.

CP 89-2143

The most widely grown variety this year, for the first time, was CP 89-

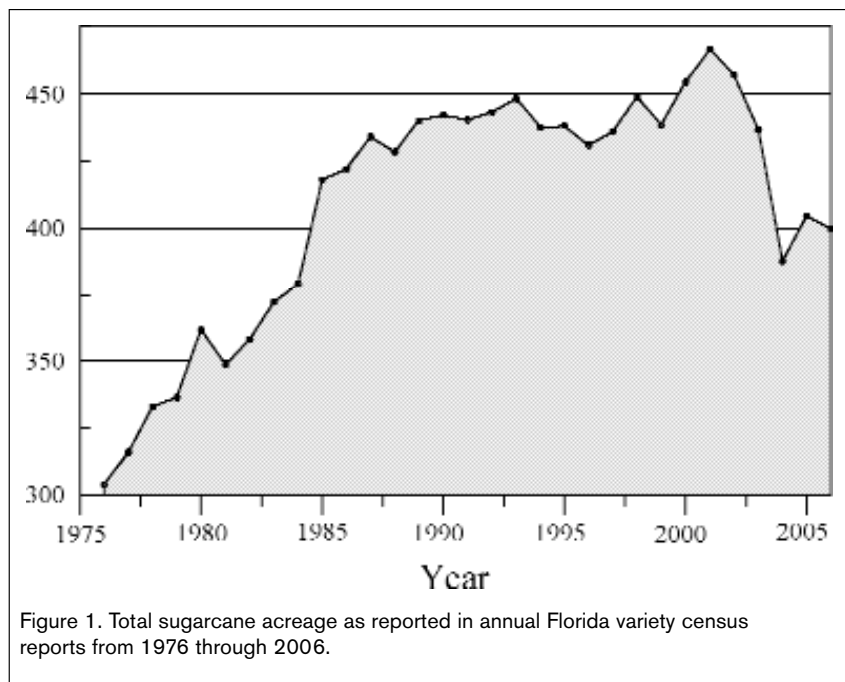


Figure 1. Total sugarcane acreage as reported in annual Florida variety census reports from 1976 through 2006.

2143 (Glaz et al., 2000) with 26.8% of the total acreage (Table 1). Last year, CP 80-1743 was the most widely grown variety and CP 89-2143 was in second place with 20.0% of the total Florida sugarcane acreage (Glaz, 2006). The 6.8% increase in acreage from last year for CP 89-2143 was its largest annual increase since its release (Tables 2 and 3). The increased use of CP 89-2143 was the largest increase of any principal variety and follows last year's 5.1% increase in acreage for CP 89-2143 (Table 3 and Glaz, 2006). Although CP 89-2143 only increased in plant-cane acreage by 3.4%, it was by far the most widely planted variety with 32.6% of all plant-cane acreage. The large plant-cane acreage for CP 89-2143 in each of the past two planting seasons (Table 3) supports reports of growers that its seed cane was the least damaged by hurricanes in 2004 and 2005. Last year with 6.0% of the acreage, CP 89-2143 was the fourth most widely grown variety on sand soils (Glaz, 2006). This year, it is still the fourth most widely grown variety on sand soils, but it has increased to 9.6% of the sand acreage (Table 4). CP 89-2143 has excellent cane yields

and maintains a high sugar concentration throughout the harvest season (Gilbert et al., 2004). In addition, Shine, Jr. et al. (2002) reported that CP 89-2143 had outstanding freeze tolerance. CP 89-2143 is used as one of three reference varieties in the CP variety development program (Glaz et al., 2005).

CP 80-1743

CP 80-1743 (Deren et al., 1991) was the most widely grown sugarcane variety in Florida for the previous 7 years (Table 2). Last year was the first year that CP 80-1743 acreage declined in Florida. This year, CP 80-1743 was the second most widely grown variety in Florida with 22.7% of the total acreage (Table 1). Plant-cane and ratoon acreages of CP 80-1743 declined this year by 6.3 and 4.8% compared with last year (Table 3). These declines are by far the largest declines in acreage among the principal varieties. Some growers reported that hurricanes during 2004 and 2005 were a major cause for these declines. CP 80-1743 yields and seed cane quality suffered due to

these hurricanes. Other growers reported that they were planning to reduce acreage of CP 80-1743 regardless of the hurricanes. Other concerns about CP 80-1743 are substantial yield losses under high water tables (Glaz et al., 2002), moderate susceptibility to leaf scald, growth cracks, sugar losses during the last half of the harvest season, and rapid juice quality deterioration after severe freezes. Therefore, Florida growers often schedule harvests of CP 80-1743 for no later than January and prioritize harvesting their remaining fields of CP 80-1743 after severe freezes as recommended by Gilbert et al. (2004). During its years of expansion, when there was no major hurricane damage, CP 80-1743 had high yields of tonnage and sugar concentration and good ratoon yields. Even after the two hurricane seasons, CP 80-1743 still comprises 47.0% of Florida's sugarcane in fourth ratoon and older (Table 1). With 11.0% of the acreage, CP 80-1743 was also the second most widely grown variety on sand soils this year (Table 4).

CP 88-1762

CP 88-1762 (Tai et al., 1997) was the third-place variety for the fourth consecutive year, with 18.4% of the total acreage (Tables 1 and 2). Following three consecutive years of 1.8% acreage increases, combined plant-cane and ratoon acreage of CP 88-1762 increased by 3.4% this year. Some growers reported that they were planning to increase acreage of CP 88-1762 due to its high yields, and others noted that CP 88-1762 has recently increased in acreage because it was one of the least damaged varieties by recent hurricanes. Growers note that because stalks of CP 88-1762 are less damaged from mechanical cutting, it is well suited for mechanical planting. Although it was only grown on 5.2% of the sand soils (Table 4), some growers reported that they are beginning to expand CP 88-1762 on their sand

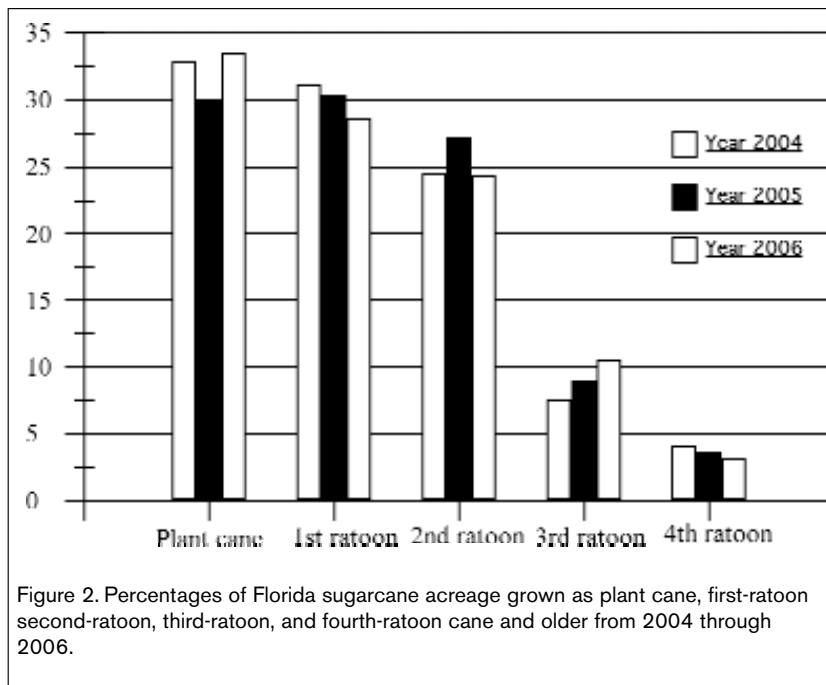


Figure 2. Percentages of Florida sugarcane acreage grown as plant cane, first-ratoon second-ratoon, third-ratoon, and fourth-ratoon cane and older from 2004 through 2006.

soils. Gilbert et al. (2004) recommended harvesting CP 88-1762 early in the harvest season.

CP 78-1628

CP 78-1628 (Tai et al., 1991) was in fourth place for the third consecutive year following two years as the second place variety (Tables 1 and 2). CP 78-1628 comprised 13.1% of the total acreage, an increase of 0.4% compared with last year after minor reductions the previous two years (Table 2). CP 78-1628 has been the most widely grown variety on sand soils in Florida for the past eight years. Its use on sand increased from 40.6% last year (Glaz, 2006) to 41.6% this year (Table 4). For several years, growers have been seeking alternatives to CP 78-1628 because it is susceptible to sugarcane brown rust. Gilbert et al. (2004) recommended harvesting CP 78-1628 in the middle portion of the harvest season for optimum sugar yields. CP 78-1628 is used as a reference variety in the CP variety development program (Glaz et al., 2005).

CP 72-2086

CP 72-2086 (Miller et al., 1984) was the most widely grown variety in Florida in 1994 (Glaz, 1995), the second-most widely grown variety for the following seven years, and the third most widely grown variety in 2002 (Table 2). This year, with 4.3% of the acreage, CP 72-2086 was in fifth place for the fourth consecutive year. Sugarcane mosaic was discovered in Florida on CP 72-2086 in 1996, the year of its highest percentage acreage (Table 2). Gilbert et al. (2004) recommended harvesting CP 72-2086 late in the harvest season. In addition to maintaining high sugar content late in the harvest season, CP 72-2086 maintains its sugar content well after freezes. CP 72-2086 is used as a reference variety in the CP cooperative variety development program (Glaz et al., 2005).

CP 84-1198

CP 84-1198 (Glaz, et al., 1994) was the sixth-place variety, for the sixth consecutive year with 4.2% of the total acreage (Table 1). Since 2000, CP 84-1198 acreage has also been relatively constant in percent use; staying between 3.8 and 5.1% of Florida's total sugarcane acreage (Table 2). After the largest reduction among principal varieties (3.7%) in ratoon-cane acreage last year (Glaz, 2006), CP 84-1198 ratoon acreage increased by 3.5% this year, second only to CP 89-2143 (Table 3). Growers often report unacceptable reductions in ratoon yields of CP 84-1198 due to uprooting of stools during its mechanical harvest. Also, stalks of CP 84-1198 that are cut mechanically and used for planting often have more damaged buds than other varieties. Advantages of CP 84-1198 are its high sugar concentration and tonnage yields in soils where uprooting is less of a problem. Gilbert et al. (2004) recommended harvesting CP 84-1198 in the middle and late portions of the harvest season. CP 84-1198 was the third most widely grown variety on sand soils in Florida with 10.2% of the acreage (Table 4).

CL 77-797

For the fourth consecutive year, CL 77-797 was the seventh most widely grown sugarcane variety in Florida with 1.6% of the total cane area (Table 1). CL 77-797 increased in use from 1994 until 2000 when it was planted on 6.3% of Florida's sugarcane acreage, but has been declining since 2000 (Table 2). Its decline by 0.8% of the combined plant and ratoon cane this year follows a decline of 1.2% last year (Table 2). CL77-797 is a late maturing variety with good tolerance to post-freeze deterioration.

CP 73-1547

CP 73-1547 (Miller et al., 1982) was the eighth most widely grown variety for the fourth consecutive year with 1.2% of the total cane area (Table 1). Although its decrease in acreage was only 0.1%, CP 73-1547 continued its decline in percent acreage since 1997 (Table 2). In recent years, these declines are probably due to yield losses resulting from the susceptibility of CP 73-1547 to sugarcane brown rust and lower ratoon yields on sand compared with

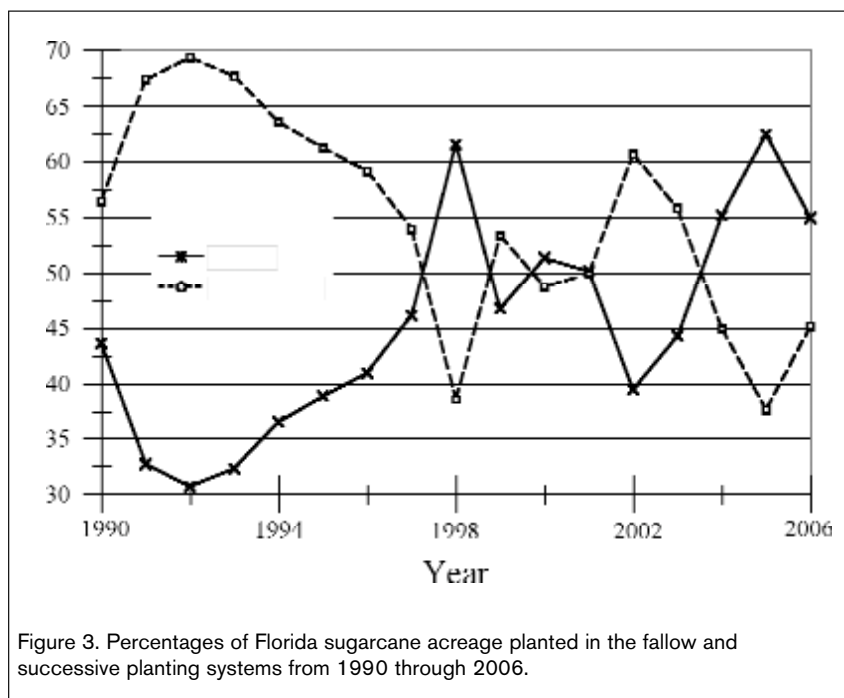


Figure 3. Percentages of Florida sugarcane acreage planted in the fallow and successive planting systems from 1990 through 2006.

CP 78-1628. For the second consecutive year, CP 73-1547 was the fifth place variety on sand soils with 6.0% of the sand acreage compared with 5.9% last year (Glaz, 2006 and Table 4).

Other Varieties

Among the varieties grouped as "all others," CL 61-620, CP 65-357, CP 72-1210, CP 80-1827, CP 85-1382, CP 85-1432, CP 94-1100, CP 94-1340, CP 96-1602, and CP 97-1944 had no acres as plant cane this year. The absence of plant cane for a variety suggests that its commercial use may soon stop. Commercial varieties used previously in Florida and not reported in the census for the first time this year were CL 69-886, CP 92-1213, CP 92-1641, and CP 97-1989.

Soil Type

Florida sugarcane growers classified 79.4% of their soils as organic and 20.6% as sand (Table 4). These percentages compare with 78.4% for organic and 21.6% for sand soils reported last year (Glaz, 2006).

Organic soils contain a minimum of 20 to 30% organic matter by weight, depending on the clay content (higher organic matter required as clay content increases). Most organic soils used for sugarcane in Florida have substantially more than 30% 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. Thus, a small portion of the acreage may not be classified correctly for soil type because most soil types reported in this census were based on visual observations.

Although five of the eight principal varieties, CP 89-2143, CP 80-1743, CP 88-1762, CP 78-1628, and CP 84-1198, were grown on at

Table 1. Percentages of the 2006 Florida sugarcane acreage planted to eight varieties that comprised at least one percent of the total acreage.

Variety	Total	Plant cane	First-ratoon cane	Second-ratoon cane	Third-ratoon cane	Fourth-ratoon cane & older
-----Percent-----						
CP 89-2143	26.8	32.6	30.2	19.8	19.0	15.1
CP 80-1743	22.7	13.4	17.7	28.4	45.2	47.0
CP 88-1762	18.4	24.2	18.9	13.4	12.6	9.8
CP 78-1628	13.1	13.6	14.4	13.9	8.1	5.1
CP 72-2086	4.3	2.9	5.1	6.8	1.3	3.3
CP 84-1198	4.2	4.2	4.3	5.2	2.3	1.2
CL 77-797	1.3	1.1	0.7	2.1	3.2	1.2
CP 73-1547	1.2	1.6	0.7	1.4	1.0	2.4
All others	8.0	6.4	8.0	8.9	7.4	14.9
Total acres	401,723	134,088	114,752	97,998	42,441	12,444

Table 2. Annual percentages from 1997 through 2006 for eight varieties that comprised at least one percent of Florida's 2006 sugarcane acreage.

Variety	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
-----Percent-----										
CP 89-2143	0.0	0.1	0.4	1.2	3.5	7.4	10.7	14.9	20.0	26.8
CP 80-1743	12.0	14.4	17.8	22.1	25.1	26.5	28.7	33.0	28.6	22.7
CP 88-1762	0.2	0.8	2.0	4.1	6.2	8.6	11.4	13.2	15.0	18.4
CP 78-1628	5.0	5.9	7.9	9.3	11.5	12.7	12.3	11.4	12.7	13.1
CP 72-2086	17.1	16.3	14.6	14.2	13.8	11.3	9.1	8.0	6.3	4.3
CP 84-1198	1.5	2.2	2.9	3.8	4.8	5.1	4.8	4.8	4.4	4.2
CL 77-797	4.7	5.7	5.9	6.3	6.1	5.3	4.8	3.3	2.1	1.3
CP 73-1547	7.8	6.7	5.4	4.1	3.3	2.8	2.3	1.6	1.3	1.2

Table 3. Percentages of 2005 and 2006 acreages for eight varieties that comprised at least one percent of Florida's 2006 sugarcane acreage.

Variety	Combined plant and ratoon cane			Plant cane only			Ratoon cane only		
	2005	2006	Change	2005	2006	Change	2005	2006	Change
-----Percent-----									
CP 89-2143	20.0	26.8	6.8	29.2	32.6	3.4	16.1	24.1	8.0
CP 80-1743	28.6	22.7	-5.9	19.7	13.4	-6.3	32.3	27.5	-4.8
CP 88-1762	15.0	18.4	3.4	17.4	24.2	6.8	14.0	15.6	1.6
CP 78-1628	12.7	13.1	0.4	14.4	13.6	-0.8	12.0	12.9	0.9
CP 72-2086	6.3	4.3	-2.0	5.7	4.3	-1.4	6.5	5.1	-1.4
CP 84-1198	4.4	4.2	-0.2	4.1	4.2	0.1	0.7	4.2	3.5
CL 77-797	2.1	1.3	-0.8	0.8	1.3	0.5	2.6	1.5	-1.1
CP 73-1547	1.3	1.2	-0.1	0.7	1.6	0.9	1.6	1.1	-0.5

Table 4. Actual and percentage acreages grown on organic and sand soils in 2006 of eight varieties that comprised at least one percent of Florida's 2006 sugarcane.

Variety	Organic soil		Sand soil	
	Acres	Percent	Acres	Percent
CP 89-2143	99,749	31.4	7,938	9.6
CP 80-1743	81,997	25.8	9,102	11.0
CP 88-1762	69,517	21.9	4,285	5.2
CP 78-1628	18,474	5.8	34,300	41.6
CP 72-2086	17,198	5.4	246	0.3
CP 84-1198	8,354	2.6	8,403	10.2
CL 77-797	5,030	1.6	352	0.4
CP 73-1547	104	0.0	4,906	6.0
All others	16,997	5.4	12,905	15.7
Total	317,420	100.0	82,437	100.0

Table 5. Actual and percentage acreages in the 2006 fallow and successive planting systems for eight varieties that comprised at least one percent of Florida's 2006 sugarcane.

Variety	Fallow system		Successive system	
	Acres	Percent	Acres	Percent
CP 89-2143	21,057	28.7	22,675	37.7
CP 80-1743	10,407	14.2	7,523	12.5
CP 88-1762	14,220	19.4	18,186	30.2
CP 78-1628	13,872	18.9	4,370	7.3
CP 72-2086	2,076	2.8	1,845	3.1
CP 84-1198	3,320	4.5	2,331	3.9
CL 77-797	691	0.9	792	1.3
CP 73-1547	2,080	2.8	21	0.0
All others	5,672	7.7	2,457	4.1
Total	73,395	100.0	60,200	100.0

Table 6. Actual and percentage acreages in the 2006 mechanical and manual planting systems for eight varieties that comprised at least one percent of Florida's 2006 sugarcane.

Variety	Mechanical system		Manual system	
	Acres	Percent	Acres	Percent
CP 89-2143	579	12.4	23,649	29.6
CP 80-1743	874	18.7	9,990	12.5
CP 88-1762	316	6.8	27,315	34.2
CP 78-1628	1,223	26.1	9,276	11.6
CP 72-2086	0	0.0	3,795	4.8
CP 84-1198	153	3.3	2,774	3.5
CL 77-797	0	0.0	74	0.1
CP 73-1547	742	15.9	73	0.1
All others	792	16.9	2,900	3.6
Total	4,679	100.0	79,846	100.0

least 3,000 acres of both soil types, growers had variety preferences according to soil (Table 4). Among principal varieties, CP 84-1198 had the most even distribution of acreage between sand and organic soils. CP 72-2086 and CL 77-797 were grown almost exclusively on organic soils; and CP 73-1547 was used primarily on sand soils. CP 89-2143, CP 80-1743, and CP 88-1762, were used widely on sand soils, but more than 90% of the acreage of each was on organic soils. CP 78-1628, the most popular variety on sand soils, was also the fourth most widely grown variety on organic soils.

Fallow and Successive Planting

All plant-cane acres were categorized as planted in a “fallow” or “successive” planting system. In the fallow system, growers do not plant sugarcane until the planting season following a final-ratoon harvest. Growers do not always leave land fallow in the “fallow” system when it is not planted to sugarcane. Instead they may plant at least one other crop, such as sweet corn, rice, snap beans, leafy vegetables, or radishes before the next sugarcane crop is planted. Sugarcane is planted several weeks after a final-ratoon sugarcane harvest in the successive planting system.

Of the 133,595 plant-cane acres classified by planting system, 73,395 (54.9%) were planted in the fallow system and 60,200 (45.1%) were planted in the successive system (Table 5). Last year, 62.4% of the acreage was planted in the fallow system and 37.6% was planted in the successive system (Glaz, 2006). Since 1996, there have been several shifts between the fallow and successive planting systems (Fig. 3).

CP 89-2143, CP 80-1743, and CP 88-1762 were widely planted in both the fallow and successive systems (Table 5). CP 78-1628 was more likely to be planted in the fallow system and CP 73-1547 was almost exclusively planted in the fallow system. Rather than indicate that CP 78-1628 and CP 73-1547 do not produce well when successively planted, these percentages reflect that successive

Table 7. Percentage of the total sugarcane acreage of the three most widely grown varieties in Florida since 1997.

Year	Percent	First	Variety rank Second	Third
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	50.4	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
2004	61.1	CP 80-1743	CP 89-2143	CP 88-1762
2005	63.6	CP 80-1743	CP 89-2143	CP 88-1762
2006	67.9	CP 89-2143	CP 80-1743	CP 88-1762

planting is not generally practiced on sand soils in Florida. CP 84-1198 and CL 77-797 were nearly equally divided between the two planting systems.

Manual and Mechanical Planting

Florida growers have been evaluating the effectiveness of

mechanical planting systems in recent years. This year, growers provided data from 84,525 acres, about 63% of the total plant cane acreage, that quantified the percentage use of manual versus mechanical planting (Table 6). Manual planting was used on 94.5% and mechanical planting on 5.5% of these reported acres. Last year when 63.8% of the total plant-

cane acreage was reported as manually or mechanically planted, 95.6% was planted manually and 4.4% was planted mechanically (Glaz, 2006). It is probable that a substantial portion of the 49,563 acres not reported as manually or mechanically planted were planted in a mechanical system. For the second consecutive year, CP 73-1547 was the only variety that was planted more in a mechanical than a manual system. CP 73-1547 was planted mostly on sand soils, and most of the mechanical planting reported in this census was on sand soils. CP 78-1628 and CP 80-1743 had substantial acreages planted in the mechanical system, but far more planted manually.

The three most widely grown sugarcane varieties (CP 89-2143, CP 80-1743, and CP 88-1762) accounted for 67.9% of Florida's 2005 sugarcane, compared with 63.6% reported last year (Table 7). The

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67.9% of the acreage planted to the top three varieties for this year is the highest percentage of this 10-year reporting period, and the second highest, 63.6%, was reported last year (Table 7). This was the tenth consecutive year that CP 80-1743 was among the three most widely grown sugarcane varieties in Florida, the fourth consecutive year for CP 88-1762, and the third consecutive year for CP 89-2143.

Acknowledgments

The author gratefully acknowledges the assistance of Manuel del Valle, Barney Eiland, Mike Irey, Gerald Powell, Phyllis Pursell, Maria A. Sanjurjo, James M. Shine, Jr., Modesto F. Ulloa, and others who helped with this census.

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