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Evaluation of New Canal Point Sugarcane Clones

2006–2007 Harvest Season

Abstract

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Thirty-three replicated experiments were conducted on 13 farms (representing 5 organic and 4 sand soils) to evaluate 47 new Canal Point (CP) and 11 new Canal Point and Clewiston (CPCL) clones of sugarcane from the CP 02, CP 01, CP 00, CP 99, CPCL 99, CPCL 97, and CPCL 96 series. Experiments compared the cane and sugar yields of the new clones, complex hybrids of *Saccharum* spp., primarily with yields of CP 89-2143, and to a lesser extent with CP 72-2086 and CP 78-1628. All three were major sugarcane cultivars in Florida. Each clone was rated for its tolerance to diseases and cold temperatures. Based on results of these and previous years' tests, three new clones—CP 00-1101, CP 00-1446, and CP 00-2180—were released for commercial production in Florida. The audience for this publication includes growers, geneticists and other researchers, extension agents, and individuals who are interested in sugarcane cultivar development.

Keywords: Brown rust, histosol, muck soil, orange rust, organic soil, *Puccinia melanocephala, Saccharum* spp., sugarcane cultivars, sugarcane smut, sugarcane yields, sugar yields, *Ustilago scitaminea*.

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Contents

Evaluation of New Canal Point Sugarcane Clones

2006–2007 Harvest Season

B. Glaz, J.C. Comstock, S.J. Edmé, R.A. Gilbert, R.W. Davidson, and N.C. Glynn

Breeding and selection for clones that can be used for commercial production of sugarcane, complex hybrids of *Saccharum* spp., support the continued success of this crop in Florida. Though production of sugar per unit area is a principal selection characteristic, it is not the only factor on which sugarcane is evaluated. In addition, analyses are made on the concentration of sugar and on the fiber content of the cane. The economic value of each clone integrates its harvesting, transportation, and milling costs with its expected returns from sugar production. Deren et al. (1995) developed an economic index for clonal evaluation in Florida. Evaluation of clonal suitability also includes its reactions to endemic pathogens.

This report summarizes the cane production and sugar yields of the clones in the plant-cane, first-ratoon, and second-ratoon stage IV experiments sampled in Florida's 2006–2007 sugarcane harvest season. This information is used to identify commercial cultivars in Florida and identify clones with useful characteristics for the Canal Point and other sugarcane breeding programs. The information is also used by representatives of other sugar industries to request Canal Point clones.

The time of year and the duration that a clone yields its highest amount of sugar per unit area is important because the Florida sugarcane harvest season extends from October to April. Because sugarcane is commercially grown in plant and ratoon crops, clones are evaluated accordingly. Adaptability to mechanical harvesters is an important trait in Florida. All sugarcane sent to Florida mills and much of the sugarcane used for planting is mechanically harvested. Before a new clone is released, Florida growers judge its acceptability for mechanical operations.

Clones with desired agronomic characteristics also must be productive in the presence of harmful diseases, insects, and weeds. Some pathogens rapidly develop new, virulent races or strains. Because of these changes in pathogen populations, clonal resistance is not considered permanent. The selection team must try not to discard clones that have sufficient resistance or tolerance to pests, but it also must discard clones that are too susceptible to pests to be grown commercially.

The disease that has caused the most difficulty in Florida in selecting resistant sugarcane cultivars has been brown rust, caused by *Puccinia melanocephala* Syd & P. Syd. From 2000 to 2005, this program discarded 15 clones that were within 1 year of commercial release due to new infections of brown rust. During the summer of 2007, commercial sugarcane fields in Florida were infected with orange rust, caused by *Puccinia kuehnii* E.J. Butler. This program has had the most success in selecting resistant cultivars for sugarcane smut, caused by *Ustilago scitaminea* Syd & P. Syd. Other diseases we must contend with are leaf scald, caused by *Xanthomonas albilineans* (Ashby) Dow; sugarcane yellow leaf virus, a disease caused by a luteovirus (Lockhart et al. 1996); sugarcane mosaic strain E.; and ratoon stunting, caused by *Leifsonia xyli* subsp. *xyli* Evtsuhenko et al., which has probably been the most damaging, though the least visible, sugarcane disease in Florida. A program to improve resistance of CP clones to ratoon stunting is underway (Comstock et al. 2001).

Scientists at Canal Point also screen clones in their selection program for resistance to brown rust, orange rust, smut, leaf scald, sugarcane yellow leaf virus, mosaic, ratoon stunting, and eye spot caused by *Bipolaris sacchari* (E.J. Butler) Shoemaker.

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Eye spot is not currently a commercial problem in Florida.

Sugarcane growers in Florida rely much more on tolerance to sugarcane diseases than on resistance. In the 2006 growing season, 8 cultivars comprised 92 percent of Florida's sugarcane (Glaz 2007). Seven of these eight cultivars—CP 72-2086, CP 73-1547, CP 78-1628, CP 80-1743, CP 84-1198, CP 88-1762, and CP 89-2143—were at least moderately susceptible to one or more of the following sugarcane diseases: brown rust, orange rust, mosaic, leaf scald, smut, and ratoon stunting. Only CL 77-797 (1.3 percent of Florida's sugarcane) was not susceptible to any of these diseases. Glaz et al. (1986) presented a formula and procedure to help growers distribute their available sugarcane cultivars while considering possible attacks of new pests.

Some growers minimize losses by planting stalks that do not contain the bacteria that cause ratoon stunting. This can be accomplished by planting with stalks that have been treated with hot-water therapy that kills the ratoon stunting bacteria or by using disease-free stalks derived from meristem tissue culture.

Damaging insects in Florida are the sugarcane borer, *Diatraea saccharalis* (F.); the sugarcane lace bug, *Leptodictya tabida*; the sugarcane wireworm, *Melanotus communis*; the sugarcane grub, *Ligyrus subtropicus*; and the West Indian cane weevil, *Metamasius hemipterus* (L.).

Winter freezes are common in the region of Florida where much of the sugarcane is produced. The severity and duration of a freeze and the tolerance of specific sugarcane cultivars are the major factors that determine how much damage occurs. The damage caused by such freezes ranges from no damage to death of the mature sugarcane plant. The rate of deterioration of juice quality after a freeze depends on the ambient air temperature: Warmer post-freeze temperatures result in more rapid deterioration of juice quality. Freezes also damage young sugarcane plants. Stalk populations may decline after severe freezes kill aboveground parts of recently emerged plants. The most severe damage occurs when the growing point is frozen, which is more likely if the plant has emerged from the soil. Tai and Miller (1996) reported that resistance to a light freeze (-1.7 °C to -2.8 °C) was not significantly correlated to fiber content, but resistance to a moderate freeze (-5.0 °C) was.

Each year at Canal Point, 50,000 to 100,000 seedlings are evaluated from crosses derived from a diverse germplasm collection. However, Deren (1995) suggested that the genetic base of U.S. sugarcane breeding programs was too narrow. About 85 percent of the cytoplasm in commercial sugarcane was *Saccharum officinarum*. This year, about half of the parental clones in our program originated from Canal Point, while the other half were developed by the United States Sugar Corporation (USSC) (CL clones). Additional parents originated from Louisiana or Texas breeding programs.

The USSC, based in Clewiston, Florida, recently discontinued its breeding program. Approximately the top 25 percent of clones in all selection stages from the USSC program were donated to the Canal Point program. Clones from the USSC program have traditionally been designated with a CL (Clewiston) prefix. Donated clones included in at least one CP evaluation trial will have a CPCL (Canal Point and Clewiston) designation and retain their USSC numbers.

The seedling stage planted in 2006 contained approximately 51,000 new clones that were planted from seeds. Once selected as seedlings, clones are vegetatively propagated. Because of this vegetative propagation, from this stage (seedling stage) on in the selection program, each plant (clone) is genetically identical to its precursor, assuming no mutations. The stage I trial selected from approximately 66,000 seedlings and planted in the winter of 2006 contained 10,722 new clones. Of these clones, 9,058 (84.5%) were CP clones and 1,664 (15.5%) were CPCL clones. The 1,807 clones in the stage II trial, planted in 2006, were selected from this stage I trial: 1,283 (71.0%) were

CP clones and 524 (29.0%) were CPCL clones. The 2006 plant-cane stage III trial had 135 new clones (28 CP clones and 107 CPCL clones) that were tested in replicated experiments on 4 grower farms. Each of the first three stages (seedling, stage I, and stage II) was evaluated for 1 year in the plant-cane crop at Canal Point. Selection is visual in the seedling phase. In stage 1, the first selection process is visual. The clones that are selected visually are then analyzed with a hand-punch Brix, and heavy emphasis is placed on Brix results. The primary selection criteria for stage II and all subsequent stages are sugar yield (in metric tons of sugar per hectare), theoretical recoverable sucrose, cane tonnage, and disease resistance.

The 135 stage III clones are evaluated for 2 years, in the plant-cane and first-ratoon crops, in commercial sugarcane fields at four locations—three with organic soils and one with a sand soil. The 13 to 14 most promising clones identified in stage III receive continued testing for 4 more years in the stage IV experiments where they are planted in successive years and evaluated in the plant-cane, first-ratoon, and second-ratoon crops. Clones that successfully complete these experimental phases undergo 2 to 4 years of evaluation and expansion by the Florida Sugar Cane League, Inc., before commercial release. Some of the League's evaluation occurs concurrently with the stage IV evaluations. The Canal Point selection program is summarized in appendix 1.

Clones with characteristics that may be valuable for sugarcane breeding programs are identified throughout the selection process. Even though the Canal Point program breeds and selects sugarcane in Florida, some CP clones have been productive commercial cultivars in Texas and outside of the United States. Sugarcane geneticists in other programs often request clones from Canal Point. From May 2006 to April 2007, clones or seeds from the Canal Point program were requested from and sent to Canada, the People's Republic of China, Costa Rica, Ecuador, Guatemala, Mexico, Nicaragua, Pakistan, and Panama.

Test Procedures

In 33 experiments, 58 new CP and CPCL clones were evaluated. Six clones of the CP 02 series and seven clones of the CPCL 99 series were evaluated at eight farms in the plant-cane crop. Thirteen clones of the CP 01 series were evaluated at two farms in the plant-cane crop and at seven farms in the first-ratoon crop. Fourteen clones of the CP 00 series were evaluated at one farm in the first-ratoon crop and at nine farms in the second-ratoon crop. Fourteen clones of the CP 99 series were evaluated at two farms in the second-ratoon crop. In four second-ratoon experiments, each of four new CPCL clones of the 97 and 96 series were evaluated at two farms.

CP 89-2143 was the primary reference cultivar. For experiments of new CP and CPCL clones on sand soils, CP 78-1628 was an important secondary reference cultivar. In 2006, CP 89-2143 was the most widely grown cultivar in Florida and CP 78-1628 the most widely grown cultivar on sand soils in Florida (Glaz 2007). CL 77-797 was also a secondary reference cultivar in two experiments that tested CPCL 96-2061. CP 72-2086 was sometimes used as a reference cultivar for KS/T. CP 72-2086 and CL 77-797 were the fifth and seventh most widely grown cultivars, respectively, in Florida in 2006 (Glaz 2007).

Agronomic practices, such as fertilization, pest and water control, and cultivation were conducted by the farmer or farm manager responsible for the field in which each experiment was planted.

Both second-ratoon experiments and the first-ratoon experiment of the CP 01 series planted at Okeelanta Corporation (Okeelanta) south of South Bay were conducted on Dania muck soil. Also, the second-ratoon experiment at Sugar Farms Cooperative North—Osceola Region S03 (Osceola) was conducted on Dania muck. As described by Rice et al. (2002), Dania muck is the shallowest of the histosols (organic soils) comprised primarily of decomposed sawgrass (*Cladium jamaicense* Crantz) in the Everglades Agricultural Area. The maximum depth to the bedrock of Dania muck is 51 cm. The other organic soils similar to Dania muck are Lauderhill muck (51 to 91 cm depth to bedrock), Pahokee muck (91 to 130 cm to bedrock), and Terra Ceia muck (more than 130 cm to bedrock).

All experiments at A. Duda and Sons', Inc. (Duda) southeast of Belle Glade, Knight Management, Inc. (Knight) southwest of 20-Mile Bend, Sugar Farms Cooperative North—SFI Region S05 (SFI) near 20-Mile Bend in Palm Beach County, and Wedgworth Farms, Inc. (Wedgworth) east of Belle Glade were conducted on Lauderhill muck. In addition, both plant-cane experiments at Okeelanta were conducted on Lauderhill muck.

The plant-cane experiment at Osceola was conducted on Pahokee muck. The second-ratoon experiment at United States Sugar Corporation—Ritta (Ritta) east of Clewiston was conducted on Terra Ceia muck.

The three experiments at Eastgate Farms, Inc. (Eastgate) north of Belle Glade, and the second-ratoon experiment at United States Sugar Corporation—Bryant (Bryant) southeast of Canal Point were conducted on Torry muck. The three experiments at Hilliard Brothers of Florida, Ltd. (Hilliard) west of Clewiston were on Malabar sand. The three experiments at Lykes Brothers, Inc. (Lykes) near Moore Haven in Glades County were on Pompano fine sand. The second-ratoon experiment at United States Sugar Corporation—Benbow (Benbow) was on Margate/Oldsmar sand and the second-ratoon experiment at United States Sugar Corporation—Townsite (Townsite) were on Margate sand.

The CP 01 series plant-cane and the CP 99 series second-ratoon experiments at Okeelanta were planted on fields in successive sugarcane rotations. In this rotation in Florida, a new crop of sugarcane is planted within about 2 months of the previous sugarcane harvest. All other experiments were planted in fields that had not been cropped to sugarcane for approximately 1 year. In all experiments, clones were planted with two lines of stalks per furrow in plots arranged in randomized-complete-block designs. All experiments of the CP clones had six replications. Second-ratoon experiments of CPCL clones had three replications.

Each plot of new CPCL clones in second-ratoon experiments had four rows, two border rows, and two inside rows used for yield determination. These rows were 10.7 m long and 3.0 m wide. The distance between rows was l.5 m, and 4.5-m alleys separated all four sides of all plots. There was no sugarcane planted at the front or back of these second-ratoon CPCL tests. In all other experiments of CP and CPCL clones, all plots had three rows, a border row, and two inside rows used for yield determination. These two rows were 10.7 m long and 3.0 m wide (0.0032 ha). The distance between rows was l.5 m, and 1.5-m alleys separated the front and back ends of the plots. The outside row of each plot was a border row and was usually planted with the same clones as the inside two rows. Experiments were two clones (6 rows) wide. An extra 1.5 m of sugarcane protected each row at the front and back of each test.

Samples of 10 stalks were cut from unburned cane from a middle row of each plot in each experiment between October 10, 2006, and February 1, 2007. In addition, preharvest samples were cut from two replications of all plant-cane experiments between October 11 and October 16, 2006. Once a stool of sugarcane was chosen for cutting, the next 10 stalks in the row were cut as the 10-stalk sample. The range of sample dates for each crop was as follows:

Plant-cane crop..............November 11, 2006 to February 1, 2007

First-ratoon crop............October 24, 2006 to January 25, 2007

Second-ratoon crop........October 10, 2006 to December 19, 2006

After each stalk sample was transported to the Agricultural Research Service's Sugarcane Field Station at Canal Point, FL, for weighing and milling, crusher juice from the milled stalks was analyzed for Brix and pol, and theoretical recoverable yield of kg 96° sugar (in kg per metric ton of cane: KS/T) was determined as a measure of sugar content. The fiber percentage of each clone was also used to calculate theoretical recoverable yield (Legendre 1992). The values of theoretical recoverable yield determined by the Legendre (1992) method were multiplied by 0.86 to better predict recoverable yield in a Florida sugarcane mill. Brix and pol were usually estimated by near infrared reflectance spectroscopy (NIRS); Brix and pol were measured for samples with unacceptable NIRS calibrations by refractometer and polarimeter, respectively.

Using 5-stalk samples collected from border rows, an average of 9 fiber samples were calculated for the CPCL clones in second-ratoon tests, and an average of 10, 14, 13, 11, and 10 fiber samples were calculated for the clones of the CP 99, CP 00, CP 01, CP 02, and CPCL 99 series, respectively. Leaves were stripped from these stalks, which were then cut into three approximately even sections (bottom, middle, and top stalk sections). Two randomly selected bottom, middle, and top sections were processed through a Jeffco1 cutter-grinder (Jeffries Brothers, Ltd., Brisbane Queensland, Australia). About 150 g of material (fresh bagasse) processed through the cutter-grinder were collected and weighed. The fresh bagasse was then placed in cloth bags, washed twice in a washing machine, and dried at 49 °C until its weight did not decline (about 1 week). The fiber percentage of a clone was calculated by dividing its dry bagasse weight by its fresh bagasse weight. Samples of a reference cultivar were processed on all dates that fiber samples of new clones were processed. All fiber percentages calculated on a given day were corrected to the historical fiber percentage of the reference cultivar.

Total millable stalks per plot were counted between June 13 and September 14, 2006. Cane yields (in metric tons per hectare: TC/H) were calculated by multiplying stalk weights by number of stalks. Theoretical yields of sugar (in metric tons per hectare: TS/H) were calculated by multiplying TC/H by KS/T and dividing by 1,000.

To assess cold tolerance, stage IV was subjected to freezing temperatures in two field experiments established at the Hague Farm of the Florida Institute of Food and Agricultural Sciences University of Florida, in Hague, near Gainesville, FL. Air temperatures usually go down to -2 to -4 °C at the testing site during winter months, which guarantees exposure of the clones to harsher freeze temperatures than normally found in south Florida. Clones of the CP 99 and 00 series, along with three reference cultivars (CP 78-1628, CP 70-1133, and CP 89-2143), were planted on February 22, 2005, as two randomized-complete-block experiments with four replications in single-row plots 1.5 m long and 2.4 m apart and with 2.4 m breaks between replications. Five stalk samples were cut for analyses of sucrose content on January 13, January 27, and March 15, 2006. Some clones were not sampled on all three dates because there were not sufficient stalks. Clones of the CP 01, CP 02, and CPCL 99 series were planted on March 16, 2006, using the same plot configurations and compared with the same three reference cultivars. Five stalks were sampled from each plot on January 13, February 6, and March 5, 2007. Cold-tolerance rankings for both experiments were based on temporal deterioration of juice quality in mature stalks after exposure to freezing temperatures.

Prior to their advancement to stage IV, CP clones were evaluated in separate tests by artificial inoculation for susceptibility to sugarcane smut, sugarcane mosaic virus, leaf scald, and ratoon stunting. CP clones were inoculated in stage II plots to determine eye spot susceptibility. Since being advanced to stage IV, separate artificial-inoculation tests were repeated on clones for smut, ratoon stunting, mosaic, and leaf scald. Each clone was also field rated for its emergence, early plant height, tillering, and shading, as well as for its reactions to natural infection by sugarcane smut, sugarcane rust, sugarcane mosaic virus, and leaf scald in stage IV.

Statistical analyses of the stage IV experiments were based on a mixed model using SAS software (SAS version 9.1, 2003; SAS Institute, Inc. Cary, NC) with clones as fixed effects and locations and replications as random effects. Least squares means were calculated for clones. Means of locations were estimated by empirical best linear unbiased predictors. Significant differences were sought at the 10 percent probability level. Differences among clones were tested by the least significant difference (*LSD),* which was used regardless of significance of F-ratios to protect against high type-II error rates (Glaz and Dean 1988). The mean square error of the clone × location interaction was the error term used to calculate this *LSD*. Clones that had significantly higher yields than the reference cultivar were also identified by individual t tests calculated by SAS. Values of *LSD* were also calculated to approximate significant differences among locations using the mean square error of replications within locations as the error term.

Results and Discussion

Table 1 lists the parentage, percentage of fiber, and reactions to smut, brown rust, orange rust, leaf scald, mosaic, and ratoon stunting for each clone included in these experiments. Tables 2–5 contain the results of the CP 02 and CPCL 99 plant-cane experiments, and tables 6–7 contain the results of the CP 01 plant-cane experiments. Tables 8–10 contain the results of the CP 01 first-ratoon experiments, and table 11 contains the results of the CP 00 first-ratoon experiment. Tables 12–14 contain the results of the CP 00 second-ratoon experiments, and table 15 contains the results of the CP 99 second-ratoon experiments. Tables 16–17 contain the results of CPCL second-ratoon experiments. Table 18 gives cold-tolerance ratings for clones of the CP 99, 00, 01, 02, and CPCL 99 series. Table 19 gives the dates that stalks were counted in each experiment.

Plant-Cane Crop, CP 02 Series

When averaged across all eight locations, four new clones—CPCL 99-1401, CP 02-1564, CPCL 99-1777, and CPCL 99-2574—yielded significantly more TS/H (metric tons of sugar per hectare) and TC/H (metric tons of cane per hectare) than CP 89-2143 (tables 2 and 5). CPCL 99-1401 also had significantly higher harvest KS/T (theoretical recoverable yield of 96^{o} sugar in kg per metric ton of cane) than CP 89-2143 (table 4). CPCL 99-1401 had significantly higher TS/H yields than all clones except CP 02-1564 and CPCL 99-1777 (table 5). CP 02-1564, CPCL 99-1777, and CP 89-2143 had similar preharvest KS/T yields (table 3), but each new clone had significantly less harvest KS/T than CP 89-2143 (table 4).

CPCL 99-4455 had significantly higher preharvest KS/T than all clones in this group (table 3). The harvest KS/T of CPCL 99-4455 was also high, although not significantly different from the harvest KS/T yields of CPCL 99-1401, CPCL 99-2574, CP 72-2086, and CP 89-2413 (table 4). The TC/H yield of CP 02-1143 was significantly higher than that of CP 89-2143 (table 2), and these two clones had similar yields of TS/H (table 5). However, both the harvest and preharvest yields of KS/T of CP 02-1143 were significantly lower than those of CP 89-2143 (tables 3–4).

Sugarcane in Florida is propagated by planting stem sections (referred to as seed cane) from which axillary buds emerge. The Florida Sugar Cane League, Inc., has begun increasing seed cane of CPCL 99-1401, CPCL 99-2574, CPCL 99-4455, and CP 02-1143 (table 1). As seed cane of these clones is increased, more disease testing will be conducted. There is particular concern regarding the undetermined susceptibility of CPCL 99-1401 to brown rust and orange rust, and its susceptibility to leaf scald; the low level of susceptibility of CPCL 99-2574 to brown rust, orange rust, and leaf scald; the susceptibility of CPCL 99-4455 to smut and its low level of susceptibility to leaf scald; and the low level of susceptibility of CP 02-1143 to orange rust and leaf scald. Of these new clones that are undergoing seed cane increases, only CPCL 99-4455 is currently resistant to brown rust and orange rust. CP 89-2143 is considered a commercial cultivar in Florida with excellent freeze tolerance because it sustains its juice quality well after exposure to moderate freezes. CPCL 99-2574 had excellent freeze tolerance (table 18). CPCL 99-1401 had mediocre freeze tolerance, CP 02-1401 had poor freeze tolerance, and the freeze tolerance of CPCL 99-4455 was not tested. The fiber contents of CPCL 99-1401, CPCL 99-2574, CPCL 99-4455, and CP 02-1564 were 10.67, 11.99, 10.37, and 9.70 percent, respectively (table 1). CP 02-1564 and CPCL 99-1777 were not increased due to concerns regarding their reactions to brown rust and orange rust.

Plant-Cane Crop, CP 01 Series

Last year's report contained the results from eight locations of the CP 01 series plant-cane crop. This year, plant-cane results are available from two additional locations (tables 6–7). No new clone had significantly higher mean yields of TC/H, harvest KS/T, or TS/H, than CP 89-2143. Similarly, no new clone had significantly higher yields of TCH, harvest KS/T, or TS/H than CP 89-2143 at Eastgate. However, the TS/H yield of CP 89-2143 was significantly lower than the TS/H yields of nine new clones in the successive planting at Okeelanta. Therefore, the new clones at Okeelanta were also compared with CP 78-1628 and no new clone had a significantly higher yield of TS/H than CP 78-1628.

First-Ratoon Crop, CP 01 Series

When averaged across all seven farms, four new clones—CP 01-1372, CP 01-2390, CP 01-1338, and CP 01-1378—yielded significantly more TC/H and TS/H than CP 89-2143 (tables 8 and 10). The KS/T yields of CP 01-1372, CP 01-2390, CP 01-1378, and CP 89-2143 were similar (table 9). However, the KS/T of CP 01-1338 was significantly lower than that of CP 89-2143. CP 01-1372 had consistently high yields of TC/H, KS/T, and TS/H at all locations on both muck and sand soils and also had high yields as plant cane last year (Glaz et al. 2007a).

Last year and again this year, CP 01-1338 and CP 01-2390 have not been considered as potential commercial cultivars. Along with its unacceptable yield of KS/T, CP 01-1338 was considered too susceptible to leaf scald (table 1) (Glaz et al. 2007a). CP 01-2390 was too susceptible to smut. Last year, CP 01-1378 was being increased for potential commercial use on Florida's muck soils, but due to its severe susceptibility to brown rust, orange rust, leaf scald, and mosaic, it is no longer being considered as a commercial candidate. The Florida Sugar Cane League, Inc., has initiated its second year of seed-cane increase of CP 01-1372 at all stage IV locations. The freeze tolerance of CP 01-1372 was excellent (table 19). Currently, CP 01-1372 has no major disease concerns, and it has a fiber content of 9.45 percent (table 1).

First-Ratoon Crop, CP 00 Series

Information for the first-ratoon crop of the CP 00 series was only collected at Eastgate this year (table 11). No new clone yielded significantly more TC/H, KS/T, or TS/H than CP 89-2143.

Second-Ratoon Crop, CP 00 Series

When averaged across all nine locations, CP 00-1630 yielded significantly more KS/T than CP 89-2143 (table 13). However, the TC/H and TS/H yields of CP 00-1630 were significantly lower than those of CP 89-2143 (tables 12 and 14). Three new clones—CP 00-1100, CP 00-1101, and CP 00-1748—had yields of TC/H and TS/H that were similar to those of CP 89-2143. However, CP 00-1100 was too susceptible to mosaic and CP 00-1748 was too susceptible to brown rust and mosaic for commercial production in Florida. CP 00-1101 and CP 00-1630 had high yields of KS/T, TC/H, and TS/H in the plant-cane (Glaz et al. 2007b) and first-ratoon crops (Glaz et al. 2007a). CP 00-1101 was released for commercial production in Florida in October 2007. CP 00-1101 had excellent freeze tolerance (table 18). CP 00-1101 was resistant to all major diseases and had a fiber content of 10.15 percent. CP 00-1630 was not released due to its low TC/H yields in the first-ratoon crop.

CP 00-1446 and CP 00-2180 were also released in October 2007 and recommended primarily for sand soils in Florida. Yields of CP 00-1446 were inconsistent at the three locations with sand soils. At Hilliard, CP 00-1446 and CP 78-1628 had similar yields of KS/T (table 13) and CP 00-1446 had significantly higher yields of TC/H and TS/H than CP 78-1628 (tables 12 and 14). CP 00-1446 and CP 78-1628 had similar yields of TC/H, KS/T, and TS/H at Townsite (tables 12–14). The TC/H yields of CP 00-1446 and CP 78-1628 were similar at Lykes, but CP 78-1628 had significantly higher yields of KS/T and TS/H than CP 00-1446 at Lykes. CP 00-2180 and CP 78-1628 had similar TC/H, KS/T, and TS/H yields at the three sand locations except that the KS/T of CP 00-2180 at Lykes was significantly lower than that of CP 78-1628. CP 00-1446 and CP 00-2180 had high yields of TC/H and TS/H in the plant-cane (Glaz et al. 2007b) and first-ratoon crops (Glaz et al. 2007a). The susceptibility of CP 00-1446 to smut, brown rust, and leaf scald was undetermined; and, it had low levels of susceptibility to orange rust and mosaic. CP 00-2180 had low levels of susceptibility to brown rust and leaf scald. CP 00-1446 and CP 00-2180 had poor freeze tolerance (table 18). CP 00-1446 and CP 00-2180 had fiber contents of 8.86 and 9.46 percent, respectively (table 1).

Second-Ratoon Crop, CP 99 Series

Two new clones—CP 99-1893 and CP 99-1894—had significantly higher mean TC/H and TS/H yields than CP 89-2143, combined across both locations, in the successively planted experiment at Okeelanta and the experiment on Torry muck at Eastgate (table 15). Both new clones and CP 89-2143 had similar KS/T yields. However, both genotypes were not considered for commercial release in Florida due to concerns regarding susceptibility to leaf scald and brown rust. Both clones had high yields as plant-cane (Glaz et al. 2005), first-ratoon (Glaz et al. 2007b), and second-ratoon crops (Glaz et al. 2007a).

Second-Ratoon Crop, Sand Soils, CPCL 96–97 Series

No new CPCL clone on the sand soils at Benbow and Townsite had a significantly higher mean yield of KS/T or TS/H than CP 89-2143 (table 16). However, the Florida Sugar Cane League, Inc., is increasing seed cane of two clones from this group—CPCL 97-2730 and CPCL 96-0860—for potential release at locations with sand soils (table 1). The mean TC/H yield of CPCL 97-2730 was higher than that of CP 89-2143, otherwise both of these clones had mean KS/T, TC/H, and TS/H yields similar to those of CP 89-2143. CPCL 96-0860 is susceptible to brown rust and orange rust, and CPCL 97-2730 had a low level of susceptibility to leaf scald. The fiber contents of CPCL 96-0860 and CPCL 97-2730 were 11.48 and 9.52 percent, respectively.

Second-Ratoon Crop, Muck Soils, CPCL 96 Series

CPCL 96-2061 and CP 89-2143 had similar yields of TC/H and TS/H across both locations with muck soils (table 17). However, the mean KS/T of CP 89-2143 was significantly higher than that of CPCL 96-2061. Seed cane of CPCL 96-2061 is being increased at locations with muck soils for potential release (table 1). Currently, CPCL 96-2061 has no major disease concerns, and it has a fiber content of 10.33 percent.

Summary

The CP 02 and CPCL 99 series were tested for the first time this year at eight locations in stage IV. CPCL 99-1401 and CPCL 99-2574 had high KS/T, TC/H, and TS/H yields. CPCL 99-4455 had high preharvest and harvest KS/T yields and CP 02-1143 had high yields of TC/H. Seed cane of these four new clones is being expanded by the Florida Sugar Cane League, Inc., for potential commercial release in Florida. CP 02-1564 and CPCL 99-1777 had high yields of TC/H and TS/H, but seed cane of these clones is not being expanded due to disease concerns.

The CP 01 series was tested at two locations in the plant-cane crop and eight locations in the first-ratoon crop this year and at eight locations in the plant-cane crop last year. CP 01-1372 had high TS/H, TC/H, and harvest KS/T yields and seed cane of CP 01-1372 is being expanded by the Florida Sugar Cane League, Inc., for potential commercial release in Florida. CP 01-2390, CP 01-1338, and CP 01-1378 also had high TC/H and TS/H yields, but seed cane of these new clones is not being expanded due to disease concerns.

The CP 00 series was tested at one location in the first-ratoon crop and nine locations in the second-ratoon crop this year, at two locations in the plant-cane crop and nine locations in the first-ratoon crop last year, and at nine locations in the plant-cane crop 2 years ago. Based on results reported here and the previous two reports of this series, CP 00-1101 was released and recommended for all soils on which sugarcane is grown in Florida, and CP 00-1446 and CP 00-2180 were released and recommended for sand soils in Florida. High-yielding clones not released due to disease concerns were CP 00-1100, CP 00-1748, and CP 00-1751.

Stage IV testing of the CP 99 series was completed this year with two second-ratoon experiments. Previous testing of these clones included 2 years and 11 locations as plant cane, 2 years and 9 locations as first ratoon, and 8 locations as second ratoon last year. No new clones were released from this group. CP 99-1893 and CP 99-1894 had high plant-cane, first-ratoon, and second-ratoon yields but were not released due to disease concerns.

CPCL clones were tested at four locations in the second-ratoon crop this year, at five locations in the first-ratoon crop last year, and at five locations in the plant-cane crop 2 years ago. Seed cane of CPCL 96-0860 and CPCL 97-2730 is being increased by the Florida Sugar Cane League, Inc., for potential commercial release and use on sand soils in Florida. Seed cane of CPCL 96-2061 is being expanded for potential release and use on muck soils in Florida.

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Tables

Notes (tables 2–17):

1. Clonal yields approximated by least squares (p = 0.10) within and across locations.
2. Location yields approximated by empirical linear unbiased predictors.
3. *LSD* = least significant difference.
4. *CV* = coefficient of variation.

Table 1. Parentage, fiber content, increase status, and ratings of susceptibility to smut, brown rust, orange rust, leaf scald, mosaic, and RSD for CL 77-0797, CP 72-2086, CP 78-1628, CP 89-2143, and 80 new sugarcane clones

	Parentage				Rating*					
			Increase	Percent		Rust		Leaf		Ratoon
Clone	Female	Male	status†	fiber	Smut	Brown	Orange	scald	Mosaic	stunting‡
CL 77-0797	CL 61-620	Mix 75B§	Commercial	11.34	R	R	-	R	R	---
CP 72-2086	CP 62-374	CP 63-588	Commercial	8.97	R	R	L	R	S	R
CP 78-1628	CP 65-0357	CP 68-1026	Commercial	10.39	S	S	-	L	R	R
CP 89-2143	CP 81-1254	CP 72-2086	Commercial	9.85	R	R	R	L	L	L
CP 99-1534	CP 89-2377	CP 89-1756	None	9.31	R	U	-	L	L	L
CP 99-1540	CP 90-1535	95 P 16§	None	11.28	L	S	-	R	L	R
CP 99-1541	CP 90-1535	95 P 16§	None	8.58	R	R	-	R	R	R
CP 99-1542	CP 90-1535	95 P 16§	None	11.54	R	R	-	L	L	L
CP 99-1686	CP 85-1382	CP 70-1133	None	10.25	L	L	-	L	R	R
CP 99-1865	CP 91-1795	CP 90-1151	None	9.37	L	L	-	L	R	R
CP 99-1889	CP 87-1475	CP 72-1210	None	12.75	S	S	-	L	R	L
CP 99-1893	CP 87-1475	CP 72-1210	None	9.94	R	L	-	L	R	S
CP 99-1894	CP 87-1475	CP 72-1210	None	11.14	R	L	-	S	R	L
CP 99-1896	CP 90-1204	CP 90-1436	None	10.56	R	L	-	R	L	S
CP 99-1944	LCP 86-454	Unknown	None	10.43	S	S	-	L	L	R
CP 99-2084	CP 93-1634	CP 84-1198	None	10.88	R	L	-	L	S	R
CP 99-2099	CP 89-2377	CP 84-1198	None	10.01	L	S	-	L	L	R
CP 99-3027	Unknown	Unknown	None	11.07	R	S	-	R	R	S
CP 00-1074	CP 89-2143	98 P07§	None	9.62	R	L	-	R	S	L
CP 00-1100	CP 89-2143	Unknown	None	8.54	R	R	R	R	S	R
CP 00-1101	CP 89-2143	CP 89-2143	Commercial	10.15	R	R	R	R	R	R
CP 00-1252	CP 90-1424	CP 92-1167	None	9.76	R	S	-	U	R	R
CP 00-1301	CP 75-1632	CP 89-2143	None	10.74	R	S	R	U	U	S
CP 00-1302	CP 75-1632	CP 89-2143	None	10.52	R	L	-	L	R	R
CP 00-1446	CP 93-1607	CP 91-1150	Commercial	8.86	U	U	L	U	L	R
CP 00-1527	CP 80-1827	CP 92-1320	None	8.96	R	L	-	R	S	S
CP 00-1630	CP 92-1167	CP 92-1320	None	10.19	R	L	R	U	U	S
CP 00-1748	CP 81-1238	CP 89-1509	None	9.73	R	S	-	R	S	R
CP 00-1751	CP 81-1238	CP 89-1509	None	8.92	R	S	-	L	L	R
CP 00-2164	US 95-1063	US 95-1127	None	9.29	R	L	-	R	L	R
CP 00-2180	HoCP 91-552	HoCP 91-552	Commercial	9.46	R	L	R	L	R	R
CP 00-2188	CP 90-1549	Unknown	None	8.68	R	L	-	R	R	R

Table 1.—continued. Parentage, fiber content, increase status, and ratings of susceptibility to smut, brown rust, orange rust, leaf scald, mosaic, and RSD for CL 77-0797, CP 72-2086, CP 78-1628, CP 89-2143, and 80 new sugarcane clones

	Parentage				Rating*					
						Rust		Leaf		Ratoon
Clone	Female	Male	Increase status†	Percent fiber	Smut	Brown	Orange	scald	Mosaic	stunting‡
CP 01-1178	CP 84-1198	CP 82-1172	None	9.97	R	U	R	L	L	R
CP 01-1338	CP 94-1200	CP 89-2143	None	9.00	R	L	-	S	L	R
CP 01-1372	CP 94-1200	CP 89-2143	All	9.45	L	R	R	L	L	R
CP 01-1378	CP 94-1200	CP 89-2143	None	10.48	R	S	S	S	S	S
CP 01-1391	CP 81-1384	CP 94-1528	None	8.62	R	R	-	S	S	R
CP 01-1564	CP 93-1634	CP 89-2143	None	10.64	R	R	-	L	U	R
CP 01-1957	CP 88-1762	Unknown	None	12.47	R	R	-	S	R	S
CP 01-2056	CP 89-2143	Unknown	None	10.55	L	R	-	R	S	R
CP 01-2390	CP 95-3218	CP 94-1528	None	9.77	S	L	-	L	R	S
CP 01-2459	US 95-1023	CP 85-1308	None	11.32	L	L	R	S	S	L
CP 02-1143	CP 93-1382	CP 92-1666	All	10.80	R	R	L	L	S	R
CP 02-1458	CP 85-1382	CP 80-1743	None	11.90	R	S	S	L	R	R
CP 02-1554	CP 92-1561	CP 94-2059	None	12.13	R	L	L	R	L	R
CP 02-1564	CP 94-1528	CP 72-2086	None	9.70	R	L	L	L	L	S
CP 02-2015	CP 85-1491	CP 80-1743	None	11.84	R	L	L	L	L	U
CP 02-2281	CP 94-1200	CP 92-1167	None	11.93	R	R	R	L	S	R
CPCL 96-0860	CL 75-0853	CL 78-1600	Sand	11.48	R	S	S	S	R	-
CPCL 96-2061	CL 83-3576	Mix 91V§	Muck	10.33	R	R	R	R	R	-
CPCL 97-0393	CL 89-4294	US87-1006	None	11.99	L	L	R	R	S	-
CPCL 97-2730	CL 75-0853	CL 88-4730	Sand	9.52	R	R	R	L	R	-
CPCL 99-1225	CL 87-2608	CP 80-1743	None	11.52	S	S	S	R	R	L
CPCL 99-1401	CL 74-0259	CP 81-1238	All	10.67	R	U	U	S	R	R
CPCL 99-1777	CL 83-3586	CL 84-4234	None	11.05	R	S	S	R	R	R
CPCL 99-2103	CL 86-4047	CL 84-3152	None	11.99	S	S	S	R	S	S
CPCL 99-2206	CL 87-1630	CP 80-1743	None	9.66	R	S	S	S	R	S
CPCL 99-2574	CL 83-3431	Mix 98C	All	11.99	R	L	L	L	R	R
CPCL 99-4455	CL 90-4643	CP 84-1198	All	10.37	S	R	R	L	R	S

* R = resistant enough for commercial production; L = low levels of disease susceptibility; S = too susceptible for production; U = undetermined susceptibility (available data not sufficient to determine the level of susceptibility).

† Commercial = Released for commercial production; None = Not considered as potential release candidate; Otherwise, increasing acreage of seed cane at all locations, locations with sand soils only, or locations with muck soils only.

‡ RSD can be controlled by using heat-treated or tissue-cultured vegetative planting material.

§ Mix 75b and 95 P 8 refer to polycrosses. In Mix 75b, female parent (CL 61-620) exposed to pollen from many clones, and in 95 P 16 CP 90-1535 exposed to pollen from many clones in 1995 crossing season; therefore, male parents of CL 77-0797 and CP 99-1540 unknown. Similar explanations for CP 99-1541, CP 99-1542, CP 00-1074, CPCL 96-2061 and CPCL 99-2574.

Table 2. Yields of cane in metric tons per hectare (TC/H) from plant cane on Lauderhill muck, Pahokee muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date								
	Lauderhill muck					Pahokee muck	Malabar sand	Pompano fine sand	
Clone	**Knight 1/9/07**	**Wedgworth 1/11/07**	**Okeelanta 1/17/07**	**SFI 1/18/07**	**Duda 1/24/07**	**Osceola 1/8/07**	**Hilliard 1/22/07**	**Lykes 12/12/06**	**Estimated yield, all farms**
CPCL 99-1401	160.64	184.35	179.44	235.78	193.93	190.90	162.34	201.78	188.74*
CP 02-1564	180.68	215.19	174.93	212.92	187.03	201.11	148.53	168.81	185.82*
CPCL 99-1777	163.34	205.78	180.19	197.66	207.27	195.84	137.36	167.19	181.76*
CP 02-2015	155.35	223.26	201.85	203.10	208.56	177.74	147.36	136.81	181.74*
CP 02-1143	132.97	192.20	171.22	227.26	207.80	197.84	113.26	175.03	177.64*
CPCL 99-1225	148.67	197.75	171.94	210.30	217.31	161.18	139.84	153.17	175.26*
CPCL 99-2574	138.63	202.59	167.67	232.67	198.94	173.97	124.28	154.07	174.58*
CPCL 99-2103	158.29	193.14	177.42	201.48	181.87	190.08	72.03	172.85	168.16
CP 78-1628	---------	---------	140.18	--------	170.17	181.09	152.78	160.40	166.20
CP 02-1554	142.86	184.42	162.25	207.23	158.75	159.86	146.63	158.28	165.04
CPCL 99-2206	132.51	178.39	162.71	189.63	164.52	177.65	134.78	158.07	162.44
CP 89-2143	---------	---------	150.28	175.14	--------	180.66	123.32	161.18	159.53
CP 02-1458	102.81	188.24	169.76	203.62	165.48	152.95	88.11	161.07	154.49
CP 02-2281	120.40	154.76	161.16	188.04	151.90	170.06	109.43	165.64	153.04
CP 72-2086	132.55	137.02	159.71	177.77	187.95	120.48	--------	152.08	146.71
CPCL 99-4455	118.87	168.18	131.83	169.38	159.55	151.39	131.80	132.29	145.50
Mean	142.04	187.52	166.41	202.13	184.07	173.93	128.79	161.17	167.92
LSD (p = 0.1)†	29.55	24.39	18.61	19.32	25.22	27.53	24.73	21.73	13.41
CV (%)	17.44	13.50	11.62	9.93	14.23	16.46	19.58	14.02	14.36

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of cane yield = 13.51 TC/H at p = 0.10.

Table 3. Preharvest yields of theoretical recoverable 96° sugar in kg per metric ton of cane (KS/T) from plant cane on Lauderhill muck, Pahokee muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date								
	Lauderhill muck					Pahokee muck	Malabar sand	Pompano fine sand	
Clone	Knight 1/9/07	Wedgworth 1/11/07	Okeelanta 1/17/07	SFI 1/18/07	Duda	Osceola 1/8/07	Hilliard 1/22/07	Lykes 12/12/06	Estimated yield, all farms
CPCL 99-4455	125.8	118.0	121.9	119.6	115.4	114.6	131.4	134.0	121.0*
CP 89-2143	-------	-------	109.3	113.5	------	93.3	140.4	121.6	111.9
CP 72-2086	113.7	110.4	100.6	107.8	87.8	89.1	-------	119.0	108.4
CPCL 99-1777	112.8	103.0	95.4	116.0	87.2	88.9	140.4	113.6	107.4
CPCL 99-2103	106.4	81.3	106.0	113.9	98.5	93.9	139.4	108.0	106.2
CPCL 99-2574	98.3	95.4	100.9	107.3	89.9	92.2	141.2	115.9	106.1
CP 02-1564	112.6	95.6	93.8	108.9	91.4	84.1	137.6	119.6	105.6
CPCL 99-1225	112.8	94.4	90.6	105.1	89.4	84.1	138.5	103.2	103.0
CP 02-2281	100.1	91.1	94.1	111.6	96.1	91.5	125.1	116.1	102.7
CP 02-1458	114.3	90.7	98.7	104.6	84.7	81.1	131.2	113.6	102.2
CPCL 99-1401	118.2	82.8	81.4	96.0	80.4	86.2	146.4	117.9	102.0
CPCL 99-2206	112.9	94.3	93.3	100.2	85.2	75.6	132.9	116.9	101.5
CP 02-1554	100.2	95.9	89.5	93.3	83.3	96.7	133.8	113.0	100.9
CP 78-1628	-------	-------	92.5	-------	87.3	82.7	136.4	102.6	100.7
CP 02-1143	103.8	110.4	92.1	106.7	79.4	79.1	129.2	102.6	100.3
CP 02-2015	106.2	87.8	95.3	94.6	87.1	78.0	126.7	113.0	98.7
Mean	109.9	96.5	97.2	106.6	89.5	88.2	135.4	114.4	104.9
LSD (p = 0.1)†	12.5	12.5	17.2	15.4	11.1	13.3	12.2	11.0	8.2
CV (%)	6.4	7.3	10.1	8.1	7.0	8.6	5.4	5.5	7.0

***** Significantly greater than CP 89-2143 at $p = 0.10$ based on *t* test.
† *LSD* for location means of sugar yield = 4.2 KS/T at $p = 0.10$.

Table 4. Yields of theoretical recoverable 96° sugar in kg per metric ton of cane (KS/T) from plant cane on Lauderhill muck, Pahokee muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date								
	Lauderhill muck					Pahokee muck	Malabar sand	Pompano fine sand	
Clone	Knight 1/9/07	Wedgworth 1/11/07	Okeelanta 1/17/07	SFI 1/18/07	Duda 1/24/07	Osceola 1/8/07	Hilliard 1/22/07	Lykes 12/12/06	Estimated yield, all farms
CPCL 99-1401	123.6	127.0	125.8	126.4	124.4	121.3	146.4	134.8	128.5*
CPCL 99-2574	120.5	124.7	131.0	124.7	127.3	118.4	141.2	134.5	127.7
CPCL 99-4455	119.4	126.1	129.9	124.3	128.6	123.5	131.4	135.9	127.4
CP 72-2086	119.3P	120.6	132.6	123.0	128.8	121.0	-------	130.4	126.9
CP 89-2143	-------	-------	130.3	117.3	-------	119.6	140.4	133.9	125.8
CPCL 99-2103	117.7	121.4	130.3	119.1	125.5	114.7	139.4	133.6	125.2
CPCL 99-1777	118.3	120.7	126.6	118.8	121.6	114.7	140.4	134.8	124.4
CP 78-1628	-------	-------	125.3	-------	125.4	115.6	136.4	127.4	122.7
CP 02-1564	113.1	119.1	122.7	112.7	120.9	113.7	137.6	137.1	122.1
CPCL 99-1225	107.1	121.0	127.0	121.2	120.1	111.1	138.5	129.1	122.0
CPCL 99-2206	108.4	116.6	126.7	117.6	121.6	114.8	132.9	127.9	120.9
CP 02-1143	111.8	115.4	124.1	118.5	119.9	111.8	129.2	129.1	120.0
CP 02-1458	110.1	115.9	119.4	117.8	119.7	107.1	131.2	122.7	118.0
CP 02-1554	109.1	110.3	121.9	110.4	116.8	111.6	133.8	127.2	117.6
CP 02-2281	103.9	113.2	117.5	112.4	121.2	116.6	125.1	127.6	117.3
CP 02-2015	108.4	106.4	116.8	108.7	111.2	104.0	126.7	118.0	112.4
Mean	113.6	118.5	125.5	118.2	122.2	115.0	135.4	130.2	122.4
LSD (p = 0.1)†	5.3	5.1	4.5	4.6	4.5	5.1	7.1	3.5	2.4
CV (%)	3.9	4.5	3.7	4.1	3.8	4.6	5.4	2.8	4.2

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of sugar yield = 2.52 KS/T at p = 0.10.

Table 5. Yields of theoretical recoverable 96° sugar in metric tons per hectare (TS/H) from plant cane on Lauderhill muck, Pahokee muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date								
	Lauderhill muck					Pahokee muck	Malabar sand	Pompano fine sand	
Clone	Knight 1/9/07	Wedgworth 1/11/07	Okeelanta 1/17/07	SFI 1/18/07	Duda 1/24/07	Osceola 1/8/07	Hilliard 1/22/07	Lykes 12/12/06	Estimated yield, all farms
CPCL 99-1401	19.831	23.387	22.779	29.803	23.967	23.241	23.774	27.243	24.262*
CP 02-1564	20.459	25.572	21.580	24.063	22.621	22.935	20.448	23.187	22.583*
CPCL 99-1777	19.417	24.825	22.811	23.525	25.189	22.610	19.230	22.551	22.514*
CPCL 99-2574	16.613	25.310	22.014	29.327	25.330	20.687	17.477	20.712	22.219*
CPCL 99-1225	16.092	24.205	21.862	25.459	26.115	17.930	19.345	19.774	21.394
CP 02-1143	14.917	22.182	21.212	26.915	24.906	22.095	14.638	22.637	21.244
CPCL 99-2103	18.611	23.401	23.119	23.987	22.578	21.709	9.933	23.122	20.785
CP 78-1628	--------	--------	17.560	--------	22.112	21.076	20.823	20.402	20.530
CP 02-2015	16.890	23.760	23.580	22.026	23.966	18.505	18.688	16.164	20.430
CP 89-2143	--------	--------	19.557	20.558	--------	21.648	17.323	21.650	19.981
CPCL 99-2206	14.382	20.810	20.987	22.278	20.013	20.458	17.926	20.297	19.667
CP 02-1554	15.608	20.233	19.791	22.861	18.505	17.834	19.609	20.162	19.331
CP 72-2086	14.682	16.609	21.156	21.977	24.224	14.510	--------	19.771	18.552
CPCL 99-4455	14.176	21.142	17.105	21.061	20.248	18.667	17.295	17.985	18.493
CP 02-1458	11.352	21.766	20.280	23.991	19.807	16.391	11.640	19.648	18.169
CP 02-2281	12.523	17.521	18.925	21.124	18.432	19.880	14.723	21.181	18.094
Mean	16.111	22.195	20.895	23.930	22.534	20.011	17.525	21.030	20.516
LSD ($p = 0.1$)†	3.554	3.034	2.568	2.432	3.308	3.372	3.321	3.013	1.757
CV (%)	18.477	14.188	12.777	10.557	15.232	17.523	19.688	14.893	15.232

***** Significantly greater than CP 89-2143 at $p = 0.10$ based on *t* test.
† *LSD* for location means of sugar yield = 1.675 TS/H at $p = 0.10$.

Table 6. Yields of preharvest and harvest theoretical recoverable 96^{o} sugar in kg per metric ton of cane (KS/T) from plant cane on Lauderhill muck and Torry muck

	Preharvest yield by soil type, farm, and sampling date			Harvest yield by soil type, farm, and sampling date		
	Lauderhill muck	Torry muck		Lauderhill muck	Torry muck	
Clone	Okeelanta 1/29/07	Eastgate 2/1/07	Mean yield, both farms†	Okeelanta 1/29/07	Eastgate 2/1/07	Mean yield, both farms†
CP 01-1321	89.2	109.8	99.5	134.1	124.3	129.1
CP 89-2143	101.4	108.1	104.7	136.4	121.5	128.8
CP 01-1205	107.2	110.4	108.8	129.8	126.0	128.0
CP 72-2086	99.4	111.3	105.4	131.6	123.7	127.6
CP 01-1178	108.7	107.5	108.1	130.4	124.3	127.4
CP 01-1391	86.7	109.3	98.0	134.5	118.0	126.0
CP 01-1378	89.5	108.0	99.7	133.2	119.0	125.5
CP 01-1338	80.6	88.6	84.6	127.6	123.0	125.3
CP 01-2390	98.2	97.5	97.8	128.2	122.4	125.3
CP 01-1181	108.7	119.8	114.3	124.3	122.6	123.6
CP 01-2056	90.3	96.9	93.6	124.5	122.5	123.6
CP 78-1628	93.4	110.1	101.8	125.3	118.6	122.0
CP 01-1372	103.9	110.6	107.3	124.1	118.2	121.2
CP 01-2459	93.3	101.2	97.2	120.2	117.2	118.8
CP 01-1957	81.7	95.1	88.4	123.7	110.4	116.9
CP 01-1564	84.2	104.8	94.5	119.1	114.6	116.7
Mean	94.8	105.6	100.2	127.9	120.4	124.1
LSD (p = 0.1)†	10.9	8.6	11.8	5.0	5.4	14.1
CV (%)	6.5	4.6	5.6	3.7	4.6	4.2

† *LSD* for location means of preharvest sugar yield = 2.6 KS/T and of harvest yield = 1.5 KS/T at p = 0.10.

Table 7. Yields of cane and of theoretical recoverable 96° sugar in metric tons per hectare (TC/H and TS/H) from plant cane on Dania muck and Torry muck

	Cane yield by soil type, farm, and sampling date			Sugar yield by soil type, farm, and sampling date		
	Lauderhill muck	Torry muck		Lauderhill muck	Torry muck	
Clone	Okeelanta 1/29/07	Eastgate 2/1/07	Mean yield, both farms†	Okeelanta 1/29/07	Eastgate 2/1/07	Mean yield, both farms†
CP 01-1178	122.51	339.15	233.21	16.023	42.356	29.432
CP 01-1391	121.93	342.92	233.37	16.408	40.482	28.529
CP 01-1321	128.16	308.77	218.36	17.157	38.267	27.711
CP 01-2459	124.07	337.53	231.55	14.938	39.731	27.439
CP 01-1378	130.94	311.98	221.73	17.471	37.014	27.110
CP 01-1372	132.75	318.48	225.65	16.498	37.679	27.094
CP 01-1564	136.41	338.56	237.40	16.163	37.615	26.862
CP 78-1628	122.61	324.84	224.18	15.363	37.924	26.662
CP 01-1205	99.17	314.60	207.68	12.842	39.516	26.338
CP 01-1338	143.40	275.88	208.31	18.273	33.915	25.936
CP 01-2390	145.25	268.55	205.33	18.424	32.754	25.393
CP 01-1957	120.88	319.08	220.33	14.872	35.319	25.076
CP 89-2143	92.16	307.02	200.37	12.572	37.257	25.016
CP 01-2056	127.10	263.33	193.98	15.856	32.054	23.813
CP 72-2086	82.81	294.38	189.30	10.863	36.418	23.767
CP 80-1743	91.27	--------	183.03	12.108	--------	22.677
CP 01-1181	88.60	231.38	158.92	11.022	28.295	19.547
Mean	118.24	306.03	211.34	15.109	36.662	25.788
LSD (p = 0.1)†	19.52	51.68	40.78	2.440	6.402	4.721
CV (%)	15.61	17.56	19.95	15.273	18.143	20.050

† *LSD* for location means of cane yield = 16.12 TC/H and of sugar yield = 2.520 TS/H at p = 0.10.

Table 8. Yields of cane in metric tons per hectare (TC/H) from first-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date							
	Dania muck	**Lauderhill muck**				**Malabar sand**	**Pompano fine sand**	
Clone	**Okeelanta 10/26/06**	**SFI 10/19/06**	**Knight 10/26/06**	**Duda 12/14/06**	**Wedgworth 12/26/06**	**Hilliard 12/28/06**	**Lykes 12/24/06**	**Mean yield, all farms**
CP 01-1372	166.26	224.78	154.58	222.41	208.46	157.43	126.98	180.13*
CP 01-2390	136.32	203.77	162.92	206.48	191.77	162.87	122.08	169.46*
CP 01-1338	162.16	239.55	88.21	214.61	191.38	--------	112.39	165.43*
CP 01-1378	141.84	169.70	196.94	216.34	200.15	119.66	114.78	165.24*
CP 01-1957	147.57	195.60	157.91	214.50	198.50	124.13	52.83	156.34*
CP 78-1628	125.45	--------	-------	201.68	--------	149.22	96.60	152.86*
CP 01-1564	166.54	166.33	126.70	187.49	199.23	135.58	86.40	152.59*
CP 01-2056	143.78	152.38	165.17	179.62	163.53	110.90	72.68	141.15
CP 01-2459	138.00	152.33	133.01	162.22	149.94	115.73	97.18	135.67
CP 01-1321	118.69	155.73	110.11	161.93	176.40	118.18	96.50	133.94
CP 01-1391	121.52	152.28	103.86	138.98	197.46	109.46	88.43	130.45
CP 89-2143	104.34	160.93	-------	162.38	--------	120.85	86.56	130.20
CP 01-1178	97.57	123.80	89.86	128.50	148.66	122.37	104.47	116.60
CP 01-1205	106.39	127.67	93.54	147.00	138.04	104.04	86.16	114.41
CP 72-2086	111.04	119.72	92.12	136.16	148.14	---------	88.19	112.91
CP 01-1181	104.45	115.30	87.44	140.33	121.04	99.04	96.29	108.42
Mean	130.75	163.99	125.88	176.29	173.76	124.96	95.53	141.61
LSD ($p = 0.1$)†	20.83	26.94	21.66	27.84	24.66	18.23	19.27	17.26
CV (%)	16.55	17.07	17.85	16.42	14.71	15.09	20.96	17.01

***** Significantly greater than CP 89-2143 at $p = 0.10$ based on *t* test.
† *LSD* for location means of cane yield = 14.26 TC/H at $p = 0.10$.

Table 9. Yields of theoretical recoverable 96° sugar in kg per metric ton of cane (KS/T) from first-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date							
	Dania muck	Lauderhill muck				Malabar sand	Pompano fine sand	
Clone	Okeelanta 10/26/06	SFI 10/19/06	Knight 10/26/06	Duda 12/14/06	Wedgworth 12/26/06	Hilliard 12/28/06	Lykes 12/24/06	Mean yield, all farms
CP 01-1181	123.0	121.8	103.4	114.1	127.5	138.2	126.6	122.0
CP 01-1178	117.6	110.7	106.3	119.6	127.1	143.6	119.1	120.6
CP 01-1372	115.1	121.2	110.4	113.8	124.4	138.4	120.4	120.5
CP 01-1205	114.3	118.3	106.1	106.6	132.6	133.5	122.8	119.5
CP 01-1378	113.5	113.5	118.3	110.7	123.7	132.3	116.6	118.2
CP 89-2143	113.6	109.1	-------	114.3	------	140.2	113.7	117.1
CP 72-2086	113.4	111.1	100.5	118.3	126.8	-------	103.4	115.7
CP 01-2390	111.4	113.7	102.4	111.4	122.5	134.8	110.1	115.2
CP 01-2459	115.1	106.4	100.6	109.5	123.8	137.3	107.4	114.3
CP 01-1321	115.4	121.7	77.1	115.5	118.1	138.6	112.4	114.1
CP 01-2056	106.0	106.8	98.8	104.5	124.0	133.6	110.7	112.1
CP 01-1564	110.2	102.7	93.4	103.7	123.8	131.8	116.6	111.8
CP 78-1628	110.3	--------	-------	109.0	------	126.2	107.3	110.8
CP 01-1391	99.6	107.1	100.8	101.5	122.6	133.4	108.6	110.1
CP 01-1338	97.3	95.6	94.2	114.8	114.0	-------	99.3	105.9
CP 01-1957	92.6	91.5	86.3	108.8	117.8	131.4	86.3	101.7
Mean	110.5	110.1	99.9	111.0	123.5	135.2	111.3	114.3
LSD ($p = 0.1$)†	8.1	10.0	7.5	7.0	6.9	9.9	6.8	5.1
CV (%)	7.6	9.4	7.8	6.6	5.8	7.6	6.3	7.4

† *LSD* for location means of sugar yield = 2.3 KS/T at $p = 0.10$.

Table 10. Yields of theoretical recoverable 96^{o} sugar in metric tons per hectare (TS/H) from first-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date							
	Dania muck	Lauderhill muck				Malabar sand	Pompano fine sand	
Clone	Okeelanta 10/26/06	SFI 10/19/06	Knight 10/26/06	Duda 12/14/06	Wedgworth 12/26/06	Hilliard 12/28/06	Lykes 12/24/06	Mean yield, all farms
CP 01-1372	16.306	27.221	17.212	25.287	26.028	21.709	15.259	21.289*
CP 01-2390	12.819	23.238	16.790	22.905	23.357	21.985	13.430	19.218*
CP 01-1378	13.732	19.358	23.304	23.830	24.697	15.867	13.402	19.098*
CP 01-1338	13.126	22.985	8.277	24.582	21.822	---------	11.120	17.140*
CP 78-1628	11.932	---------	---------	21.979	---------	19.173	10.404	16.923
CP 01-1564	15.107	17.549	11.958	19.436	24.609	17.848	10.139	16.672
CP 01-1957	11.661	17.983	13.528	23.265	23.543	16.768	4.578	15.927
CP 01-1321	13.735	18.967	8.455	18.582	20.977	16.153	10.830	15.385
CP 01-2056	12.637	16.322	16.190	18.892	20.293	14.823	8.034	15.313
CP 01-2459	13.227	16.219	13.613	17.778	18.628	15.864	10.400	15.128
CP 89-2143	10.454	17.577	---------	18.629	---------	16.869	9.873	15.107
CP 01-1391	10.361	16.428	10.576	14.364	24.203	14.479	9.459	14.298
CP 01-1178	11.578	13.972	9.628	15.471	18.944	17.655	11.881	14.187
CP 01-1205	11.761	15.248	10.001	15.794	18.314	13.635	10.609	13.692
CP 01-1181	12.876	14.096	9.106	16.032	15.424	13.632	12.162	13.253
CP 72-2086	10.271	13.303	9.340	16.101	18.784	--------	9.135	12.939
Mean	12.599	18.031	12.713	19.558	21.402	16.890	10.670	15.973
LSD (p = 0.1)†	3.492	3.750	2.432	3.281	3.335	2.931	2.267	2.035
CV (%)	28.829	21.610	19.844	17.443	16.157	17.943	22.071	20.348

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of sugar yield = 2.582 TC/H at p = 0.10.

Table 11. Yields of cane in metric tons per hectare (TC/H) and of theoretical 96° recoverable sugar in kg per metric ton (KS/T) and in metric tons per hectare (TS/H) from first-ratoon cane on Torry muck

	Mean yield		
	Cane (TC/H)	Sugar (KS/T)	Sugar (TS/H)
Clone	Eastgate 1/25/07	Eastgate 1/25/07	Eastgate 1/25/07
CP 89-2143	229.70	133.6	30.660
CP 00-1446	235.03	129.5	30.426
CP 00-1751	211.20	138.8	29.313
CP 00-1101	226.72	128.9	29.198
CP 00-1074	215.29	131.8	28.399
CP 00-1100	206.08	135.9	27.982
CP 72-2086	207.28	132.6	27.495
CP 00-1748	205.06	133.6	27.359
CP 00-2180	209.36	129.8	27.069
CP 00-1301	196.71	132.4	26.232
CP 00-1252	198.36	128.2	25.416
CP 00-1302	209.72	119.7	25.047
CP 00-2188	189.35	122.5	23.177
CP 00-2164	149.49	136.3	20.357
CP 00-1527	140.95	136.6	19.326
Mean	202.02	131.3	26.497
LSD (p = 0.1)	27.22	3.5	3.528
CV (%)	14.00	2.7	13.825

Table 12. Yields of cane in metric tons per hectare (TC/H) from second-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, Margate sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date									
	Dania muck		Lauderhill muck				Malabar sand	Margate sand	Pompano fine sand	
Clone	Okeelanta 10/20/06	Osceola 10/23/06	Knight 10/13/06	SFI 10/18/06	Duda 10/25/06	Wedg-worth 11/6/06	Hilliard 10/10/06	Town-site 11/16/06	Lykes 10/16/06	Estimated yield, all farms
CP 00-1100	100.03	118.48	99.97	83.77	138.14	113.51	42.75	126.14	92.53	101.13
CP 89-2143	116.37	95.46	-------	105.05	135.38	-------	-------	94.06	-------	99.53
CP 00-1748	99.87	106.56	86.78	68.73	148.82	110.17	57.16	119.72	77.31	96.71
CP 00-1302	100.90	103.67	105.71	71.79	177.33	76.20	38.03	91.05	78.71	93.91
CP 00-1101	100.42	93.17	123.63	79.57	133.32	95.71	37.35	85.52	78.95	92.26
CP 00-1446	106.52	100.48	88.52	83.14	123.23	80.58	47.46	106.14	88.60	91.33
CP 78-1628	------	-------	-------	--------	-------	-------	26.94	94.53	101.98	88.14
CP 00-1527	100.00	96.48	62.81	64.65	160.51	72.77	54.33	87.73	69.63	85.59
CP 00-2180	73.78	80.26	93.49	61.95	155.84	71.97	30.48	95.02	96.63	84.14
CP 00-1630	78.55	99.95	91.42	67.21	120.61	82.66	24.54	79.83	81.02	80.77
CP 00-1074	103.35	90.93	77.55	51.82	107.95	56.65	42.20	75.25	82.38	76.63
CP 00-1751	88.71	75.94	59.22	54.24	115.06	69.47	24.80	106.54	69.00	72.85
CP 00-1252	87.35	79.02	80.90	49.61	101.04	64.12	24.68	37.26	70.53	67.00
CP 00-1301	64.75	87.15	61.46	85.32	90.14	66.99	24.07	55.01	56.88	66.18
CP 72-2086	74.64	-------	68.56	46.47	-------	57.66	-------	68.23	62.07	64.01
CP 00-2188	72.09	48.96	38.63	46.57	64.14	60.20	37.81	100.95	61.88	57.95
CP 00-2164	41.48	57.76	16.39	42.78	75.91	38.75	9.74	30.48	40.62	39.70
Mean	88.05	88.95	77.00	66.42	123.16	74.49	34.82	85.50	75.54	79.87
LSD (p = 0.1)†	19.85	19.14	17.13	22.36	27.49	14.49	16.53	22.86	12.60	10.96
CV (%)	23.45	22.36	23.11	35.01	23.19	20.20	49.32	19.37	17.33	24.84

† *LSD* for location means of cane yield = 13.75 TC/H at p = 0.10.

Table 13. Yields of theoretical recoverable 96° sugar in kg per metric ton of cane (KS/T) from second-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, Margate sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date									
	Dania muck		Lauderhill muck				Malabar sand	Margate sand	Pompano fine sand	
Clone	Okeelanta 10/20/06	Osceola 10/23/06	Knight 10/13/06	SFI 10/18/06	Duda 10/25/06	Wedgworth 11/6/06	Hilliard 10/10/06	Townsite 11/16/06	Lykes 10/16/06	Estimated yield, all farms
CP 00-1630	107.6	118.9	106.1	116.1	108.8	115.7	125.8	136.9	119.9	117.1*
CP 00-1748	109.6	104.3	97.6	110.5	106.6	113.5	129.5	139.6	114.6	113.7
CP 00-2188	106.2	111.0	104.3	107.9	101.9	112.6	126.9	133.6	116.3	113.3
CP 89-2143	100.7	106.3	-------	119.0	112.6	--------	--------	129.0	-------	113.3
CP 00-1101	107.1	113.7	101.5	115.7	101.5	120.7	117.5	128.9	112.2	113.2
CP 00-1751	109.0	108.1	100.0	112.0	105.9	116.6	122.0	130.6	111.7	112.8
CP 00-1074	104.5	110.5	97.5	105.8	99.9	111.9	126.5	132.7	112.0	111.1
CP 00-1100	102.5	106.5	98.9	104.9	105.7	121.4	110.4	135.5	109.2	110.2
CP 00-1252	105.9	109.3	98.1	108.0	101.1	115.6	115.2	116.7	110.5	109.2
CP 00-2164	111.3	104.4	95.1	103.0	97.8	112.0	123.1	128.0	109.1	109.2
CP 00-1527	116.4	105.3	95.2	95.9	105.9	110.8	124.4	123.8	103.5	109.1
CP 00-1301	113.4	108.3	94.8	112.5	95.8	112.7	117.0	121.2	98.4	108.3
CP 00-2180	109.3	103.2	91.6	108.0	98.2	114.5	109.5	121.0	98.7	106.1
CP 72-2086	109.0	--------	93.3	101.6	--------	110.4	--------	118.0	103.3	105.9
CP 78-1628	-------	--------	-------	--------	--------	--------	115.0	120.4	105.1	105.3
CP 00-1302	101.5	103.2	92.1	100.7	80.2	105.5	112.8	120.4	102.6	102.0
CP 00-1446	111.0	100.7	80.5	99.0	91.5	102.7	117.6	115.9	93.9	101.6
Mean	107.8	107.6	96.4	107.5	100.9	113.1	119.5	126.6	107.6	109.5
LSD (p = 0.1)†	8.1	5.6	6.2	9.2	8.4	6.5	7.9	7.7	6.3	3.7
CV (%)	7.8	5.4	6.7	8.9	8.6	6.0	6.8	4.4	6.1	7.0

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of sugar yield = 2.9 KS/T at p = 0.10.

Table 14. Yields of theoretical recoverable 96º sugar in metric tons per hectare (TS/H) from second-ratoon cane on Dania muck, Lauderhill muck, Malabar sand, Margate sand, and Pompano fine sand

	Mean yield by soil type, farm, and sampling date									
	Dania muck		Lauderhill muck				Malabar sand	Margate sand	Pompano fine sand	
Clone	Okeelanta 10/20/06	Osceola 10/23/06	Knight 10/13/06	SFI 10/18/06	Duda 10/25/06	Wedgworth 11/6/06	Hilliard 10/10/06	Townsite 11/16/06	Lykes 10/16/06	Estimated yield, all farms
CP 89-2143	11.750	10.186	-----	12.578	15.231	-----	-----	12.151	-----	11.270
CP 00-1100	10.267	12.632	10.065	8.866	14.732	13.780	4.736	17.070	10.041	11.233
CP 00-1748	10.870	11.107	8.509	7.645	15.900	12.527	7.385	16.696	8.856	10.936
CP 00-1101	10.926	10.631	12.559	9.379	13.496	11.565	4.454	11.047	8.844	10.347
CP 00-1630	8.382	11.822	9.737	7.908	13.236	9.510	3.157	10.951	9.741	9.378
CP 00-1527	11.522	10.176	6.122	6.431	16.966	8.162	6.722	10.741	7.189	9.355
CP 00-1302	10.493	10.708	9.731	7.379	14.389	8.015	4.251	11.065	8.043	9.337
CP 78-1628	------	-----	-----	-----	-----	-----	3.143	11.381	10.678	9.272
CP 00-1446	11.886	10.081	7.208	8.430	11.264	8.303	5.679	12.302	8.356	9.245
CP 00-2180	7.985	8.300	8.699	6.897	15.416	8.273	3.411	11.566	9.474	8.856
CP 00-1074	10.788	10.041	7.537	5.468	10.751	6.331	5.336	10.031	9.140	8.379
CP 00-1751	9.742	8.194	6.008	6.166	12.156	8.129	3.029	13.914	7.703	8.221
CP 00-1252	9.249	8.618	7.974	5.358	10.250	7.384	2.913	4.306	7.774	7.219
CP 00-1301	7.499	9.523	5.816	9.803	8.610	7.666	2.856	6.718	5.600	7.179
CP 72-2086	8.117	-----	6.493	4.799	-----	6.412	-----	8.087	6.381	6.716
CP 00-2188	7.686	5.486	4.102	5.020	6.566	6.871	4.798	13.441	7.124	6.639
CP 00-2164	4.610	6.030	1.562	4.632	7.357	4.312	1.215	3.893	4.415	4.281
Mean	9.486	9.569	7.475	7.297	12.421	8.483	4.206	10.904	8.085	8.698
LSD (p = 0.1)†	2.400	2.161	1.796	2.602	3.080	1.838	2.068	3.121	1.356	1.262
CV (%)	26.308	23.467	24.965	37.083	25.762	22.512	51.077	20.734	17.429	26.645

† *LSD* for location means of sugar yield = 1.541 TS/H at p = 0.10.

Table 15. Yields of cane in metric tons per hectare (TC/H) and theoretical recoverable 96° sugar in kg per metric ton (KS/T) and metric tons per hectare (TS/H) from second-ratoon cane on Dania muck and Torry muck

	Mean cane yield by soil type, farm, and sampling date			Mean KS/T yield by soil type, farm, and sampling date			Mean TS/H yield by soil type, farm, and sampling date		
	Dania muck	Torry muck		Dania muck	Torry muck		Dania muck	Torry muck	
Clone	Okeelanta 10/24/06	Eastgate 12/19/06	Mean yield, both farms	Okeelanta 10/24/06	Eastgate 12/19/06	Mean yield, both farms	Okeelanta 10/24/06	Eastgate 12/19/06	Mean yield, both farms
CP 99-1893	99.02	185.85	142.43*	102.5	119.1	110.8	10.191	22.206	16.198*
CP 99-1894	104.60	176.32	140.46*	106.1	116.1	111.1	11.126	20.505	15.816*
CP 99-1896	86.77	222.76	154.77*	95.5	101.5	98.5	8.432	22.601	15.517
CP 99-1889	90.05	192.73	141.39*	91.7	107.0	99.4	8.276	20.625	14.450
CP 99-1944	70.58	173.02	121.80	107.8	116.3	112.0	7.645	20.171	13.908
CP 89-2143	55.69	169.73	112.71	105.3	124.2	114.8	5.965	21.063	13.514
CP 99-1865	71.29	158.10	114.69	101.8	120.3	111.1	7.220	19.034	13.127
CP 99-1541	55.06	165.81	110.44	112.1	119.3	115.7	6.250	19.814	13.032
CP 72-2086	54.49	159.97	107.50	103.6	124.2	113.8	5.715	19.907	12.788
CP 99-1686	55.58	162.01	109.13	100.5	116.9	108.6	5.592	18.923	12.278
CP 99-2099	41.42	172.44	106.93	104.6	113.1	108.8	4.181	19.510	11.846
CP 99-1540	50.03	165.07	107.55	101.7	108.3	105.0	5.047	17.935	11.491
CP 99-2084	54.20	150.87	102.53	97.8	116.5	107.1	5.358	17.528	11.443
CP 99-1534	46.25	144.58	95.42	103.5	116.6	110.1	4.713	16.862	10.788
CP 99-3027	51.74	128.68	90.21	103.7	111.2	107.4	5.408	14.273	9.841
CP 99-1542	28.62	134.76	81.69	102.2	111.4	106.8	2.935	15.025	8.980
Mean	63.46	166.42	114.98	102.5	115.1	108.8	6.503	19.124	12.813
LSD (p = 0.1)†	16.68	29.47	21.51	6.1	3.6	6.4	1.650	3.471	2.185
CV (%)	27.34	18.41	21.57	6.2	3.3	4.8	26.391	18.869	21.952

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of cane yield = 19.19 TC/H, and of sugar yield = 1.3 KS/T and 2.049 TS/H at p = 0.10.

Table 16. Yields of cane in metric tons per hectare (TC/H) and theoretical recoverable 96^{o} sugar in kg per metric ton (KS/T) and in metric tons per hectare (TS/H) from second-ratoon cane on Margate/Oldsham sand and Margate sand

	Mean cane yield by soil type, farm, and sampling date			Mean KS/T yield by soil type, farm, and sampling date			Mean TS/H yield by soil type, farm, and sampling date		
	Margate/ Oldsham sand	Margate sand		Margate/ Oldsham sand	Margate sand		Margate/ Oldsham sand	Margate sand	
Clone	**Benbow 10/24/06**	**Townsite 12/19/06**	**Mean yield, both farms**	**Benbow 10/24/06**	**Townsite 12/19/06**	**Mean yield, both farms**	**Benbow 10/24/06**	**Townsite 12/19/06**	**Mean yield, both farms**
CPCL 97-2730	116.09	104.92	110.51*	124.17	125.46	124.74	14.411	13.331	13.870
CP 89-2143	93.56	94.23	93.90	120.92	128.88	124.90	11.380	12.170	11.775
CPCL 96-0860	104.35	103.88	104.12	111.86	112.85	112.35	11.531	11.743	11.637
CPCL 97-0393	106.28	98.93	102.60	115.05	107.52	111.29	12.241	10.658	11.450
CP 78-1628	98.68	93.20	95.94	111.31	120.35	115.83	10.983	11.221	11.102
Mean	103.79	99.03	101.41	116.66	119.01	117.82	12.109	11.825	11.967
LSD (p = 0.1)†	21.96	32.17	16.03	7.76	9.59	11.14	2.466	4.241	2.113
CV (%)	13.93	21.00	15.84	4.50	5.38	4.93	13.414	23.964	17.682

***** Significantly greater than CP 89-2143 at p = 0.10 based on *t* test.
† *LSD* for location means of cane yield = 18.22 TC/H, and of sugar yield = 3.8 KS/T and 2.130 TS/H at p = 0.10.

Table 17. Yields of cane in metric tons per hectare (TC/H) and theoretical recoverable 96^{o} sugar in kg per metric ton (KS/T) and metric tons per hectare (TS/H) from second-ratoon cane on Torry muck and Terra Ceia muck

	Mean cane yield by soil type, farm, and sampling date			Mean KS/T yield by soil type, farm, and sampling date			Mean TS/H yield by soil type, farm, and sampling date		
	Torry muck	Terra Ceia muck		Torry muck	Terra Ceia muck		Torry muck	Terra Ceia muck	
Clone	**Bryant 11/16/06**	**Ritta 12/19/06**	**Mean yield, both farms**	**Bryant 11/16/06**	**Ritta 11/16/06**	**Mean yield, both farms**	**Bryant 11/16/06**	**Ritta 11/16/06**	**Mean yield, both farms**
CP 89-2143	124.28	99.76	112.35	123.7	115.0	119.4	15.397	11.427	13.471
CL 77-0797	127.93	73.64	100.79	116.4	99.2	107.8	14.763	7.415	11.089
CPCL 96-2061	115.23	90.31	102.77	108.9	100.6	104.7	12.508	9.156	10.832
CP 72-2086	--------	-------	--------	-------	110.4	115.4	---------	--------	--------
Mean	122.48	87.90	105.30	116.3	106.3	111.8	14.223	9.333	11.798
LSD (p = 0.1)†	30.93	35.76	40.45	12.8	11.2	8.0	2.480	4.319	5.100
CV (%)	10.59	24.73	17.38	6.3	6.8	6.9	10.019	29.164	19.377

† *LSD* for location means of cane yield = 22.04 TC/H, and of sugar yield = 9.5 KS/T and 2.295 TS/H at p = 0.10.

Table 18. Rankings of clones and percent rating of CP 89-2143, by series, of damage to juice quality by freezing temperatures

CP 99 series			CP 00 series			CP 01 series			CP 02 and CPCL 99 series		
Clone	Rank	% of CP 89-2143	Clone	Rank	% of CP 89-2143	Clone	Rank	% of CP 89-2143	Clone	Rank	% of CP 89-2143
CP 72-2086	12	88.0	CP 72-2086	12	88.0	CP 72-2086	12	92.6	CP 72-2086	14	92.6
CP 89-2143	1	100.0	CP 89-2143	3	100.0	CP 78-1628	1	104.1	CP 78-1628	1	104.1
CP 99-1534	16	83.9	CP 00-1074	15	85.4	CP 89-2143	4	100.0	CP 89-2143	5	100.0
CP 99-1540	7	91.5	CP 00-1100	10	93.7	CP 01-1178	7	98.7	CP 02-1143	13	92.7
CP 99-1541	5	93.3	CP 00-1101	2	102.1	CP 01-1181	14	90.3	CP 02-1458	7	98.2
CP 99-1542	6	91.9	CP 00-1252	4	99.6	CP 01-1205	6	99.3	CP 02-1554	4	100.3
CP 99-1686	14	87.7	CP 00-1301	1	102.3	CP 01-1321	11	92.7	CP 02-1564	6	99.6
CP 99-1865	2	96.3	CP 00-1302	13	85.9	CP 01-1338	15	87.3	CP 02-1582	15	89.5
CP 99-1889	9	90.2	CP 00-1446	11	88.7	CP 01-1372	3	100.3	CP 02-1736	9	95.8
CP 99-1893	8	91.4	CP 00-1527	7	94.7	CP 01-1378	10	96.1	CP 02-2015	12	93.2
CP 99-1894	3	96.1	CP 00-1630	6	97.0	CP 01-1391	16	81.9	CP 02-2281	17	84.1
CP 99-1896	13	87.8	CP 00-1748	5	98.8	CP 01-1564	9	98.3	CPCL 99-1225	10	95.4
CP 99-1944	10	89.6	CP 00-1751	9	94.0	CP 01-1957	13	91.0	CPCL 99-1401	8	97.3
CP 99-2084	4	93.7	CP 00-2164	14	85.6	CP 01-2056	2	100.9	CPCL 99-1777	16	88.7
CP 99-2099	15	84.3	CP 00-2180	16	81.3	CP 01-2390	5	99.9	CPCL 99-2103	2	102.3
CP 99-3027	11	88.1	CP 00-2188	8	94.5	CP 01-2459	8	98.7	CPCL 99-2206	11	93.6
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Table 19. Dates of stalk counts of 10 plant cane, 8 first-ratoon, and 15 second-ratoon experiments

Location	Crop		
	Plant cane	**First ratoon**	**Second ratoon**
Benbow	---	---	09/14/06
Bryant	---	---	09/14/06
Duda	07/11/06	07/26/06	08/11/06
Eastgate	06/13/06	---	08/10/06
Hilliard	07/20/06	08/08/06	09/12/06
Knight	07/16/06	08/03/06	09/08/06
Lykes	07/19/06	08/09/06	09/11/06
Okeelanta	07/13/06	08/02/06	09/06/06
Okeelanta (successive)	07/14/06	08/04/06	09/07/06
Osceola	07/06/06	---	08/23/06
Ritta	---	---	09/14/06
Townsite (CP)	---	---	09/13/06
Townsite (CPCL)	---	---	09/14/06
SFI	07/25/06	08/01/06	09/07/06
Wedgworth	06/21/06	08/02/06	08/24/06