

AN OVERVIEW OF 2023 ACTIVITIES IN THE LOUISIANA STATE UNIVERSITY AGRICULTURAL CENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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The main objective of the LSU AgCenter Sugarcane Variety Development Program is to contribute to the profitability of the Louisiana sugarcane industry. This is accomplished by developing genetically improved varieties of sugarcane for the industry. The Variety Development Program is comprised of several distinct stages (Table 1) each of which is critical to the overall objective. The stages as listed in chronological order depict the process of creating, selecting, testing, and releasing new, genetically improved varieties for commercial production. For the program to be effective, each of these stages must be accomplished every year. This report is a summary of the activities of the LSU AgCenter sugarcane variety development team in the 2023 season.

Sugarcane variety development at the LSU AgCenter is a team effort carried out by scientists from a diversity of disciplines (Table 2). The LSU AgCenter and the United States Department of Agriculture (USDA) sugarcane breeding teams work independently as well as cooperatively to produce “L” and HoCP or Ho varieties, respectively. The best varieties from each program are brought together for evaluation at the nursery, infield, and out-field test stages of the program (Table 1). Out-field testing is conducted by personnel from the LSU AgCenter, the USDA, and the American Sugar Cane League. Upon recommending a variety for commercial release, seedcane can be procured from the American Sugar Cane League from 44 secondary increase stations around the industry. Seedcane increase of highly recommended experimental varieties generally commences when varieties are introduced to the out-field testing stage. The cooperative effort under which the three entities (the LSU AgCenter, the USDA, and the American Sugar Cane League) participate to develop improved sugarcane varieties for the Louisiana sugarcane industry is outlined in the “three-Way Agreement of 2007”.

Success in developing improved sugarcane varieties is heavily dependent on the availability of novel genetic variation upon which selection is applied. A new flush of genetic variation is produced every year by making targeted crosses. Cultivated sugarcane does not flower naturally under Louisiana conditions hence, the breeding program must rely on artificial photoperiod treatment to induce and synchronize flowering of sugarcane parents for crossing. Photoperiod treatment to induce flowering began on June 1 and continued until September 27, 2023, when the natural day length was less than 12 ½ hours and decreasing at a rate conducive to sugarcane flowering. However, although this time may be conducive for flower initiation in Louisiana, by the time the flowers emerge and are used in crossing, the temperatures (too low) would not be conducive for pollen production. The first flowers were produced by the second week of September. The 2023 crossing campaign ran from September 15, 2023, and ended on November 20, 2023.

The 2023 crossing campaign was adversely affected by the extreme hot and dry weather that prevailed in the summer of 2023 (Fig. 1). The hottest months were July and August, with an average temperature of 87.8° and 90.1°, respectively, which happens to be very critical months

for flower initiation, crossing and seed set. Stalk numbers were decreased in 2023 to 1,294 stalks (Table 2) as compared to 1,647 stalks in 2022. The stalks were also stunted, and some lateral buds germinated. Tassel production reduced from 692 in 2022 to 390 in 2023. Ultimately, flower production decreased in 2023 (30.1%) compared with 2022 (42.0%). Many flowers were initiated but failed to develop past the boot stage. In all, 253 crosses were made using 390 tassels comprising 66 genotypes. These produced only 28,899 viable seeds with 19,051 seeds coming from bi-parental crosses, 2,899 seeds from polycrosses, and 6,949 from self-crosses. Germination rates decreased in 2023 with an average of 10 plants per gram of seeds compared to 15 plants per gram of seeds in 2022. A more comprehensive report of the 2023 crossing campaign can be found in the chapter titled **“2024 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM”**.

The next stage after crossing is the seedling stage. Although sugarcane is a clonally propagated crop, every sugarcane variety begins life as a single seedling. A total of 59,000 seedlings from the 2022 crossing series were germinated in the greenhouse from true seed and transplanted to the field in April of 2023. Individual seedling selection will be carried out in 2024 when these seedlings are in the first stubble crop. Of the 59,000 seedlings from the 2021 crossing series transplanted in 2022, 37,899 (64%) survived the winter and were subjected to individual seedling selection in September of 2023. A total of 1,599 clones (4 % selection rate) were selected and planted in 10-foot, first-line trial plots. The selection criteria included visual appraisal for pith, disease symptoms, insect damage, lodging, and for yield (mainly stalk number, stalk diameter and height). This was followed by an evaluation of the visually selected clones for Brix using a handheld refractometer.

Superior experimental varieties of the 2020 crossing series planted in the first-line trial were advanced to 16-foot, second-line trials (536 clones; 36% selection rate). From the 2019 crossing series, superior experimental varieties from the second-line trials were advanced to 2-row, un-replicated, 16-foot, increase plots (74 clones; 30% selection rate). Thirty-two (32) experimental varieties from the 2018 crossing series judged to be superior to the checks were assigned permanent variety designations (“L”, “HoCP, or Ho”) in the fall of 2023. These newly assigned experimental varieties were entered into replicated nursery trials (2 replicates, 16-foot plots) at three locations (Sugar Research Station, New Iberia Research Station and USDA-ARS Ardoyne Farm). Additional details about selection in the seedling and early clonal stages can be found in the section titled **‘SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER’S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2023’**.

The section titled **‘2023 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFIELD VARIETY TRIALS’** describes experiments that were conducted outside of the experiment station in several locations scattered across the Louisiana sugarcane industry. The objective is to identify and select varieties that will perform well across the range of environments a commercial variety is likely to encounter in Louisiana. These tests are planted in grower’s farms by the breeding crew but are managed by the growers. Nineteen (19) varieties from the 2022 assignment series (2017 Crossing series) that performed well in the plant cane crop on-station nursery trials were replanted into infield and off station nursery tests. The off-station nurseries were planted in single row, 20-foot plots with 4-foot

alleys. The infield tests were planted in two-row, 25-foot plots with 5-foot alleys. The experimental design for the off-station nursery and infield tests was a randomized complete block with two replications per location. The infield test is the first-time experimental varieties are harvested and weighed using weigh wagons to estimate cane yield. Up until this point, cane yield was estimated using stalk counts multiplied by the weight of 10 random stalks in a plot. Varieties selected by the LSU AgCenter and USDA are jointly evaluated in the off-station and infield locations.

Four experimental varieties from the 2021 assignment series that performed well in the infield, off-station and on-station nursery tests were introduced to outfield locations and planted into increase plots. Those that continue to perform well in these tests will subsequently be planted into the outfield testing stage of the program in 2024. In 2023, one of the experimental varieties from the 2020 Assignment Series was eligible for planting into the outfield trial stage or introduced on primary increase stations. No variety was released to the Louisiana sugar industry in 2023. The outfield stage of the program is described in detail in the section titled **‘2023 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS’**.

The section titled **‘SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION’** describes activities in the sucrose (‘juice lab’) laboratory for 2023. The lab. Processed a total of 3,645 samples using the Spectracane FT-NIR instrument. A subset of samples (343) was processed using the standard wet chemistry method and the data were used to validate data obtained from the Spectracane FT-NIR instrument.

Promising experimental varieties that made it to the advanced stages of the program were entered into several tests to screen for resistance to prominent diseases (Dr. Andre Gama, Plant Pathologist) and insect pests (Dr. Blake Wilson, Entomologist) of sugarcane in Louisiana. Results gathered from these screening tests will be instructive in determining which varieties to recommend for commercial release and how best to manage these varieties during commercial production. The data will also be useful in the crossing program in determining what parents to pair to avoid making susceptible by susceptible crosses. Also informative were data from the molecular breeding program (Dr. Niranjana Baisakh) in deciding, which crosses to make based on genetic diversity among parents at the molecular level and, which parents harbor the Bru 1 gene that confers rust resistance.

The 2023 Louisiana sugarcane industry experienced above average temperatures in the early months, followed by an unexpected freeze on March 21st. Spring and summer months were particularly dry, leading to severe drought conditions that heavily affected the western and northern parishes. This drought contributed to lower tonnage for a large portion of the industry. No tropical storms impacted the region. The annual rainfall recorded at Baton Rouge was 51.41 inches, slightly under the long-term average, while New Orleans and Lafayette saw 39.85 inches and 46.49 inches respectively, indicating drier conditions across the region. Harvest began on September 27, 2023, and concluded on January 16, 2024. The final trial harvested was an outfield trial on January 4, 2023.

The decision regarding the further testing and seed increase of candidate varieties in the

program was determined at the Variety Advancement Committee meeting. The 2023 meeting was held on August 10th at the American Sugar Cane League office in Thibodaux, Louisiana.

Progress in the LSU AgCenter Sugarcane Variety Development Program would not be possible without the financial support of state funds from the LSU AgCenter and the Louisiana sugar industry through the American Sugar Cane League and the cooperation of the USDA-ARS Sugarcane Research Laboratory.

Table 1. Chronological activities within the LSU AgCenter sugarcane variety ('L' varieties) development program.

Year	Stage and activity
1	Crossing
2	Seedlings planted
3	Seedlings selected in 1R to plant first line trial
4	First line trial selected in PC to plant second line trial
5	Second line trial selected in PC to plant increase plots
6	Second line trial selected in 1R to assign permanent 'L' variety numbers On-station (3) nurseries planted using 'seedcane' from increase plots
7	On-station nurseries PC harvested Off-station (3) and infield (2) nurseries planted
8	On-station nurseries 1R harvested Off-station and infield nurseries PC harvested Experimental clones introduced to 12 outfield test sites and planted as 'seedcane' increase plots Experimental clones introduced to 3 primary increase stations
9	On-station nurseries 2R harvested Off-station and infield 1R harvested Outfield (12) tests planted at six light and six heavy soil locations Experimental clones increased on three primary increase stations
10	On-station nurseries 3R harvested Off-station and infield nurseries 2R harvested Outfield tests PC harvested Continue seedcane increase of experimental clones on primary increase stations
11	Off-station and infield nurseries 3R harvested Outfield tests 1R harvested Introduce experimental clones to 44 secondary increase stations
12	Outfield tests 2R harvested Increase seedcane of experimental clones on 44 secondary increase stations
13	Variety release meeting New variety distributed by ASCL from secondary increase stations

1R, First ratoon cane crop; PC, Plant cane crop; 2R, Second ratoon cane crop; ASCL, American Sugarcane League.

Table 2. Members of the LSU AgCenter Sugarcane Variety Development Team in 2023.

Team Member	Budgetary Unit	Responsibility
Collins Kimbeng	Sugar Research Station	Program Leader
Michael Pontif	Sugar Research Station	Selection and Variety Testing
Blake Wilson	Sugar Research Station	Insect Resistance
Kenneth Gravois	Sugar Research Station	Extension
Andre Gama	Plant Pathology and Crop Physiology	Disease Resistance
Niranjan Baisakh	School of Plant, Environmental and Soil Sciences	Molecular Breeding
Albert Orgeron	Sugar Research Station	Ripener Research
Mathew Foster	Sugar Research Station	Weed Science
Warner Simon	Sugar Research Station	Infield Variety Testing
Mavis Daigle	Sugar Research Station	Sucrose Laboratory
Brayden Blanchard	Sugar Research Station	Photoperiod & Crossing
Zachary Taylor	Sugar Research Station	Outfield Variety Testing

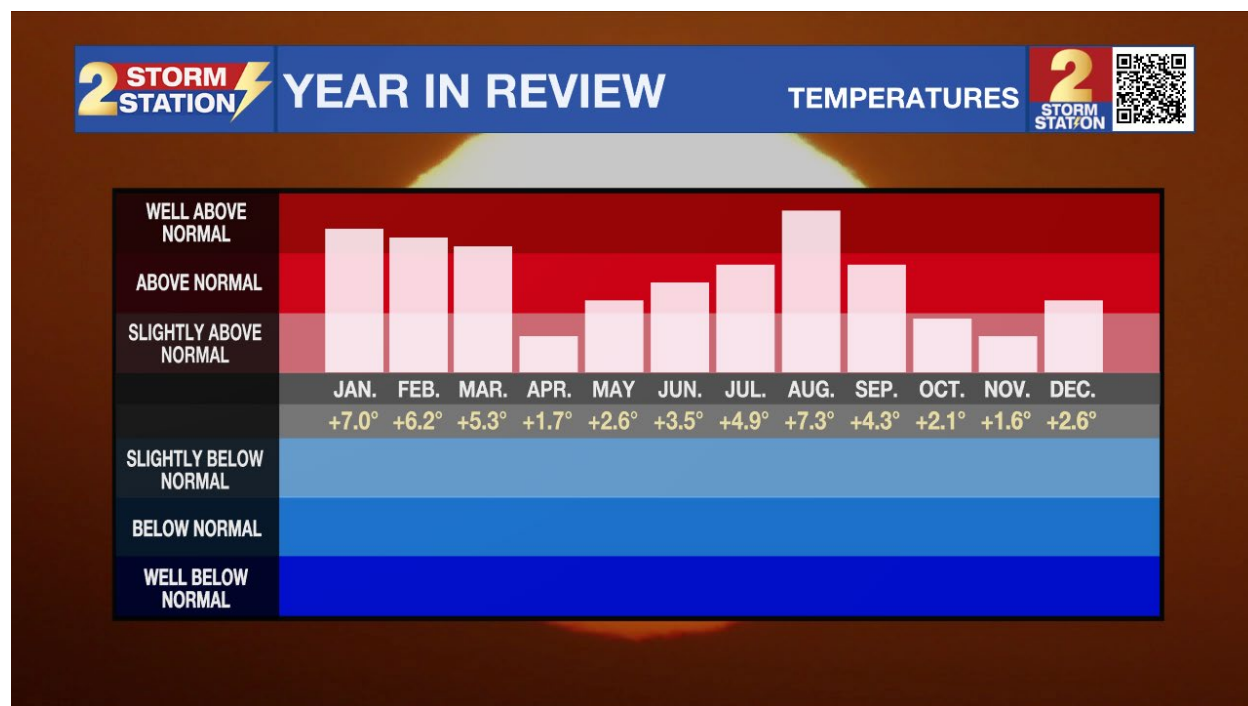


Fig. 1. 2023 concludes as the hottest year on record in Baton Rouge. January 01, 2024 7:26 PM in Weather news. Source: The Storm Station. By: Meteorologist Malcolm Byron. <https://www.wbrz.com/news/top-5-weather-events-of-2023-1-extreme-heat>

2023 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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The longstanding goal of the LSU AgCenter's Sugarcane Variety Development Program is the development of genetically improved sugarcane varieties which will positively impact the sugar industry. The variety development program begins with the photoperiod and crossing stages. Photoperiod treatments are managed to induce the flowering of genotypes that would otherwise not naturally flower in Louisiana's climatic conditions. Crosses are made through hybridization techniques that use sugarcane yield components, borer resistance, disease resistance, pedigree characteristics, and other performance metrics as criteria to select parents and to decide what crosses to make. The breeding program strives to perform crosses that will yield superior progeny.

Eyepiece cuttings of breeding genotypes to be used for the 2023 crossing season were planted in October of 2022. The cuttings were planted in Styrofoam cell trays and maintained in the greenhouse. In February 2023, the cuttings were transferred to can culture. The transplants were planted in large cans (38 liters) containing equal parts of field soil, washed sand, and peat moss and maintained in the greenhouse. During their time in these cans, the plants were trimmed twice to harden the parent stalks and induce tillering. The cans were moved out of the greenhouse and onto the photoperiod rail carts during the second week of April. Great diligence was given to the care of the parental genotypes in greenhouse culture in the 2023 season to promote the maturity and general health of the plants. Natural lighting and six light-tight chambers were used to employ photoperiod treatments. The cans were placed on photoperiod carts and assigned to a specific photoperiod regime based on previous knowledge of their flowering behavior. Genotypes that are difficult to flower were given a longer induction treatment of 41 consecutive days of 12 ½ hours of constant day length with a later start date of decline period which began on July 10, 2023. In comparison, genotypes considered to be easy to flower were given a shorter induction treatment of 37 consecutive days of 12 ½ hours of constant day length and a decline period that began on July 6, 2023. New genotypes for which flowering behavior was not known were placed throughout the photoperiod carts. The new genotypes will be moved to more favorable photoperiod conditions in the following crossing season if they do not flower in a specific photoperiod regime. Fertilization was adjusted to condition the plants for floral induction as a high C:N ratio has been shown to promote flowering in sugarcane.

The first photoperiod treatment began on June 1, 2023. All photoperiod treatments were initiated with a minimum of 37 consecutive days of 12 ½ hours of constant day length (Table 1). After the initial constant photoperiod days, day length was artificially shortened by one minute per day. Tassel (flower) initiation begins after the day length begins to decrease. Treatments differed by the number of days with constant day length (photoinductive days) and the date on which the decline in day length was initiated (Table 1). All photoperiod treatments were discontinued on September 27, 2023, when the natural day length was less than 12 ½ hours and decreasing at a rate conducive to sugarcane flowering.

Flowering of the parents began in the second week of September in 2023. The normal time frame for first flowering can be as early as the last week of August or as late as the third week of September. There may be a slight deviation in the appearance of the first flower due to temperature during the photoperiod induction phase, varietal characteristics, and the photoperiod treatments. Stalk numbers were decreased in 2023 to 1,294 stalks (Table 2) as compared to 1,647 stalks in 2022. On average, there were 3.99 stalks per can with 186 cans producing tassels (Table 2). There was a decrease in tassel production with 390 tassels produced in 2023 (Table 2) as compared to 692 tassels produced in 2022. The total flowering percentage for the six photoperiod bays decreased from 42.0% in 2022 to 30.1% in 2023. This is likely due to a dry season and high temperatures experienced during the summer months and flowering season. Many flowers were left in the boot stage after a hot dry period caused stunted growth and germination of the lateral buds.

Crossing began on September 15, 2023, and ended on November 20, 2023. A total of 390 tassels comprising 66 genotypes (Table 2) were used to produce 253 crosses (Table 3, Table 5). A total of 28,899 viable seeds were produced in 2023 (Table 3) with 19,051 seeds coming from bi-parental crosses, 2,899 seeds from polycrosses, and 6,949 seeds from self-crosses (Table 3). Germination rate was estimated based on the germination of 0.5 g of seed under greenhouse conditions in late December of 2023 into January 2024. Germination rates decreased in 2023 with an average of 10 plants per gram of seeds compared to 15 plants per gram of seeds in 2022 (Table 3).

After successful 2021 and 2022 crossing seasons, minor adjustments were made to further optimize the process. Substantial benefits were achieved from refraining from trimming in the 2021 season at the cost of total stalks due to less tillering of the parents. This approach was justified by previous research regarding growth and maturation of parental genotypes to flower (Burr et al. 1957; Clements and Awada 1967; Coleman 1969; Julien 1973; LaBorde 2007). Considering the success of the prior season, trimming was once again applied in the 2022 season in very few instances to induce tillering while as not to inhibit the growth of the parents. This strategy of reduced trimming resulted in some success, as the total number of stalks greatly increased from the 2021 season while the number of tassels increased only slightly. Continued hypotheses suggested helpful measures for the future seasons. One suggested method that was employed on a small scale in the 2023 crossing season is the application of LED growth lighting applied to the parents in the greenhouse. This promoted substantial growth in the months that they are contained in greenhouse culture and counteracted the inhibiting effects of tillering for both a high population and adequate growth of the tested parent stalks. With strong evidence that these growth lights benefitted the early vigor of the parents, they will be applied on a larger scale for the 2024 crossing campaign.

Germination results are again a cause for concern. Proper resource allocation and management is crucial to the crossing campaign, and while recent years' efforts have improved the flowering capabilities of parental genotypes, crossing efforts are wasted by a lack of germination and viable seed. Noticed trends of reduced germination, especially in recent years have prompted breeders to thoroughly review protocol and consider multiple inhibiting factors to

germination. Among these causes likely to be the root of the issue are humidity and temperature fluctuations in the crossing house, unsuitable weather conditions during the season, and timing of the crosses and maturation of the seed. High amounts of inbreeding within the parents used could also be a contributing factor to the reduced germination. Highly selected populations lend themselves to a bias towards the favorable combinations of genes, many of which can be sourced from relatively few parents. An extensive exploitation of elite parents over the years can lead to a narrow genetic base of parent germplasm, justifying the need for continued diversification. These are factors that will continue to be examined closely in the next crossing season. Still, the benefits of new practices were seen in the resulting high-quality crosses made and the potential abundance of genetic variation achieved from the 2023 Crossing Campaign.

Table 1. Summary of the 2023 photoperiod treatments for the LSU AgCenter's sugarcane variety development program

Bay	Cart	Treatment Start Date	Days of Constant Photoperiod	Date Photoperiod Decline Started	Days of Declining Photoperiod		Mean Flowering Date	Total Stalks	Percent Flowered
					Peak 1	Peak 2			
1	A	14-Jun	44	28-Jul	72	87	295±2	77	35
1	B	14-Jun	44	28-Jul	72	87	297±3	72	44
1	C	14-Jun	44	28-Jul	72	87	294±4	53	32
2	A	14-Jun	44	28-Jul	72	87	307±5	79	32
2	B	14-Jun	44	28-Jul	72	87	296±4	93	24
2	C	14-Jun	44	28-Jul	72	87	289±3	67	34
3	A	1-June	37	6-Jul	87	102	283±3	85	29
3	B	1-June	37	6-Jul	87	102	270±3	67	21
3	C	1-June	37	6-Jul	87	102	272±3	50	38
4	A	1-June	37	6-Jul	87	102	279±4	73	22
4	B	1-June	37	6-Jul	87	102	279±4	63	30
4	C	1-June	37	6-Jul	87	102	281±5	68	32
5	A	1-June	41	10-Jul	82	97	290±4	78	36
5	B	1-June	41	10-Jul	82	97	286±6	74	32
5	C	1-June	41	10-Jul	82	97	282±4	73	27
6	A	1-June	41	10-Jul	82	97	293±4	80	24
6	B	1-June	41	10-Jul	82	97	289±5	72	28
6	C	1-June	41	10-Jul	82	97	283±5	70	26

Table 2. Summary of can, variety, and flower information in bays 1-6 subjected to photoperiod treatments.

Varieties used in crossing	Cans with stalks	Cans with tassels	Total stalks	Total tassels	Mean stalks per can	Mean tassels per can†	Mean pollen rating‡	Mean days to flower§
-----Number-----								
66	324	186	1294	390	3.99±1.36	2.10±1.05	5.61±2.20	90.25±21.02

† Based upon cans with tassels.

‡ Pollen rating of 1 through 4 indicates male tassel; pollen rating of 5 through 9 indicates female tassel.

§ Days from photoperiod decline start date to flowering.

Table 3. Summary of 2023 crossing and seed production.

Type of Cross	Crosses	Sum of Seed Production	Mean Seed Production Per Cross	Mean Seed Production Per Female Tassel	Mean Germination Per Gram Seed
-----Number-----					
Biparental	198	19051	96 ± 244	96 ± 244	9 ± 21
Polycross	18	2899	161 ± 222	161 ± 222	13 ± 19
Self	37	6949	188 ± 512	188 ± 512	15 ± 34
Total	253	28899	114 ± 297	114 ± 297	10 ± 23

Table 4. Varietal flowering summary in 2023 in the photoperiod bays

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
CP83-644	40 ± 2	300	98 ± 7	6	8	2	25
HO06-563	39 ± 1	275	98 ± 4	3	15	7	47
HO07-613	41 ± 2	.	.	.	7	.	.
HO08-717	44 ± 0	348	139	.	6	1	17
HO08-730	40 ± 1	268	90 ± 8	3	16	7	44
HO09-827	37 ± 1	268	88 ± 2	7	12	7	58
HO09-832	44 ± 0	.	.	.	6	.	.
HO09-840	40 ± 1	265	80 ± 3	8	20	12	60
HO09-9401	35 ± 0	261	95 ± 5	8	12	11	92
HO09-9402	40 ± 1	268	72 ± 3	6	17	9	53
HO11-532	40 ± 1	268	96 ± 6	3	27	15	56
HO11-573	40 ± 1	277	95 ± 3	6	15	6	40
HO12-615	40 ± 1	277	97 ± 3	6	20	8	40
HO13-705	44 ± 0	296	90 ± 2	4	12	3	25
HO13-739	39 ± 1	.	.	.	15	.	.
HO15-964	41 ± 1	.	.	.	20	.	.
HO15-971	35 ± 0	.	.	.	7	.	.
HO16-600	36 ± 0	275	87 ± 1	6	15	4	27
HO16-608	44 ± 0	.	.	.	7	.	.
HO17-738	44 ± 0	.	.	.	4	.	.
HO17-776	38 ± 1	259	88 ± 7	9	14	10	71
HO18-878	35 ± 0	.	.	.	13	.	.
HO95-988	35 ± 0	272	101 ± 7	3	6	5	83
HOC P00-950	39 ± 1	263	93 ± 6	8	18	6	33
HOC P01-517	35 ± 0	.	.	.	8	.	.
HOC P01-523	35 ± 0	.	.	.	9	.	.
HOC P02-618	44 ± 0	.	.	.	5	.	.
HOC P04-838	41 ± 1	263	74 ± 3	8	20	8	40
HOC P04-847	40 ± 1	310	101	9	18	1	6
HOC P09-804	41 ± 1	282	97 ± 3	4	26	8	31
HOC P09-814	35 ± 0	.	.	.	5	.	.
HOC P14-802	37 ± 1	261	73 ± 3	3	12	5	42
HOC P14-867	37 ± 1	.	.	.	10	.	.
HOC P14-885	40 ± 1	314	126 ± 6	3	36	7	19
HOC P17-701	37 ± 1	.	.	.	4	.	.
HOC P18-801	40 ± 1	348	161	.	11	1	9
HOC P18-803	37 ± 1	.	.	.	8	.	.
HOC P18-815	39 ± 0	.	.	.	5	.	.
HOC P18-829	39 ± 0	.	.	.	5	.	.
HOC P91-552	35 ± 0	259	72	4	4	2	50
HOC P92-618	44 ± 0	.	.	.	13	.	.
HOC P92-624	37 ± 1	286	99 ± 7	7	17	7	41
HOC P95-951	42 ± 1	.	.	.	8	.	.
HOC P96-540	39 ± 1	.	.	.	16	.	.
HOC P96-561	44 ± 0	348	139	6	3	1	33
HOC P97-609	39 ± 1	268	79 ± 4	4	19	5	26
HOL15-508	40 ± 1	.	.	.	11	.	.

Table 4. Continued

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L01-283	38 ± 1	.	.	.	17	.	.
L01-299	39 ± 1	268	88 ± 3	3	25	9	36
L01-315	44 ± 0	296	87 ± 0	8	5	2	40
L03-371	39 ± 0	.	.	.	2	.	.
L05-448	37 ± 1	261	80 ± 5	3	12	8	67
L05-457	42 ± 1	259	69 ± 4	8	28	14	50
L06-001	39 ± 1	272	90 ± 5	4	27	6	22
L06-038	40 ± 2	263	72 ± 7	4	6	3	50
L06-040	44 ± 0	298	89	7	3	1	33
L07-057	43 ± 0	277	96 ± 15	7	29	4	14
L08-088	35 ± 0	298	116 ± 4	7	9	4	44
L08-090	40 ± 1	268	88 ± 7	6 ± 1	21	7	33
L09-099	41 ± 1	284	96 ± 16	3	19	3	16
L09-112	42 ± 1	.	.	.	15	.	.
L09-123	40 ± 1	265	74 ± 4	8	21	7	33
L10-147	40 ± 1	275	85 ± 3	7	20	9	45
L11-183	39 ± 1	261	76 ± 1	9	14	12	86
L11-187	39 ± 1	298	111 ± 10	6	22	5	23
L12-201	42 ± 1	.	.	.	10	.	.
L12-202	40 ± 1	298	134 ± 23	4	15	2	13
L12-218	38 ± 2	.	.	.	7	.	.
L12-227	38 ± 1	272	86	4	8	4	50
L13-243	35 ± 0	.	.	.	2	.	.
L13-251	40 ± 1	259	65 ± 3	4	17	10	59
L14-265	39 ± 1	314	133 ± 9	8	12	6	50
L14-267	42 ± 1	.	.	.	12	.	.
L14-269	44 ± 0	296	92 ± 2	6	12	4	33
L14-275	44 ± 0	282	73	6	4	1	25
L14-276	41 ± 1	277	93 ± 5	8	20	10	50
L14-282	35 ± 0	.	.	.	5	.	.
L15-306	38 ± 1	298	117 ± 2	9	18	6	33
L15-320	44 ± 0	263	61 ± 3	6	7	6	86
L15-337	38 ± 1	282	109 ± 9	2	21	7	33
L17-410	35 ± 0	.	.	.	7	.	.
L19-006	40 ± 1	268	76 ± 2	3	9	8	89
L19-021	40 ± 1	275	103 ± 6	6	20	6	30
L19-486	39 ± 1	284	98 ± 3	7	13	4	31
L19-498	39 ± 0	268	79 ± 2	9	2	2	100
L20-037	39 ± 1	.	.	.	12	.	.
L20-055	44 ± 0	.	.	.	4	.	.
L20-061	39 ± 2	282	73	6	9	1	11
L20-065	39 ± 1	300	98 ± 7	3	20	2	10

Table 4. Continued

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L21-075	44 ± 0	286	80 ± 2	4	6	4	67
L21-087	35 ± 0	.	.	.	4	.	.
L21-088	35 ± 0	.	.	.	2	.	.
L21-094	44 ± 0	.	.	.	4	.	.
L94-426	35 ± 0	348	161 ± 0	6	7	2	29
L94-433	35 ± 0	348	161	4	5	1	20
L99-226	39 ± 1	272	84 ± 2	4	21	2	10
L99-233	40 ± 1	265	80 ± 4	4	41	16	39
LCP81-010	40 ± 2	272	88 ± 4	4	7	6	86
LCP85-384	40 ± 1	277	98 ± 4	4	21	20	95
LCP86-454	44 ± 0	.	.	.	3	.	.
N39	41 ± 1	.	.	.	7	.	.
N64	38 ± 2	.	.	.	7	.	.

Table 5. Crosses and seed made in 2023

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL23-001	HO17-776	HOC91-552	16	XL23-037	L15-298	L99-233	0
XL23-002	L05-457	HOC91-552	0	XL23-038	HO17-776	L19-006	0
XL23-002	L05-457	HOC91-552	0	XL23-039	HO09-840	L19-006	0
XL23-003	L05-457	L13-251	0	XL23-040	HOC91-838	L19-006	33
XL23-003	L05-457	L13-251	0	XL23-041	L19-006	L19-006	0
XL23-004	HOC91-552	HOC91-552	0	XL23-041	L19-006	L19-006	0
XL23-005	L13-251	L13-251	0	XL23-042	L15-320	L01-299	0
XL23-006	L05-457	HOC14-802	0	XL23-043	L01-299	L01-299	0
XL23-007	L11-183	HOC14-802	18	XL23-044	L19-498	HO08-730	0
XL23-008	HO17-776	HOC14-802	0	XL23-045	HO08-730	HO08-730	0
XL23-009	HOC14-802	HOC14-802	0	XL23-046	L09-123	L13-251	88
XL23-010	HO09-9401	L13-251	0	XL23-047	HO09-827	L13-251	36
XL23-011	L05-448	L05-448	0	XL23-048	L08-090	L06-038	0
XL23-012	HOC91-838	L06-038	0	XL23-049	L15-298	L19-006	0
XL23-013	HO17-776	L06-038	0	XL23-050	L15-320	L19-006	0
XL23-014	HO09-9401	L06-038	0	XL23-051	L08-090	L19-006	33
XL23-015	L05-457	L06-038	0	XL23-052	HO17-776	HOC97-609	15
XL23-016	L15-320	L13-251	0	XL23-053	HO09-840	HOC97-609	0
XL23-017	L11-183	L13-251	0	XL23-054	HOC91-838	HOC97-609	0
XL23-017	L11-183	L13-251	0	XL23-055	HO09-9402	L06-001	0
XL23-018	HOC91-950	L13-251	0	XL23-056	L19-498	HOC14-802	45
XL23-018	HOC91-950	L13-251	0	XL23-057	HO09-827	HOC97-609	299
XL23-019	HO09-9401	L13-251	0	XL23-058	L15-320	L12-227	335
XL23-020	HOC91-838	L99-233	0	XL23-059	L12-227	L12-227	49
XL23-021	L05-457	L99-233	48	XL23-060	L01-299	L01-299	0
XL23-022	L11-183	L99-233	0	XL23-060	L01-299	L01-299	0
XL23-022	L11-183	L99-233	0	XL23-061	LCP81-010	23P1	217
XL23-023	HO09-840	L99-233	0	XL23-062	L99-226	23P2	27
XL23-024	L15-320	L13-251	0	XL23-063	L19-006	23P3	267
XL23-025	L15-298	L13-251	0	XL23-064	HO95-988	23P4	27
XL23-026	HO09-840	L13-251	0	XL23-065	L05-457	L06-001	471
XL23-027	HO09-9401	L05-448	0	XL23-066	L05-457	L06-001	104
XL23-028	L11-183	L05-448	0	XL23-067	L10-147	L06-001	420
XL23-029	L09-123	L05-448	0	XL23-068	HO09-9402	HO06-563	0
XL23-030	HO09-9402	L11-532	0	XL23-069	L05-457	HO06-563	12
XL23-030	HO09-9402	L11-532	0	XL23-070	HO09-9402	HO08-730	40
XL23-031	HO11-532	HO11-532	0	XL23-071	HO16-600	HO08-730	48
XL23-031	HO11-532	HO11-532	0	XL23-072	HO16-600	HO95-988	10
XL23-032	HO17-776	L11-532	14	XL23-073	HOC91-838	HO95-988	0
XL23-033	HO09-9402	HOC97-609	0	XL23-074	L10-147	HOC97-609	423
XL23-034	L11-183	HOC97-609	0	XL23-075	L15-298	HOC97-609	0
XL23-035	HO09-9402	HOC14-802	0	XL23-076	L08-090	L13-251	33
XL23-035	HO09-9402	HOC14-802	0	XL23-077	HO09-9402	L12-227	0
XL23-036	HOC91-838	HOC14-802	35	XL23-078	L14-276	L12-227	280

Table 5. Continued

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL23-078	L14-276	L12-227	280	XL23-120	HOCP04-838	L21-075	0
XL23-079	L14-276	L12-227	13	XL23-121	HO09-840	L21-075	34
XL23-080	HO16-600	L12-227	682	XL23-122	L21-075	L21-075	0
XL23-081	HO09-9402	LCP85-384	39	XL23-123	L11-183	L21-075	0
XL23-082	LCP85-384	LCP85-384	18	XL23-124	HOCP92-624	L21-075	190
XL23-082	LCP85-384	LCP85-384	0	XL23-125	HO17-776	LCP85-384	0
XL23-083	HO11-573	L19-006	0	XL23-126	L19-486	LCP85-384	18
XL23-084	L07-057	L19-006	43	XL23-127	LCP85-384	LCP85-384	0
XL23-085	L09-123	L19-006	0	XL23-128	LCP85-384	LCP85-384	5
XL23-086	L09-123	L19-006	0	XL23-129	HO17-776	L99-233	0
XL23-087	HO09-827	HO06-563	63	XL23-130	HOCP92-624	L99-233	15
XL23-088	HO09-840	HO06-563	142	XL23-131	L19-486	L99-233	263
XL23-089	L09-123	HO06-563	44	XL23-132	HOCP92-624	L01-299	170
XL23-090	HO16-600	L99-233	486	XL23-133	HO11-573	L01-299	0
XL23-091	L05-457	L99-233	619	XL23-134	L01-299	L01-299	20
XL23-092	HO12-615	L99-233	81	XL23-135	L01-299	L01-299	49
XL23-093	L11-183	HO06-563	33	XL23-136	LCP85-384	LCP85-384	35
XL23-094	HO11-573	L99-233	89	XL23-137	LCP85-384	LCP85-384	38
XL23-095	L09-123	L05-448	48	XL23-138	L05-448	23P7	338
XL23-096	L11-183	HOCP09-804	85	XL23-139	LCP81-010	23P8	810
XL23-097	L15-320	HOCP09-804	46	XL23-140	LCP81-010	23P9	384
XL23-098	HO11-573	HOCP09-804	0	XL23-141	HO08-730	23P10	69
XL23-099	L09-123	HOCP09-804	33	XL23-142	HO95-988	23P11	60
XL23-100	L15-298	HO11-532	19	XL23-143	HO95-988	23P12	494
XL23-101	L11-183	HO11-532	0	XL23-144	L19-021	L99-233	0
XL23-102	HO09-840	HO11-532	11	XL23-145	L14-276	L06-001	176
XL23-103	L10-147	L99-233	906	XL23-146	HO11-573	L06-001	6
XL23-104	HO09-840	L99-233	145	XL23-147	L10-147	L06-001	980
XL23-105	HO12-615	LCP81-010	0	XL23-148	HO17-776	L99-226	15
XL23-106	L14-275	23P5	119	XL23-149	HO09-840	L99-226	1318
XL23-107	L20-061	23P6	0	XL23-150	L10-147	L99-226	1546
XL23-108	L19-486	L15-337	0	XL23-151	HOCP04-838	LCP85-384	363
XL23-109	L11-183	HO06-563	15	XL23-152	L10-147	LCP85-384	1054
XL23-110	HOCP00-950	HO11-532	0	XL23-153	HO12-615	LCP85-384	42
XL23-111	L15-298	HOCP09-804	0	XL23-154	LCP85-384	LCP85-384	0
XL23-112	HO09-840	L09-099	0	XL23-155	LCP85-384	LCP85-384	43
XL23-113	HO09-9401	L09-099	0	XL23-156	LCP85-384	LCP85-384	55
XL23-114	HO09-9401	L19-006	0	XL23-157	LCP81-010	LCP81-010	0
XL23-115	HO12-615	L19-006	0	XL23-158	LCP81-010	LCP81-010	1074
XL23-116	HOCP92-624	L15-337	0	XL23-159	LCP85-384	LCP85-384	24
XL23-117	L14-276	L15-337	0	XL23-160	LCP85-384	LCP85-384	69
XL23-118	L14-276	L99-233	0	XL23-161	HOCP92-624	L99-233	1051
XL23-119	L10-147	L21-075	16	XL23-162	L08-090	L99-233	0

Table 5. Continued

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL23-163	HO09-9401	HO08-730	0	XL23-206	L14-269	HOC09-804	0
XL23-164	L08-090	HO08-730	0	XL23-207	L15-306	HOC09-804	0
XL23-165	L14-276	HO13-705	55	XL23-208	HOC00-950	HO13-705	0
XL23-166	L01-315	HO13-705	39	XL23-209	L08-088	HO11-532	20
XL23-167	L14-276	L21-075	0	XL23-210	L14-269	HO11-532	20
XL23-168	HO09-9401	L21-075	0	XL23-211	HO12-615	HO11-532	0
XL23-169	L14-276	HOC09-804	240	XL23-212	L01-299	23P17	6
XL23-170	L10-147	HOC09-804	790	XL23-213	LCP85-384	23P18	22
XL23-171	L14-269	L09-099	16	XL23-214	LCP85-384	LCP85-384	9
XL23-172	L10-147	L09-099	401	XL23-215	LCP85-384	LCP85-384	40
XL23-173	HO09-9401	LCP85-384	0	XL23-216	LCP85-384	LCP85-384	18
XL23-174	L01-315	L06-001	7	XL23-217	L14-276	HO06-563	278
XL23-175	L01-299	Unknown	34	XL23-218	L15-306	HO06-563	529
XL23-176	L01-299	Unknown	7	XL23-219	HO09-840	HO06-563	61
XL23-177	HO09-827	L99-233	0	XL23-220	L19-021	L15-337	21
XL23-178	L06-040	L99-233	12	XL23-221	HOC04-847	L15-337	0
XL23-179	US01-040	L99-233	0	XL23-222	L05-457	HO11-532	0
XL23-180	HO09-827	HO11-532	0	XL23-223	L05-457	LCP85-384	0
XL23-181	HO09-9401	HO11-532	54	XL23-224	HOC92-624	LCP85-384	0
XL23-182	L08-088	HO11-532	14	XL23-225	HOC00-950	L20-065	0
XL23-183	L11-187	HO11-532	0	XL23-226	L11-187	L20-065	37
XL23-184	L19-486	HOC09-804	72	XL23-227	L15-306	L20-065	0
XL23-185	HO09-9401	HOC09-804	0	XL23-228	L14-265	L09-099	9
XL23-186	L11-187	HOC09-804	0	XL23-229	HO12-615	L09-099	0
XL23-187	L15-306	L12-202	0	XL23-230	HOC92-624	HOC14-885	1179
XL23-188	L08-088	L12-202	0	XL23-231	CP83-644	HOC14-885	76
XL23-189	HO11-573	L12-202	0	XL23-232	L08-088	HOC14-885	100
XL23-190	L07-057	HO13-705	0	XL23-233	L14-265	HOC14-885	484
XL23-191	L07-057	HO13-705	0	XL23-234	HOC14-885	HOC14-885	1877
XL23-192	HO09-840	HO13-705	0	XL23-235	HOC14-885	HOC14-885	1718
XL23-193	L08-090	LCP85-384	0	XL23-236	L08-090	HO95-988	0
XL23-194	US01-040	LCP85-384	0	XL23-237	L14-276	HO06-563	28
XL23-195	LCP85-384	LCP85-384	50	XL23-238	L19-021	HO06-563	0
XL23-196	LCP85-384	LCP85-384	0	XL23-239	L14-265	HO06-563	24
XL23-197	L01-299	23P13	0	XL23-240	L15-306	HOC14-885	61
XL23-198	HO08-730	23P14	49	XL23-241	L14-265	HOC14-885	310
XL23-199	HO08-730	23P15	0	XL23-242	HOC14-885	HOC14-885	1756
XL23-200	L05-448	23P16	10				
XL23-201	L11-187	L20-065	0				
XL23-202	L14-269	L20-065	0				
XL23-203	CP83-644	L20-065	0				
XL23-204	HO09-827	L06-001	307				
XL23-205	L15-306	L06-001	10				

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SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER'S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2023

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In the selection phase of the LSU AgCenter's Sugarcane Variety Development Program, superior clones are advanced through the seedling (single stool), first line, second line, and increase stages of the breeding program. In the first stubble crop of the second-line trials, those clones with acceptable breeding or commercial value are assigned a permanent variety number. A total of 58,380 seedlings from 150 crosses were planted in the field in the spring of 2023. The majority of these seedlings are progeny of bi-parental crosses among commercial and elite experimental varieties. In the fall of 2023, family selection was practiced on the 37,899 stubble seedlings, planted in 2022, surviving the winter. This selection resulted in the planting of 1,599 first-line trial plots. At the same time, superior clones were selected and advanced through subsequent stages (536 to second line trials, 74 to the increase stage). Assignments of permanent "L23" numbers were given to the 32 best clones of the 2018 crossing series.

Procedures

In the selection stage of the LSU AgCenter's Sugarcane Variety Development Program, single stools are established from seed generated in the crossing stage. After evaluating and selecting the families for cane yield potential in the cross-appraisal studies, clones with desirable phenotypes are selected and advanced through first line, second line, and increase stages. In the first stubble crop of the second-line trials, clones judged to have breeding or commercial value are assigned a permanent variety number and advanced to the nursery stage of testing.

Results and Discussion

A total of 58,380 seedlings from 150 crosses of the 2022 crossing series were planted to the field in the spring of 2023 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2023, individual selection was practiced on the 37,899 stubble single stools of the 2021 crossing series, planted in 2022, that survived the winter. The 1,599 clones selected and advanced from the single stools were planted in 10-foot, first-line trial plots. Dates of planting and harvesting of all plots in the selection phase of the program can be found in Table 2.

The 1,471 first-line trial plots of the 2020 crossing series were visually appraised for cane yield potential in August of 2023 (Table 3). After screening for cane yield potential, acceptable clones were further evaluated for pest resistance (diseases and borer injury), stalk quality, and Brix (Table 3). This second stage of advancement concluded with the planting of 536 clones in single row, 16-foot, second line trials plots.

The 245 plant-cane, second line trial plots of the 2019 crossing series were visually appraised for yield potential August 2023. Based on the field evaluation, comments and sucrose lab data collected in 2022, 74 clones were planted in one single row, 25-foot plots representing the increase stage of the program (Table 4). These clones will be candidates for assignment in 2024. Of the 449 candidates from the first stubble crop of the second line trial plots, the best 32 clones from the 2018 crossing series were assigned permanent "L23" numbers (Table 5). These

newly assigned “L23” varieties were then planted in replicated nursery trials at three on station locations (Sugar Research Station, Iberia Research Station, and USDA-ARS Ardoyne Farm)

The advancement summary of clones from crosses made in 2018 through 2022 is shown in Table 6. Crosses are sorted by female parent in ascending order, with the percentile ranking given for each cross in each stage of the program.

Table 1. Summary of selections, advancements and assignments made during 2023 by the Louisiana, “L” Sugarcane Variety Development Program’s personnel

Crosses					Advanced to			
Crossing series	Progeny test	Selection program	Plants transplanted	Over-wintered plants	1st line	2nd line	Increase	On-station Nurseries (L23 Assignments)
----- number of clones -----								
X18	--	70	72,661	44,689	1,373	449	194	32
X19	50	96	46,969	21,951	662	245	74	
X20	50	144	52,985	30,967	1,471	536		
X21	--	124	59,049	37,899	1,599			
X22	--	150	58,380					

Table 2. Dates of seedling and line trials planted or harvested in 2023

Crossing Series	Test	Crop	Date Planted	Date Harvested
X22	Seedlings	Planted	04/11-04/25/23	
X21	Seedlings	First Stubble	04/20-04/26/22	09/11-09/12/23
X21	First Line Trails	Planted	09/13/23	
X20	First Line Trials	Plant-cane	10/12-10/18/22	09/19/23
X19	First Line Trials	First Stubble	10/19/21	12/04/23
X20	Second Line Trials	Planted	09/20/23	
X19	Second Line Trials	Plant-cane	09/28/22	11/06/23
X18	Second Line Trials	First Stubble	10/11/21	10/16/23
X17	Second Line Trials	Second Stubble	09/16/20	11/02/23
X19	Light Soil Increase	Planted	10/03/23	
X18	Light Soil Increase	Plant-cane	11/02/22	10/24/23
X17	Light Soil Increase	First Stubble	10/27/21	11/09/23
X16	Light Soil Increase	Second Stubble	09/29/20	11/09/23
X19	Heavy Soil Increase	Planted	10/03/23	
X17	Heavy Soil Increase	First Stubble	10/27/21	11/06/23
X16	Heavy Soil Increase	Second Stubble	09/30/20	11/02/23

Table 3. Numbers of experimental clones dropped for identified faults in the 2020 crossing series first-line trials

Trait	Fault	
	Frequency	Percent
----- 1471 clones enter first round of evaluation -----		
Rating	557	37.87
----- 914 clones enter second round of evaluation -----		
Rating	344	22.70
Pith	4	0.27
Smut	1	0.07
Other	1	0.07
----- 935 clones dropped -----		
Clones advanced	536	36.44

Table 4. Number of experimental clones dropped for identified faults in the 2019 crossing series of the plant-cane second line trial prior to advancement to the increase stage

Trait	Fault	
	Frequency	Percent
----- 245 clones enter first round of evaluation -----		
Rating	170	69.39
Pith	1	0.41
Smut	1	0.41
----- 172 clones dropped -----		
Clones advanced to Increase stage	74	30.20

Table 5. First stubble second line trial data for 2023 “L” assignments. Assignments were made at the first stubble stage and included data accumulated from the proceeding stages. The population parameters (mean, minimum, maximum and standard deviation) reported are for the assigned clones and checks only.

Variety	Female	Male	Sugar per Acre	Stalk weight	Fiber
			Ibs/Ton	Ibs/stalk	%
HoCP 96-540	TUCCP77-042	HoCP96-540	215	1.84	11.5
L 01-299	L97-128	HoCP96-540	218	1.83	12.1
HoCP 09-804	HOCPP02-625	HOCPP01-523	222	1.24	13.7
HoCP 12-615	L93-365	LCP85-384	199	1.42	13.2
L14-267	LCP86-454	LCP85-384	218	2.15	11.5
L 23-135	HOCPP14-867	HO11-532	196	1.80	11.6
L 23-136	L05-457	L99-233	230	1.10	11.7
L 23-137	L07-057	18P1	255	1.52	10.1
L 23-138	HOCPP14-867	HO11-532	207	2.11	13.2
L 23-139	HO09-827	L06-001	227	1.63	10.1
LCP 23-140	HO11-573	HOCPP14-826	227	1.31	10.2
L 23-141	HO09-827	HO11-532	235	1.41	12.3
L 23-142	L11-187	HOCPP97-609	207	1.53	9.5
L 23-143	L14-273	L01-299	206	2.49	11.6
L 23-144	HO09-827	HO11-532	219	1.48	11.1
L 23-145	L05-457	HOCPP14-802	199	1.58	11.8
L 23-146	L13-243	18P12	200	1.73	13.3
L 23-147	L05-457	HOCPP14-802	214	1.88	12.5
L 23-148	HO09-827	L06-001	219	1.54	11.6
L 23-149	L05-457	L99-233	221	1.30	14.2
L 23-150	L05-457	HOCPP14-802	212	1.33	12.3
L 23-151	L94-433	18P15	198	1.91	13.0
L 23-152	L15-337	L09-099	194	1.46	12.8
L 23-153	HOCPP14-867	HO11-532	180	1.35	11.5
L 23-154	HO09-827	L06-001	179	1.66	11.3
L 23-155	L05-457	18P2	189	1.15	13.5
L 23-156	LCP81-010	HO11-9406	197	1.82	12.8
L 23-157	HOCPP92-624	L99-226	212	1.54	10.6
L 23-158	HOCPP92-624	L99-226	198	1.55	12.2
L 23-159	HO09-827	L06-001	215	1.44	12.5

Table 5. Continued

Variety	Female	Male	Sugar per Acre	Stalk weight	Fiber
			Ibs/Ton	Ibs/stalk	%
LCP 23-160	HO13-739	HOL15-501	212	1.63	11.4
L 23-161	HOCP92-624	L99-226	211	1.39	11.4
L 23-162	L05-457	HOCP14-802	199	1.58	11.8
L 23-163	L14-282	L01-299	192	1.30	13.8
L 23-164	LCP81-010	HO11-9406	142	1.77	9.6
L 23-165	HOCP92-624	HO11-9406	170	1.23	10.7
L 23-166	L05-457	L99-233	176	1.26	13.6
Mean			206	2	12.1
Min			142	1	9.4
Max			255	2	13.8
Std Dev			20	0	0.98

Table 6. Advancement summary of the crosses in 2018 through 2021 series

			1 st Line		2 nd Line		Increases		Assignments	
Female	Male	Survive	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
2021 Crossing Series										
L05-457	H0CP14-802	591	3	24	.	.	.	.	.	.
L07-057	H0CP14-802	218	21	90	.	.	.	.	.	.
HO09-9401	H0CP14-802	197	17	87	.	.	.	.	.	.
HO09-9401	H0CP14-802	141	19	96	.	.	.	.	.	.
L09-123	L99-233	376	13	64	.	.	.	.	.	.
HO09-9401	H0CP14-802	138	1	33	.	.	.	.	.	.
L09-123	HO08-730	211	3	47	.	.	.	.	.	.
L05-457	HO08-730	429	3	33	.	.	.	.	.	.
H0CP91-552	L05-448	195	3	48	.	.	.	.	.	.
H0CP91-552	L05-448	71	3	70	.	.	.	.	.	.
H0CP91-552	L05-448	455	0	10	.	.	.	.	.	.
H0CP91-552	21P7	945	0	10	.	.	.	.	.	.
L13-251	21P9	372	8	54	.	.	.	.	.	.
L13-251	21P10	417	13	61	.	.	.	.	.	.
H0CP91-552	21P11	944	2	21	.	.	.	.	.	.
L05-448	21P12	169	0	10	.	.	.	.	.	.
HO09-9401	H0CP14-802	263	17	80	.	.	.	.	.	.
L10-147	L12-227	162	16	91	.	.	.	.	.	.
L10-147	L12-227	205	16	86	.	.	.	.	.	.
L10-147	LCP81-030	187	6	63	.	.	.	.	.	.
H0CP92-624	L12-202	779	40	72	.	.	.	.	.	.
HO14-835	L99-226	229	0	10	.	.	.	.	.	.
L10-147	L99-226	448	2	24	.	.	.	.	.	.
L10-147	L99-226	207	2	38	.	.	.	.	.	.
H0CP92-624	L99-226	427	1	21	.	.	.	.	.	.
L15-320	HO11-532	194	1	25	.	.	.	.	.	.
L10-147	L08-090	285	6	53	.	.	.	.	.	.
LCP81-010	21P15	432	7	50	.	.	.	.	.	.
H0CP95-951	21P16	121	0	10	.	.	.	.	.	.
L15-320	L01-299	222	0	10	.	.	.	.	.	.
L05-457	L01-299	666	88	96	.	.	.	.	.	.
HO09-9401	L99-226	242	22	88	.	.	.	.	.	.
L15-320	L12-227	1010	59	75	.	.	.	.	.	.
H0CP92-624	L12-227	733	25	63	.	.	.	.	.	.
L15-320	L98-207	859	0	10	.	.	.	.	.	.
H0CP92-624	L99-233	1730	11	30	.	.	.	.	.	.
H0CP95-951	21P19	243	0	10	.	.	.	.	.	.
LCP81-010	21P20	461	5	41	.	.	.	.	.	.
L11-183	LCP85-384	67	0	10	.	.	.	.	.	.
HO09-9401	LCP85-384	245	10	68	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
HOCP92-624	L98-207	1757	29	51	.	.	.	.	.	.
HOCP92-624	LCP81-010	703	2	22	.	.	.	.	.	.
L14-273	L09-099	178	1	26	.	.	.	.	.	.
L14-282	L15-337	205	0	10	.	.	.	.	.	.
L14-282	L06-001	363	4	42	.	.	.	.	.	.
HOCP96-561	L99-226	160	11	81	.	.	.	.	.	.
L15-298	L01-299	224	22	90	.	.	.	.	.	.
HOCP92-624	L12-202	388	5	45	.	.	.	.	.	.
L05-457	HOCP92-618	660	0	10	.	.	.	.	.	.
HOCP91-552	HOCP92-618	118	2	51	.	.	.	.	.	.
HOCP04-838	HO11-532	79	4	72	.	.	.	.	.	.
L11-187	L99-233	212	0	10	.	.	.	.	.	.
L15-298	L99-233	104	6	74	.	.	.	.	.	.
HOCP04-838	L15-337	180	7	67	.	.	.	.	.	.
L10-147	L15-337	1353	9	31	.	.	.	.	.	.
HO13-739	HO08-730	175	1	27	.	.	.	.	.	.
HOCP14-867	HO08-730	214	0	10	.	.	.	.	.	.
L10-147	HO08-730	343	6	52	.	.	.	.	.	.
L10-147	HO08-730	239	6	57	.	.	.	.	.	.
HO08-717	L99-226	418	5	43	.	.	.	.	.	.
L11-187	L99-226	229	2	37	.	.	.	.	.	.
L12-218	L99-226	234	2	36	.	.	.	.	.	.
L15-320	L15-337	54	0	10	.	.	.	.	.	.
HOCP14-867	L15-337	320	17	73	.	.	.	.	.	.
L11-183	L06-001	322	35	93	.	.	.	.	.	.
L11-183	HOCP14-885	1163	70	78	.	.	.	.	.	.
L01-283	HOCP14-885	1281	13	39	.	.	.	.	.	.
L11-183	HOCP09-804	419	12	60	.	.	.	.	.	.
L15-320	HOCP09-804	352	25	82	.	.	.	.	.	.
L14-276	HOCP09-804	394	33	87	.	.	.	.	.	.
HOCP09-814	HOCP09-804	201	19	89	.	.	.	.	.	.
L11-187	L13-251	209	6	60	.	.	.	.	.	.
L14-276	L13-251	291	3	39	.	.	.	.	.	.
L14-276	L13-251	498	3	28	.	.	.	.	.	.
HOCP96-561	L13-251	364	26	83	.	.	.	.	.	.
Ho09-840	L09-099	226	5	54	.	.	.	.	.	.
HOCP96-561	L09-099	282	14	71	.	.	.	.	.	.
L06-040	L09-099	418	16	66	.	.	.	.	.	.
HOCP92-624	L09-099	1471	12	36	.	.	.	.	.	.
L06-040	L99-226	195	0	10	.	.	.	.	.	.
LCP81-010	L99-233	185	0	10	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
HOC92-624	HOC85-845	1377	32	55	.	.	.	.	.	.
L15-320	HOC14-885	829	9	42	.	.	.	.	.	.
L12-218	HOC14-885	163	2	44	.	.	.	.	.	.
HO13-739	L14-267	967	40	69	.	.	.	.	.	.
L15-320	L14-267	1096	17	48	.	.	.	.	.	.
HO19-739	L09-112	100	13	95	.	.	.	.	.	.
HO19-739	L09-112	1012	13	45	.	.	.	.	.	.
L15-320	L09-112	95	1	40	.	.	.	.	.	.
L01-283	L09-112	869	5	27	.	.	.	.	.	.
L01-283	HOC09-804	409	49	94	.	.	.	.	.	.
L10-147	HOC09-804	421	15	65	.	.	.	.	.	.
HOC09-814	L99-226	518	30	75	.	.	.	.	.	.
L14-265	L99-226	320	46	97	.	.	.	.	.	.
L14-265	L99-226	116	46	99	.	.	.	.	.	.
L14-276	L99-226	803	60	84	.	.	.	.	.	.
L10-146	HOC96-540	94	0	10	.	.	.	.	.	.
L14-276	21P28	108	7	81	.	.	.	.	.	.
L15-306	HOC14-885	217	13	77	.	.	.	.	.	.
HO16-600	HOC14-885	1447	52	66	.	.	.	.	.	.
L12-201	HOC14-885	310	0	10	.	.	.	.	.	.
L10-146	HOC14-885	542	4	34	.	.	.	.	.	.
L12-201	L14-266	405	0	10	.	.	.	.	.	.
L12-201	L09-099	489	2	23	.	.	.	.	.	.
L12-218	L09-099	247	15	78	.	.	.	.	.	.
L12-218	L09-099	99	15	98	.	.	.	.	.	.
L15-298	L99-226	253	7	59	.	.	.	.	.	.
L14-265	L99-226	755	5	30	.	.	.	.	.	.
L09-840	HOC96-540	383	0	10	.	.	.	.	.	.
HOC96-561	L05-448	597	14	56	.	.	.	.	.	.
L11-187	L05-448	156	4	58	.	.	.	.	.	.
HOC18-801	L14-267	381	3	35	.	.	.	.	.	.
L11-183	L14-267	635	26	69	.	.	.	.	.	.
L12-218	L14-267	220	7	62	.	.	.	.	.	.
HO09-832	HOC09-804	163	10	79	.	.	.	.	.	.
HOC96-561	HO11-532	82	6	84	.	.	.	.	.	.
L07-057	HO11-532	231	0	10	.	.	.	.	.	.
L14-265	HO13-705	147	1	32	.	.	.	.	.	.
L14-265	L01-299	316	2	29	.	.	.	.	.	.
HOC85-845	21P31	126	2	49	.	.	.	.	.	.
HOC96-540	21P36	210	0	10	.	.	.	.	.	.
LCP85-384	21P38	122	3	57	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
HO08-717	HOCP14-885	623	1	20	.	.	.	.	.	.
LCP85-384	21P40	120	9	85	.	.	.	.	.	.
HOCP96-540	21P41	119	0	10	.	.	.	.	.	.
L14-282	L14-267	91	9	92	.	.	.	.	.	.
L94-433	HO11-532	125	0	10	.	.	.	.	.	.
L11-183	HOL15-508	399	0	10	.	.	.	.	.	.
HOCP00-950	HO11-573	75	1	46	.	.	.	.	.	.
HOCP96-561	HO11-573	117	13	93	.	.	.	.	.	.
L11-183	HO11-573	211	0	10	.	.	.	.	.	.
L11-187	HOCP97-609	384	23	76	.	.	.	.	.	.
2020 Crossing Series										
Mix 1	Mix2	65	0	12	0	17	.	.	.	.
Ho16-622	Ho12-630	482	23	72	2	42	.	.	.	.
HoCP09-804	L13-251	145	8	78	0	17	.	.	.	.
L16-386	L13-251	182	4	53	0	17	.	.	.	.
Ho16-646	L12-201	150	7	72	1	55	.	.	.	.
HoCP15-996	HoCP09-804	212	3	46	1	46	.	.	.	.
Ho16-608	Ho11-532	156	0	12	0	17	.	.	.	.
L01-299	L12-201	180	2	41	1	50	.	.	.	.
HoCP09-804	L12-201	152	0	12	0	17	.	.	.	.
Ho16-617	L12-201	114	0	12	0	17	.	.	.	.
HoCP16-670	Ho12-630	352	1	26	1	39	.	.	.	.
Ho08-730	Ho12-630	316	7	54	3	65	.	.	.	.
HoCP16-685	Ho11-532	143	0	12	0	17	.	.	.	.
CR94-1006	CP14-1649	384	9	56	1	37	.	.	.	.
Ho08-730	L12-201	416	11	60	4	67	.	.	.	.
Ho11-532	HoL15-993	209	13	81	9	91	.	.	.	.
Ho16-600	Ho15-930	202	18	91	10	94	.	.	.	.
L15-312	Ho15-930	201	0	12	0	17	.	.	.	.
HoCP14-885	HoL15-508	205	0	12	0	17	.	.	.	.
HoCP14-885	HoL15-501	444	30	82	9	80	.	.	.	.
Ho13-739	Ho13-708	551	5	38	4	59	.	.	.	.
Ho13-739	HoCP14-885	119	0	12	0	17	.	.	.	.
HoCP13-737	Ho11-573	353	18	74	11	86	.	.	.	.
Ho16-666	Poly18-4	195	3	46	1	48	.	.	.	.
Ho11-532	Ho12-630	147	3	52	1	57	.	.	.	.
CP14-1490	CP06-2897	249	19	88	8	87	.	.	.	.
L99-226	L12-201	812	42	75	9	70	.	.	.	.
Ho16-622	L12-201	615	11	50	0	17	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
L11-183	L12-201	575	0	12	0	17	.	.	.	.
Ho13-739	L14-282	203	1	29	1	48	.	.	.	.
L16-380	Ho11-532	399	8	51	3	60	.	.	.	.
HoCP14-855	Ho11-532	126	1	34	0	17	.	.	.	.
Ho08-730	HoCP14-855	166	4	57	1	53	.	.	.	.
HoL15-501	Ho11-532	441	1	25	0	17	.	.	.	.
H08-9504	Ho11-532	226	16	85	4	77	.	.	.	.
L16-380	HoCP 04-838	102	1	39	0	17	.	.	.	.
LCP85-384	Ho12-630	424	54	97	27	98	.	.	.	.
L16-375	Ho12-630	412	5	44	0	17	.	.	.	.
Ho08-730	Ho12-630	180	0	12	0	17	.	.	.	.
L16-375	HoCP96-540	84	6	85	1	72	.	.	.	.
H08-9504	HoCP96-540	295	5	48	2	56	.	.	.	.
Ho12-630	HoL15-993	90	2	55	1	71	.	.	.	.
Ho15-972	Ho12-630	320	50	99	13	90	.	.	.	.
Ho17-724	Ho12-630	233	13	78	7	85	.	.	.	.
Ho16-600	Ho12-630	416	9	53	3	58	.	.	.	.
Ho13-739	HoCP04-852	248	9	68	1	42	.	.	.	.
Ho16-601	Ho11-512	208	0	12	0	17	.	.	.	.
HoCP13-737	Ho16-600	220	9	69	1	46	.	.	.	.
Ho15-963	Ho16-600	380	6	47	0	17	.	.	.	.
Ho16-608	HoCP14-826	219	0	12	0	17	.	.	.	.
HoCP14-867	Ho12-630	285	9	64	5	76	.	.	.	.
HoCP16-670	Ho16-635	229	13	79	2	64	.	.	.	.
Ho11-573	Ho16-635	248	3	43	2	61	.	.	.	.
HoCP96-540	Ho16-635	197	21	94	9	93	.	.	.	.
Ho12-630	L12-218	469	25	76	16	88	.	.	.	.
Ho16-678	Ho11-573	613	0	12	0	17	.	.	.	.
Ho11-573	HoCP09-857	400	18	70	8	80	.	.	.	.
HoCP13-737	HoCP09-857	445	33	87	15	87	.	.	.	.
L16-353	HoCP09-857	209	6	62	5	82	.	.	.	.
HoL15-508	HoCP14-826	410	13	65	2	47	.	.	.	.
Ho15-963	HoCP14-826	673	22	66	7	69	.	.	.	.
Ho16-680	HoCP14-826	962	79	89	20	81	.	.	.	.
Ho15-964	Ho12-630	217	25	95	13	97	.	.	.	.
Ho15-963	Ho12-630	614	0	12	0	17	.	.	.	.
Ho16-627	Ho12-630	62	0	12	0	17	.	.	.	.
CP11-2412	CP12-1753	562	19	67	9	76	.	.	.	.
Ho15-960	Ho11-573	166	13	89	10	97	.	.	.	.
Ho11-512	Ho11-573	239	7	63	1	43	.	.	.	.
HoL15-511	Ho15-930	171	2	42	1	51	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
Ho05-961	Ho11-573	157	0	12	0	17	.	.	.	.
HoCP13-737	Ho11-573	458	2	27	2	44	.	.	.	.
Ho15-972	Ho11-573	228	1	28	1	44	.	.	.	.
HoCP91-555	Ho11-573	420	22	76	4	66	.	.	.	.
HoCP14-885	Ho11-573	408	10	59	3	59	.	.	.	.
HoCP05-920	Ho11-573	173	0	12	0	17	.	.	.	.
L16-372	Ho11-573	158	0	12	0	17	.	.	.	.
HoCP05-920	HoCP14-826	358	11	63	2	51	.	.	.	.
Ho11-573	HoCP14-826	455	32	84	12	84	.	.	.	.
L15-306	HoCP14-826	141	21	98	8	96	.	.	.	.
Ho11-512	Ho15-960	381	4	40	3	61	.	.	.	.
Ho11-573	HoCP14-830	430	38	91	22	95	.	.	.	.
Ho13-739	HoL15-993	289	0	12	0	17	.	.	.	.
Ho17-9512	Ho12-630	395	57	97	15	89	.	.	.	.
HoCP17-728	Ho11-573	151	11	87	2	74	.	.	.	.
Ho08-730	Ho15-930	191	1	31	1	49	.	.	.	.
CP13-4028	CP09-1822	209	26	96	18	99	.	.	.	.
L16-353	Ho11-573	188	0	12	0	17	.	.	.	.
HoCP14-885	Ho13-708	455	49	95	25	95	.	.	.	.
Ho15-930	Ho13-708	356	22	80	9	83	.	.	.	.
L15-306	Ho13-708	192	0	12	0	17	.	.	.	.
H08-9507	Ho11-573	366	17	71	1	49	.	.	.	.
Ho15-972	HoCP14-885	467	11	57	3	55	.	.	.	.
Ho16-627	HoCP14-885	307	7	55	0	17	.	.	.	.
HoCP14-885	Ho13-739	206	5	58	2	68	.	.	.	.
Ho13-739	HoCP14-885	230	16	83	3	73	.	.	.	.
Ho15-960	Poly19-7 (HoCP96-540, L09-112, HoCP09-814, Ho15-960, Ho07-753)	198	0	12	0	17	.	.	.	.
L12-201	Poly19-9	288	2	33	1	41	.	.	.	.
Ho11-573	Poly19-9	690	2	27	2	40	.	.	.	.
L16-353	Poly19-10	204	11	77	4	79	.	.	.	.
Ho12-630	Ho18-878	902	36	68	13	74	.	.	.	.
HoCP17-702	Ho18-878	357	38	93	16	92	.	.	.	.
Ho09-840	Ho18-878	395	19	73	6	75	.	.	.	.
Ho18-878	Ho12-630	208	15	86	5	82	.	.	.	.
Ho09-840	Ho12-630	235	21	92	10	91	.	.	.	.
Ho12-630	Ho18-877	711	0	12	0	17	.	.	.	.
CP14-4430	CP11-1314	312	6	51	3	67	.	.	.	.
Ho14-722	Ho13-739	504	3	31	3	52	.	.	.	.
L11-183	Ho13-739	231	3	45	2	63	.	.	.	.
HoCP18-857	Ho13-739	862	1	24	0	17	.	.	.	.
L14-282	HoCP18-847	556	4	34	1	36	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
Ho14-722	HoCP18-847	644	11	48	7	70	.	.	.	.
HoCP18-857	HoCP18-847	1090	9	36	1	34	.	.	.	.
Ho11-556	HoCP18-847	294	0	12	0	17	.	.	.	.
Ho12-630	HoCP17-714	449	2	29	2	45	.	.	.	.
L14-282	HoCP17-714	426	12	61	4	65	.	.	.	.
HoCP18-852	HoCP17-714	171	3	49	2	72	.	.	.	.
HoCP18-857	HoCP17-714	963	11	42	2	36	.	.	.	.
L14-282	Ho17-722	365	3	35	1	38	.	.	.	.
L16-386	Ho17-722	117	0	12	0	17	.	.	.	.
L17-434	Ho17-722	159	10	82	1	54	.	.	.	.
L17-410	HoCP18-847	247	7	61	2	62	.	.	.	.
Ho17-9513	HoCP18-847	374	1	25	0	17	.	.	.	.
L11-183	HoCP18-847	165	8	74	1	53	.	.	.	.
L14-282	HoCP18-857	191	2	40	0	17	.	.	.	.
HoCP09-804	HoCP17-714	385	0	12	0	17	.	.	.	.
L11-183	HoCP17-714	463	19	70	4	63	.	.	.	.
L17-426	Ho17-722	191	0	12	0	17	.	.	.	.
Ho15-971	HoCP17-714	141	14	93	5	89	.	.	.	.
Ho08-730	HoCP17-714	61	0	12	0	17	.	.	.	.
HoCP18-827	HoCP17-714	357	21	80	10	85	.	.	.	.
L17-424	HoCP17-714	629	4	32	1	35	.	.	.	.
L17-398	HoCP17-714	324	8	59	6	78	.	.	.	.
L17-424	HoCP18-866	718	9	44	2	38	.	.	.	.
Ho12-630	HoCP18-866	219	18	90	10	93	.	.	.	.
L17-405	Ho11-532	202	0	12	0	17	.	.	.	.
Ho05-961	HoCP14-885	218	7	65	4	78	.	.	.	.
HoL15-508	HoCP14-885	386	2	30	0	17	.	.	.	.
CPCL05-1201	CG04-09694	335	3	36	1	40	.	.	.	.
CP08-1968	Poly 20-15 (NA01640,NA052748)	62	0	12	0	17	.	.	.	.
L09-123	L99-233	192	0	12	0	17	.	.	.	.
HOCP91-552	HOCP91-552	641	0	12	0	17	.	.	.	.
L05-457	L15-320	221	2	37	0	17	.	.	.	.
L09-123	L15-337	352	0	12	0	17	.	.	.	.
HO09-9401	L99-233	434	4	38	3	57	.	.	.	.
L09-123	L15-337	155	0	12	0	17	.	.	.	.
L11-187	L12-202	164	0	12	0	17	.	.	.	.
2019 Crossing Series							.	.	.	.
HoCP13-752	Ho12-630	170	8	92	0	26	0	32	.	.
HoCP13-738	Ho11-573	211	1	30	1	65	0	32	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
L11-183	HOC91-552	196	5	78	4	93	2	97	.	.
HO09-827	HOC94-838	133	7	94	0	26	0	32	.	.
L05-457	HOC94-838	385	1	23	0	26	0	32	.	.
US01-040	HO14-835	227	0	11	0	26	0	32	.	.
L07-057	HO14-835	188	0	11	0	26	0	32	.	.
L11-187	HO14-835	872	2	22	2	54	0	32	.	.
L05-457	HOC14-802	178	6	87	0	26	0	32	.	.
HOC92-624	L99-233	282	4	59	0	26	0	32	.	.
US01-040	18P7	700	12	70	3	61	0	32	.	.
HO11-9406	18P8	700	12	70	3	61	0	32	.	.
L05-457	HOC94-838	225	0	11	0	26	0	32	.	.
HOC95-951	HOC96-540	396	0	11	0	26	0	32	.	.
L05-457	L99-233	164	1	36	0	26	0	32	.	.
LCP81-010	L06-038	98	0	11	0	26	0	32	.	.
HO09-827	L06-001	354	3	42	2	69	2	90	.	.
HOL15-993	18P9	185	12	97	4	94	1	89	.	.
L14-275	18P9	115	1	44	0	26	0	32	.	.
L15-337	18P9	171	1	35	0	26	0	32	.	.
L14-275	18P9	182	1	33	0	26	0	32	.	.
L12-218	L09-099	121	0	11	0	26	0	32	.	.
L05-457	L12-227	203	6	82	2	79	1	85	.	.
LCP81-010	18P10	560	11	73	7	90	3	88	.	.
HOC94-838	18P10	407	6	60	5	89	1	81	.	.
L12-218	HO13-705	127	1	41	0	26	0	32	.	.
HOC96-561	L99-233	159	0	11	0	26	0	32	.	.
L13-251	18P11	198	0	11	0	26	0	32	.	.
L11-168	L09-099	359	1	25	0	26	0	32	.	.
HOC14-867	HO13-705	877	23	79	6	73	2	79	.	.
L14-282	L01-299	197	6	83	1	66	0	32	.	.
L14-275	L12-202	199	0	11	0	26	0	32	.	.
LCP81-010	HOC91-552	394	10	77	4	82	3	94	.	.
HO08-730	HO11-532	230	2	44	0	26	0	32	.	.
HO09-827	HO11-532	441	7	66	2	64	1	78	.	.
L09-123	L09-099	318	1	27	0	26	0	32	.	.
L11-168	L09-099	183	2	54	0	26	0	32	.	.
L15-337	L09-099	742	2	24	0	26	0	32	.	.
LCP81-010	HO11-9406	338	0	11	0	26	0	32	.	.
HOC92-624	HO11-9406	211	2	50	0	26	0	32	.	.
HOC92-624	L99-226	452	3	39	0	26	0	32	.	.
HOC14-867	HO11-532	408	23	95	12	96	4	96	.	.
L13-243	18P12	452	27	96	14	98	1	77	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
HOC96-561	L99-233	897	18	74	9	80	1	67	.	.
HOC96-561	L99-226	176	2	56	0	26	0	32	.	.
HO09-840	L99-226	142	5	88	0	26	0	32	.	.
L05-457	HOC94-838	87	0	11	0	26	0	32	.	.
HO09-840	HOC14-802	917	14	62	8	77	1	66	.	.
L05-457	HOC14-802	211	2	50	0	26	0	32	.	.
L05-457	HOC91-552	82	0	11	0	26	0	32	.	.
L09-123	L99-233	939	3	28	2	53	0	32	.	.
HO06-563	19P4	172	0	11	0	26	0	32	.	.
L11-183	19P4	191	19	98	2	85	1	87	.	.
L16-391	19P4	389	6	63	4	83	0	32	.	.
LCP81-010	L99-226	1732	31	72	20	87	6	84	.	.
L10-147	L06-001	1383	15	53	6	63	2	70	.	.
L09-123	L99-233	182	3	68	0	26	0	32	.	.
12-202	HO06-563	543	5	46	1	52	1	72	.	.
L06-040	L16-386	201	1	31	0	26	0	32	.	.
L16-360	L01-299	983	27	81	7	76	1	65	.	.
LCP81-010	L06-001	781	33	90	11	91	0	32	.	.
L05-457	L99-233	455	3	38	0	26	0	32	.	.
LCP81-010	L99-233	422	7	69	3	75	0	32	.	.
HO11-9406	L16-386	870	14	67	6	74	1	68	.	.
L14-265	L16-386	314	2	37	0	26	0	32	.	.
L11-187	L99-226	229	11	93	7	97	0	32	.	.
L14-265	L99-226	774	4	32	4	67	1	69	.	.
US01-040	HO11-532	59	0	11	0	26	0	32	.	.
LCP81-010	L12-202	176	0	11	0	26	0	32	.	.
HO06-563	HOC94-838	453	6	58	4	78	3	92	.	.
L08-090	L99-226	147	1	40	0	26	0	32	.	.
L09-123	L99-226	458	0	11	0	26	0	32	.	.
L08-090	HO11-532	636	7	55	0	26	0	32	.	.
L09-099	19P5	1386	8	34	4	55	3	76	.	.
L12-202	19P5	338	1	26	1	56	0	32	.	.
L12-227	19P5	320	4	57	1	58	1	82	.	.
L99-233	19P5	572	5	45	0	26	0	32	.	.
HO11-9406	L99-226	330	5	61	2	71	2	91	.	.
HOC99-814	HO11-532	1126	11	52	4	59	2	71	.	.
L11-168	HO11-532	191	3	65	1	68	0	32	.	.
L12-202	HO11-532	498	11	76	3	70	1	74	.	.
HO06-530	HO13-705	157	0	11	0	26	0	32	.	.
L13-243	L09-099	413	13	85	9	95	5	98	.	.
L14-265	L09-099	859	35	89	14	92	7	95	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
L10-147	L99-233	411	0	11	0	26	0	32	.	.
L13-243	HOCP97-609	236	0	11	0	26	0	32	.	.
L14-265	HOCP97-609	883	27	84	10	86	3	83	.	.
HO06-530	L99-226	1288	6	29	4	57	3	80	.	.
L14-282	L14-266	194	3	64	2	84	1	86	.	.
L13-243	19P6	180	0	11	0	26	0	32	.	.
L11-183	HO11-532	149	4	80	0	26	0	32	.	.
L01-283	HO11-532	423	19	91	5	88	3	93	.	.
L15-298	L99-233	219	0	11	0	26	0	32	.	.
L10-147	HO13-705	530	5	48	2	60	1	73	.	.
LCP81-010	L06-001	1392	45	86	14	81	1	64	.	.
LCP81-010	L99-226	490	10	75	3	72	1	75	.	.
HO08-730	L01-299	212	2	48	0	26	0	32	.	.

2018 Crossing Series

HO15-964	HOCP14-885	118	0	7	0	15	0	24	0	42
HO13-739	HOL15-501	131	3	65	2	91	1	93	1	98
HOCP14-885	HO11-573	136	2	47	0	15	0	24	0	42
HOL15-508	HO11-573	142	0	7	0	15	0	24	0	42
HO11-573	HOCP14-826	115	3	73	1	75	1	95	1	99
L12-201	HO12-630	227	6	74	3	85	0	24	0	42
L09-112	L12-201	329	2	22	1	44	0	24	0	42
HO09-840	L12-201	107	4	84	1	78	0	24	0	42
L14-282	L12-201	138	0	7	0	15	0	24	0	42
L14-282	HO12-630	499	0	7	0	15	0	24	0	42
HO11-532	HO12-630	117	0	7	0	15	0	24	0	42
L01-299	HO11-532	112	2	51	2	94	0	24	0	42
L14-282	HOL15-508	464	0	7	0	15	0	24	0	42
HO13-739	HOL15-993	132	2	48	0	15	0	24	0	42
HO13-739	HO15-930	80	0	7	0	15	0	24	0	42
HOCP14-885	HOL15-501	137	5	83	2	88	1	92	0	42
HO13-708	HO12-630	446	0	7	0	15	0	24	0	42
HO13-739	HOCP14-826	135	0	7	0	15	0	24	0	42
L99-233	18P1	299	7	69	0	15	0	24	0	42
L99-233	18P1	1798	3	14	0	15	0	24	0	42
L09-123	18P1	396	4	35	1	40	0	24	0	42
L07-057	18P1	236	15	98	9	99	6	99	1	95
L99-233	18P2	934	0	7	0	15	0	24	0	42
L09-123	18P2	314	2	23	0	15	0	24	0	42
L05-457	18P2	248	7	77	3	84	2	94	1	94

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
HO09-9401	18P2	240	5	61	0	15	0	24	0	42
L99-233	18P3	365	0	7	0	15	0	24	0	42
L07-057	18P3	576	2	19	1	34	0	24	0	42
HO09-840	HOC04-838	252	9	81	3	83	1	77	0	42
L09-123	HOC04-838	1714	11	24	0	15	0	24	0	42
HO09-840	L99-233	736	5	26	2	43	1	58	0	42
L09-123	18P4	332	13	86	0	15	0	24	0	42
L11-168	HOC04-838	160	8	94	1	61	0	24	0	42
L12-227	18P6	2540	8	18	1	30	0	24	0	42
L12-202	18P6	215	13	96	5	97	1	81	0	42
L12-202	18P6	344	8	68	2	59	0	24	0	42
HOC92-624	HOC15-510	410	4	34	2	55	0	24	0	42
HOC92-624	HO06-563	239	15	97	4	93	0	24	0	42
L11-187	HOC97-609	393	19	93	6	91	3	93	1	93
L05-457	L99-233	2402	33	43	17	66	13	85	3	85
L11-183	HOC91-552	374	9	70	2	58	0	24	0	42
HO09-827	HOC04-838	1518	21	44	5	47	1	49	0	42
L05-457	HOC04-838	3728	31	30	12	46	4	55	0	42
US01-040	HO14-835	463	18	85	7	90	5	96	0	42
L07-057	HO14-835	119	0	7	0	15	0	24	0	42
L11-187	HO14-835	200	5	71	1	57	0	24	0	42
L05-457	HOC14-802	659	24	82	15	96	9	97	4	97
HOC92-624	L99-233	1626	27	50	12	68	4	70	0	42
US01-040	18P7	390	23	95	4	79	2	84	0	42
HO11-9406	18P8	884	4	21	1	31	0	24	0	42
L05-457	HOC04-838	413	16	85	3	67	0	24	0	42
HOC95-951	HOC96-540	246	5	58	0	15	0	24	0	42
L05-457	L99-233	239	3	37	0	15	0	24	0	42
LCP81-010	L06-038	2386	23	33	4	33	1	48	0	42
HO09-827	L06-001	2844	58	59	18	62	12	79	4	88
HOL15-993	18P9	1310	10	29	3	37	1	50	0	42
L14-275	18P9	243	0	7	0	15	0	24	0	42
L15-337	18P9	234	5	64	2	73	0	24	0	42
L14-275	18P9	295	4	42	0	15	0	24	0	42
L12-218	L09-099	353	15	90	3	71	1	71	0	42
L05-457	L12-227	192	4	61	0	15	0	24	0	42
LCP81-010	18P10	1296	4	17	0	15	0	24	0	42
HOC04-838	18P10	351	3	31	0	15	0	24	0	42
L12-218	HO13-705	479	14	80	4	69	1	64	0	42
HOC96-561	L99-233	2160	28	39	9	50	4	63	0	42

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
L13-251	18P11	2510	19	28	5	36	3	56	0	42
L11-168	L09-099	154	2	40	0	15	0	24	0	42
HOCP14-867	HO13-705	2558	18	27	6	38	2	51	0	42
L14-282	L01-299	596	12	57	5	70	3	83	1	90
L14-275	L12-202	69	1	46	0	15	0	24	0	42
LCP81-010	HOCP91-552	2578	35	42	12	53	2	50	0	42
HO08-730	HO11-532	1261	29	66	6	54	3	69	0	42
HO09-827	HO11-532	1464	64	91	22	89	6	78	0	42
L09-123	L09-099	322	6	53	1	45	1	73	0	42
L11-168	L09-099	638	26	89	9	87	2	74	0	42
L15-337	L09-099	453	13	79	4	76	1	66	1	92
LCP81-010	HO11-9406	1510	28	52	14	77	8	85	2	86
HOCP92-624	HO11-9406	617	10	49	4	64	2	75	1	89
HOCP92-624	L99-226	684	19	75	8	81	3	80	3	96
HOCP14-867	HO11-532	2250	28	36	12	57	4	62	3	87
L13-243	18P12	1099	24	64	12	80	8	91	1	84
HOCP91-552	18P12	369	5	41	1	42	0	24	0	42
L14-273	L99-226	436	11	72	3	65	1	67	0	42
HOCP00-950	HO11-532	191	0	7	0	15	0	24	0	42
L13-243	HO11-532	499	23	92	8	92	3	89	0	42
L14-273	HO11-532	235	11	92	3	85	0	24	0	42
LCP81-010	HO11-532	1996	7	20	3	32	2	53	0	42
HOCP92-618	18P13	1610	17	35	4	39	2	57	0	42
L99-233	18P13	767	7	32	5	64	2	71	0	42
HOCP95-951	L01-299	475	10	63	4	71	1	65	0	42
HO09-827	L01-299	702	12	50	3	50	1	59	0	42
L11-187	L01-299	211	0	7	0	15	0	24	0	42
L CP81-010	L06-001	352	14	88	3	72	2	87	0	42
HO09-827	L09-099	331	13	87	6	95	2	90	0	42
HO09-827	HO11-532	1171	33	76	11	78	2	60	2	91
HOCP96-561	HO11-532	1102	22	57	2	35	1	52	0	42
HOCP96-561	HO13-705	1544	6	21	0	15	0	24	0	42
L98-209	L99-226	371	1	16	1	42	0	24	0	42
HOL15-993	L99-226	523	10	55	1	35	1	64	0	42
L14-282	L99-226	809	0	7	0	15	0	24	0	42
HOCP04-838	18P14	935	13	45	4	51	1	54	0	42
HO11-9406	18P14	421	12	78	5	82	1	68	0	42
L10-147	18P14	1238	24	56	8	63	5	78	0	42
HOCP97-609	18P14	448	1	15	0	15	0	24	0	42
L14-273	L01-299	492	40	99	16	98	9	98	1	92

Table 6. Continued

			1 st Line		2 nd Line		Increases		Assignments	
			No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile	No.	Rank Percentile
Female	Male	Survive								
HOCP92-624	L99-226	1047	20	54	9	74	6	88	0	42
LCP81-010	L99-226	3092	22	28	8	41	4	57	0	42
L11-183	HOCP04-838	293	6	60	1	48	0	24	0	42
L94-433	18P15	1017	29	78	6	60	4	76	1	85
L11-183	L06-001	1740	22	38	6	49	3	61	0	42
HO09-827	L99-226	1954	13	25	9	52	6	72	0	42
L14-276	L99-226	367	9	71	5	86	2	86	0	42
HO08-730	18P16	604	14	67	3	56	3	82	0	42

2023 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFELD VARIETY TRIALS

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Five years after the initial hybridization of parents, clones that have met or exceeded criteria for desired characteristics at previous selection stages are assigned permanent numbers by each of the Louisiana Sugarcane Variety Development Programs. The LSU program assigns variety designations of “L,” and the USDA program assigns variety designations of “Ho” and “HoCP.” These varieties are planted in replicated nursery and infield tests at locations across the southern Louisiana sugarcane-growing areas.

One objective of the nursery and infield stages is to identify and select varieties that will perform well across the range of environments a commercial variety will encounter in Louisiana. Nursery tests are initially planted at three on-station locations (USDA-ARS - Ardoyne Farm, Iberia Research Station, and Sugar Research Station) during the year of assignment, and four to five additional and different off-station locations are planted the year after assignment. The off-station nurseries are Newton Cane, Inc. (Bunkie), Michael Melancon (Cecilia), and Landry Farms (Paincourtville), along with the two infield trial locations at Blackberry Farms (Vacherie), and Circle A Farms (Maurice). Both the LSU and USDA varieties were planted at each location. The locations, soil types, dates of planting and dates of harvest are listed in Table 1.

The on-station nursery trials were planted in single row (6-foot centers), 16-foot-long plots with 4-foot alleys. The off-station nurseries were planted in single row, 20-foot plots with 4-foot alleys. The infield tests were planted in two-row, 25-foot-long plots with 5-foot alleys. The experimental design for both nursery and infield tests was a randomized complete block with two replications per location. Commercial check varieties, L01-299, Ho 12-615, HoCP 14-885, L 15-306, and HoL 15-508 were planted in all nursery and infield tests for comparison.

Millable stalk counts for both nursery and infield tests were made in late July and August. A combine harvester and weigh wagon system was used to cut and weigh plots, respectively, for the infield tests. At harvest, 10-stalk samples were harvested by hand and stripped of leaves. A bundle weight was recorded to obtain a stalk weight (lb) estimate. Samples were then analyzed for sucrose content and fiber content. At the USDA-ARS laboratory, the pre-breaker press method was used to estimate fiber content. A juice sample was sent to the laboratory to obtain Brix and pol readings, which were used to estimate theoretical recoverable sugar per ton as estimated by the Winter-Carp formula as reported by Gravois and Milligan (1992). Samples sent to the Sugar Research Station sucrose laboratory were analyzed with a NIR Spectra Cane system to estimate sucrose and fiber content. Cane yield for the nursery tests was estimated as the product of stalk weight and stalk number. Cane yield for the infield tests was determined from the plot weights and reduced 14 percent to account for extraneous trash. Sugar per acre was calculated as the product of sugar per ton and cane yield.

The 2023 Louisiana sugarcane industry experienced above average temperatures in the early months, followed by an unexpected freeze on March 21st. Spring and summer months were particularly dry, leading to severe drought conditions that heavily affected the western and northern parishes. This drought contributed to lower tonnage for a large portion of the industry. No tropical storms impacted the region. The annual rainfall recorded at Baton Rouge was 51.41 inches, slightly under the long-term average, while New Orleans and Lafayette saw 39.85 inches and 46.49 inches respectively, indicating drier conditions across the region. Harvest began on September 27, 2023, and concluded on January 16, 2024. The final off-station nursery trial was harvested on November 29, 2023. The most widely grown varieties in Louisiana were L 01-299, Ho 12-615, and HoCP 09-804 occupying 53%, 10% and 9 % of the state's acreage, respectively. Recommended cultural practices were followed at all test locations. Mean separation used least square means probability differences where $P=0.05$. Varieties that are significantly higher or lower than L 01-299 are denoted by a (+) or minus (-) respectively, next to the value for each unit.

References:

Gravois, K.A. and S.B. Milligan. 1992. Genetic relationships between fiber and sugarcane yield components. Crop Sci. 32: 62-66.

Table 1. 2023 Location, soil texture, and planting and harvest dates for the nursery and infield tests

					Harvest Date	Varieties	
Series	Location†	Stage	Soil Texture	Planting Date	2022	No. Planted	No. Harvested
2018	Blackberry Farms	Infield	Commerce silt loam	09/12/19	Not Harvested	31	0
2018	Circle A Farm	Infield	Coteau-Patoutville-Frost silt loam	08/14/19	10/23/23	31	1
2018	Newton Cane, Inc	Nursery	Norwood silt loam	08/13/19	10/12/23	54	2
2018	Michael Melancon	Nursery	Loreauville silt loam	09/05/19	10/18/23	54	2
2018	Landry Farms	Nursery	Sharkey silty clay loam	09/14/19	11/29/23	54	2
2019	Sugar Research Station	Nursery	Commerce silt loam	11/11/19	Not Harvested	42	0
2019	Ardoyne Farm—U.S.D.A	Nursery	Commerce silt loam	11/20/19	Not Harvested	42	0
2019	Iberia Research Station	Nursery	Baldwin silty clay	11/07/19	Not Harvested	42	0
2019	Blackberry Farms	Infield	Commerce silt loam	09/09/20	10/17/23	36	1
2019	Circle A Farm	Infield	Coteau-Patoutville-Frost silt loam	08/13/20	Not Harvested	36	0
2019	Newton Cane, Inc	Nursery	Norwood silt loam	08/19/20	Not Harvested	54	0
2019	Michael Melancon	Nursery	Loreauville silt loam	08/18/20	10/18/23	54	5
2019	Landry Farms	Nursery	Sharkey silty clay loam	08/11/20	10/09/23	54	5
2020	Sugar Research Station	Nursery	Commerce silt loam	11/02/20	11/07/23	27	4
2020	Ardoyne Farm—U.S.D.A	Nursery	Commerce silt loam	11/04/20	Not Harvested	33	0
2020	Iberia Research Station	Nursery	Baldwin silty clay	11/05/20	10/24/23	38	4
2020	Blackberry Farms	Infield	Commerce silt loam	09/27/21	10/17/23	34	1
2020	Circle A Farm	Infield	Coteau-Patoutville-Frost silt loam	08/19/21	10/23/23	34	1
2020	Newton Cane, Inc	Nursery	Norwood silt loam	08/17/21	10/12/23	52	8
2020	Michael Melancon	Nursery	Loreauville silt loam	09/28/21	10/18/23	52	8
2020	Landry Farms	Nursery	Sharkey silty clay loam	08/24/21	10/09/23	52	8
2021	Sugar Research Station	Nursery	Commerce silt loam	11/09/21	11/07/23	29	4
2021	Ardoyne Farm—U.S.D.A	Nursery	Commerce silt loam	11/15/21	10/31/23	29	4
2021	Iberia Research Station	Nursery	Baldwin silty clay	11/11/21	10/24/23	29	4
2021	Blackberry Farms	Infield	Commerce silt loam	09/16/22	12/07/23	24	8
2021	Circle A Farm	Infield	Coteau-Patoutville-Frost silt loam	08/18/22	12/14/23	24	8
2021	Newton Cane, Inc	Nursery	Norwood silt loam	09/07/22	11/20/23	46	15
2021	Michael Melancon	Nursery	Loreauville silt loam	09/20/22	11/09/23	46	15
2021	Landry Farms	Nursery	Sharkey silty clay loam	09/14/22	12/13/23	46	15
2022	Sugar Research Station	Nursery	Commerce silt loam	10/27/22	11/21/23	31	15
2022	Ardoyne Farm—U.S.D.A	Nursery	Commerce silt loam	11/09/22	12/13/23	31	15
2022	Iberia Research Station	Nursery	Baldwin silty clay	11/01/22	11/02/23	31	15
2022	Blackberry Farms	Infield	Commerce silt loam	08/25/23		26	
2022	Circle A Farm	Infield	Coteau-Patoutville-Frost silt loam	08/17/23		26	
2022	Newton Cane, Inc	Nursery	Norwood silt loam	08/23/23		46	
2022	Michael Melancon	Nursery	Loreauville silt loam	08/15/23		46	
2022	Landry Farms	Nursery	Sharkey silty clay loam	09/01/23		46	
2023	Sugar Research Station	Nursery	Commerce silt loam	10/25/23		31	
2023	Ardoyne Farm—U.S.D.A	Nursery	Commerce silt loam	10/30/23		31	
2023	Iberia Research Station	Nursery	Baldwin silty clay	11/01/23		31	

† Ardoyne-U.S.D.A. Ardoyne Farm (Chacahoula), Blackberry Farms (Vacherie), Iberia Research Station (Jeanerette), Newton Cane, Inc. (Bunkie), Sugar Research Station (St. Gabriel), Michael Melancon (Cecilia), Landry Farms (Paincourtville), and Circle A Farm (Maurice)

Table 2. Off-station nursery third-stubble means of the 2018 “HoCP” assignment series on a Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	2396 -	7.1 -	343	0.99	14157 -	12.6
L01-299	12182	34.5	354	1.10	62799	12.0
HoCP 09-804	4891 -	16.3 -	299 -	0.57 -	57717	16.5 +
L 12-201	6972 -	19.8 -	353	0.97	41564 -	11.3
Ho 12-615	7936 -	24.2 -	326 -	0.85 -	56991	13.4 +
HoCP 18-803	7454 -	23.8 -	312 -	1.11	43016	12.6

Table 3. Off-station nursery third-stubble means of the 2018 “HoCP” assignment series on a Commerce silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	4641 -	17.3	268	1.68	20691 -	12.7
L01-299	8962	33.9	264	1.79	37752	12.6
HoCP 09-804	6964	24.0	291 +	1.12 -	42834	14.8 +
L 12-201	9593	32.1	299 +	1.69	37934	12.0
Ho 12-615	4906 -	19.3	254	1.17 -	32670	14.4 +
HoCP 18-803	6005	22.3	268	1.52	29040 -	12.6

Table 4. Off-station nursery third-stubble means of the 2018 “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	10724	37.2	288	1.76	42471	12.4 -
L01-299	14866	53.2	280	1.71	61892	13.4
HoCP 09-804	9849	36.2	274	1.40	52635	12.9
L 12-201	10946	34.4	318	1.64	42108	11.5 -
Ho 12-615	7775	28.5	274	1.12	51002	14.2
HoCP 18-803	13081	46.4	284	1.75	52635	12.6

Table 5. Off-station nursery third-stubble means of the 2018 “HoCP” assignment series across 3 locations (Newton, Melancon, and Landry) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	5920	20.5 -	300	1.48	25773 -	12.6
L01-299	12004	40.5	299	1.53	54148	12.7
HoCP 09-804	7235 -	25.5 -	288	1.03 -	51062	14.7 +
L 12-201	9171	28.7 -	323	1.43	40535	11.6
Ho 12-615	6872 -	24.0 -	285	1.04 -	46888	14.0
HoCP 18-803	8847	30.8	288	1.46	41564	12.6

Table 6. Off-station nursery second-stubble means of the 2019 “L” and “HoCP” assignment series on a Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	6915	27.3	253	1.12	47553	12.7
HoCP 09-804	7360	28.0	266	0.96	58080	15.9 +
L 12-201	8045	30.0	268	1.37	43742	11.8
Ho 12-615	7546	29.4	256	1.03	56991	13.2
Ho 13-739	9821	37.6	261	1.49 +	50457	12.5
HoCP 19-947	10756	36.7	293 +	1.65 +	44468	11.0 -

Table 7. Off-station nursery second-stubble means of the 2019 “L” and “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	13377	54.6	246	1.53	71148	13.8
HoCP 09-804	9278	37.7	247	1.19	63344	14.7
L 12-201	11896	42.8	279 +	1.76	48642 -	10.4 -
Ho 12-615	11401	45.7	244	1.39	64977	13.9
Ho 13-739	12623	47.2	267	1.65	57717	12.5
HoCP 19-947	11993	43.1	279 +	1.83	47190 -	10.6 -

Table 8. Off-station nursery second-stubble means of the 2019 “L” and “HoCP” assignment series across 2 locations (Melancon, and Landry) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	10146	41.0	249	1.33	59351	13.3
HoCP 09-804	8319	32.9	256	1.07 -	60712	15.3 +
L 12-201	9971	36.4	274 +	1.57 +	46192	11.1 -
Ho 12-615	9473	37.6	250	1.21	60984	13.6
Ho 13-739	11222	42.4	264	1.57 +	54087	12.5
HoCP 19-947	11374	39.9	286 +	1.74 +	45829	10.8 -

Table 9. Off-station nursery first-stubble means of the 2020 “L” and “HoCP” assignment series on a Commerce silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	9689	38.6	251	1.60	48098	12.1
Ho 13-739	11835	44.1	267 +	1.84	47916	12.1
L 14-267	11701	42.6	275 +	1.86	45920	11.8
HoCP 14-885	13601	47.3	288 +	1.95	48279	10.0 -
L 20-37	6016	22.1	273 +	1.39	31944	10.9 -
L 20-65	13423	41.1	327 +	1.88	44286	11.8
HoCP 20-501	9475	33.0	287 +	1.65	38660	10.4 -
HoCP 20-521	10913	39.8	274 +	1.63	49368	11.6
HoCP 20-527	6597	28.2	233 -	1.56	35937	12.1
HoCP 20-568	6985	25.4	274 +	1.26	40112	11.7

Table 10. Off-station nursery first-stubble means of the 2020 “L” and “HoCP” assignment series on a Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2023.

Variety	Sugar Per Acre (lbs./A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
L01-299	5696	20.6	277	1.12	37026	13.7
Ho 13-739	4682	16.7	283	1.07	30311	12.2 -
L 14-267	4055	15.1	269	1.25	24140	12.3 -
HoCP 14-885	4068	14.9	273	1.03	29403	11.2 -
L 20-37	3235	12.1	269	0.95	24321	11.5 -
L 20-65	3741	11.6	329 +	0.99	22688	11.6 -
HoCP 20-501	2970	11.6	258	0.82	26136	10.2 -
HoCP 20-521	3928	13.8	286	0.96	28859	12.4 -
HoCP 20-527	3374	13.1	260	1.00	25592	12.7 -
HoCP 20-568	3278	12.5	255	1.04	23051	11.6 -

Table 11. Off-station nursery first-stubble means of the 2020 “L” and “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2023.

Variety	Sugar Per Acre (lbs./A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
L01-299	9500	35.5	268	1.19	59895	11.8
Ho 13-739	7020	25.2	278	1.10	45557	12.4
L 14-267	10124	36.9	274	1.69 +	43742	11.2
HoCP 14-885	9653	32.9	297	1.13	57717	10.2 -
L 20-37	8608	29.7	289	1.39	42108	10.9
L 20-65	9280	30.3	305	1.45 +	42653	11.4
HoCP 20-501	6902	26.1	264	1.42	36845	10.2 -
HoCP 20-521	9947	35.0	286	1.22	56991	11.1
HoCP 20-527	8916	36.1	248	1.36	53180	12.5
HoCP 20-568	8562	33.4	253	1.35	50276	11.0

Table 12. Off-station nursery first-stubble means of the 2020 “L” and “HoCP” assignment series across 3 locations (Newton, Melancon, and Landry) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	8295	31.5	265	1.30	48340	12.6
Ho 13-739	7845	28.7	276	1.34	41261	12.2 -
L 14-267	8627	31.5	272	1.60	37934 -	11.8 -
HoCP 14-885	9107	31.7	286 +	1.37	45133	10.5 -
L 20-37	5953	21.3	277	1.24	32791 -	11.1 -
L 20-65	8815	27.7	320 +	1.44	36542 -	11.6 -
HoCP 20-501	6449	23.6	270	1.30	33880 -	10.3 -
HoCP 20-521	8263	29.5	282	1.27	45073	11.7 -
HoCP 20-527	6296	25.8	247	1.31	38236 -	12.4
HoCP 20-568	6275	23.8	261	1.22	37813 -	11.5 -

Table 13. Off-station nursery plantcane means of the 2021 “L” and “HoCP” assignment series on a Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2023

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	9361	38.3	245	2.19	35030	12.4
Ho12-615	8818	35.3	250	1.67	42471	12.8
HoCP 14-885	12712	46.9	272	2.14	43742	10.2 -
L 15-306	10411	36.1	287	2.21	32852	11.4
HoL 15-508	9328	34.1	275	1.99	34667	10.0 -
L 21-78	5786	23.7 -	251	1.60 -	28677	12.0
L 21-80	9506	41.7	229	2.18	38115	11.6
L 21-95	9283	35.3	262	1.83	38478	13.1
L 21-102	5817	22.0 -	276	1.51 -	28859	12.4
HoCP21-608	7712	26.7	282	2.06	25229	12.2
Ho21-616	10469	39.9	258	2.98 +	26681	9.4 -
HoCP21-617	7544	31.7	236	1.92	32489	12.2
HoCP21-621	8277	30.8	275	1.82	33033	12.2
HoCP21-629	8112	30.9	266	1.81	33759	11.8
HoCP21-630	6971	31.6	226	1.68	37571	12.9
HoCP21-642	6755	28.4	243	1.81	31400	11.6
HoCP21-647	11445	42.4	271	2.11	40293	10.8
HoCP21-652	9244	35.7	261	2.17	33578	13.2
HoCP21-655	11019	42.1	262	2.19	38115	12.2
HoCP21-659	9508	33.6	282	2.38	27951	12.1

Table 14. Off-station nursery plantcane means of the 2021 “L” and “HoCP assignment series on a Commerce silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	9130	35.8	257	2.09	33759	10.8
Ho12-615	11427	43.5	264	1.78	48824 +	13.0 +
HoCP 14-885	11970	37.7	316 +	1.96	38478	10.9
L 15-306	11877	41.2	288 +	2.34	35574	12.2 +
HoL 15-508	9999	36.3	277	1.71	41927	10.7
L 21-78	7972	28.0	285	1.47 -	38115	11.4
L 21-80	11461	40.0	286	1.90	42108	11.0
L 21-95	9773	34.6	282	1.56 -	44286	13.7 +
L 21-102	6234	23.4 -	266	1.31 -	35756	11.9
HoCP21-608	11058	36.5	302 +	1.84	40112	11.7
Ho21-616	12750 +	41.6	303 +	2.41	34304	9.4
HoCP21-617	10150	36.6	277	2.28	32126	12.1 +
HoCP21-621	10773	35.4	304 +	1.58 -	45012	11.7
HoCP21-629	10017	33.1	302 +	1.60 -	41564	11.5
HoCP21-630	8615	32.2	267	1.47 -	44105	13.7 +
HoCP21-642	8162	27.2	298 +	1.77	30492	10.3
HoCP21-647	11108	41.0	272	1.98	41745	10.1
HoCP21-652	8874	31.3	284	2.06	30129	13.2 +
HoCP21-655	5860	21.0 -	285	1.78	24140	12.4 +
HoCP21-659	12298	40.8	302	2.06	39749	12.2 +

Table 15. Off-station nursery plantcane means of the 2021 “L” and “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	19885	69.6	285	2.19	63707	14.1
Ho12-615	17368	65.4	266	1.91	68607	14.7
HoCP 14-885	23362 +	76.1	307	2.60 +	58443	10.4 -
L 15-306	15925 -	57.9	275	2.32	50094 -	11.6 -
HoL 15-508	15786 -	52.8 -	300	1.80 -	58625	9.6 -
L 21-78	11138 -	37.6 -	296	1.92	39204 -	13.5
L 21-80	9315 -	38.0 -	244 -	1.58 -	48461 -	10.3 -
L 21-95	12074 -	44.4 -	276	1.88 -	47372 -	12.4
L 21-102	11889 -	46.3 -	256	1.75 -	52998	13.5
HoCP21-608	13037 -	43.7 -	298	2.02	43379 -	12.2 -
Ho21-616	18112	61.5	295	2.51 +	49005 -	9.8 -
HoCP21-617	13412 -	49.5 -	272	1.88 -	52635 -	12.7
HoCP21-621	14147 -	50.1 -	283	1.76 -	56810	13.1
HoCP21-629	17232	56.6 -	305	1.95	58262	12.0 -
HoCP21-630	13754 -	50.8 -	271	1.72 -	59169	14.6
HoCP21-642	13992 -	44.9 -	311	1.80 -	49913 -	11.5 -
HoCP21-647	15851 -	53.4 -	297	2.09	51365 -	10.2 -
HoCP21-652	14988 -	51.1 -	294	2.24	45738 -	13.0
HoCP21-655	13924 -	54.6 -	255	2.40	45557 -	12.0 -
HoCP21-659	16587	52.3 -	318	2.33	44831 -	11.6 -

Table 16. Off-station nursery plantcane means of the 2021 “L” and “HoCP” assignment series across 3 locations (Newton, Melancon, and Landry) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01-299	12792	47.9	263	2.16	44165	12.4
Ho12-615	12537	48.1	260	1.78 -	53301 +	13.5
HoCP 14-885	16015 +	53.6	298 +	2.24	46888	10.5 -
L 15-306	12737	45.1	283	2.29	39507	11.7
HoL 15-508	11705	41.1	284	1.83 -	45073	10.1 -
L 21-78	8299 -	29.7 -	277	1.66 -	35332 -	12.3
L 21-80	10094	39.9	253	1.89	42895	11.0 -
L 21-95	10377	38.1 -	273	1.76 -	43379	13.1
L 21-102	7980 -	30.6 -	266	1.52 -	39204	12.6
HoCP21-608	10602	35.6 -	294 +	1.97	36240	12.0
Ho21-616	13777	47.7	285 +	2.63 +	36663	9.5 -
HoCP21-617	10369	39.3	262	2.03	39083	12.4
HoCP21-621	11066	38.8	288 +	1.72 -	44952	12.3
HoCP21-629	11787	40.2	291 +	1.78 -	44528	11.7
HoCP21-630	9780 -	38.2 -	254	1.62 -	46948	13.7 +
HoCP21-642	9636 -	33.5 -	284 +	1.79 -	37268	11.2 -
HoCP21-647	12801	45.6	280	2.06	44468	10.4 -
HoCP21-652	11036	39.4	280	2.16	36482	13.1
HoCP21-655	10268	39.2	267	2.12	35937	12.2
HoCP21-659	12798	42.2	301 +	2.25	37510	12.0

Table 17. On-station nursery second-stubble means of the 2020 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	10690 -	38.7 -	277	2.25	34258 -	13.3 -
L 01-299	19721	70.8	278	2.34	60576	15.5
HoCP 09 -804	11750 -	39.5 -	296 +	1.80 -	44014 -	14.1
L 12-201	13862 -	46.4 -	299 +	2.84 +	32670 -	12.3 -
Ho 12-615	12323 -	43.6 -	282	1.72 -	51047	14.3
L 20-37	11156 -	38.6 -	289	2.32	33351 -	12.4 -
L 20-65	11599 -	35.9 -	323 +	1.92	37434 -	12.3 -

Table 18. On-station nursery second-stubble means of the 2020 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	4566	18.0	249	1.45	24729	12.3
L 01-299	10313	37.5	273	1.26	59441	13.3
HoCP 09 -804	6142	25.1	244	1.09	46056	13.9
L 12-201	7185	25.6	280	1.57	32670	11.8 -
Ho 12-615	6513	28.1	232	1.21	46963	13.3
L 20-37	9464	31.9	295	1.86	33804	11.8 -
L 20-65	10819	34.9	313 +	1.34	52408	11.7 -

Table 19. On-station nursery second-stubble means of the 2020 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	9237 -	34.1 -	271	1.52	44921 -	12.5
L 01-299	16790	60.7	277	1.51	80768	12.3
HoCP 09 -804	9671 -	34.3 -	282	1.17 -	58534 -	14.3
L 12-201	10907 -	34.8 -	314	1.41	49459 -	11.6
Ho 12-615	10624 -	41.3 -	258	1.24 -	66701	12.7
L 20-65	14590	41.9 -	351 +	1.40	59895 -	12.3

Table 20. On-station nursery second-stubble means of the 2020 “L” assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A. -Ardoyne Farm) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP 96-540	8164 -	30.3 -	266	1.74	34636 -	12.7
L 01-299	15608	56.3	276	1.70	66928	13.7
HoCP 09 -804	9188 -	33.0 -	274	1.35	49534 -	14.1
L 12-201	10651 -	35.6 -	297	1.94	38266 -	11.9 -
Ho 12-615	9820 -	37.7 -	257	1.39	54904 -	13.4
L 20-37	10757 -	36.5 -	295	1.97	38886 -	12.0 -
L 20-65	12164 -	37.3 -	328 +	1.54	50039 -	12.0 -

Table 21. On-station nursery first-stubble means of the 2021 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	14908	55.1	271	2.66	41518	15.1
Ho13 - 739	13614	47.1	291 +	2.55	36754	12.4 -
L 14 - 267	13875	46.5	299 +	2.64	35166	12.0 -
HoCP 14-885	15401	55.9	276	2.66	41972	11.0 -
L 21-78	11391	38.2	299 +	1.67 -	45602	14.6
L 21-80	13319	47.6	278	2.46	38796	14.1
L 21-95	12140	44.2	274	1.90 -	46283	14.5
L 21-102	11164	40.1	279	1.98 -	40611	13.6

Table 22. On-station nursery first-stubble means of the 2021 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	8642	34.6	250	1.68	41518	12.2
Ho13 - 739	5833	22.9 -	255	1.62	28586 -	12.3
L 14 - 267	7709	29.2	261	1.83	31763	11.6
HoCP 14-885	9084	34.8	260	1.71	40611	10.9 -
L 21-78	6263	23.3 -	269	1.10 -	42653	13.5 +
L 21-80	5424 -	23.2 -	231	1.54	29948 -	12.6
L 21-95	5601	23.3 -	241	1.22 -	38115	13.2 +
L 21-102	2965 -	12.4 -	239	0.82 -	30401 -	10.7 -

Table 23. On-station nursery first-stubble means of the 2021 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	9153	33.9	270	1.36	49913	11.1
Ho13 - 739	10084	34.1	295 +	1.56	43560	12.1
L 14 - 267	12241	40.8	300 +	2.03 +	40157	11.3
HoCP 14-885	9992	32.5	307 +	1.37	47644	9.6 -
L 21-78	7569	27.0	281	1.30	41745	12.9 +
L 21-80	9103	30.8	297 +	1.42	43333	11.8
L 21-95	6961	24.8	281	1.10	44014	12.8 +
L 21-102	8291	29.0	286	1.08	53996	11.5

Table 24. On-station nursery first-stubble means of the 2021 “L” assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A. -Ardoyne Farm) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	10901	41.2	264	1.90	44316	12.8
Ho13 - 739	9844	34.7	280	1.91	36300	12.3
L 14 - 267	11275	38.8	287	2.17	35695	11.6
HoCP 14-885	11492	41.1	281	1.91	43409	10.5 -
L 21-78	8407 -	29.5 -	283	1.35 -	43333	13.6
L 21-80	9282	33.9 -	269	1.81	37359	12.9
L 21-95	8234 -	30.8 -	265	1.41 -	42804	13.5
L 21-102	7473 -	27.2 -	268	1.29 -	41669	11.9

Table 25. On-station nursery plantcane means of the 2022 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	17847	61.9	288	2.21	55811	12.6
L 14 - 267	15411	56.0	275	2.74	41064 -	10.9
HoCP 14-885	20479	77.3	267	2.79	55358	10.4 -
L 15 - 306	13409	46.5	288	2.57	36300 -	11.1
L 22-106	17772	66.7	267	2.68	49005	15.0 +
L 22-107	14255	51.7	276	2.64	39249 -	12.2
L 22-109	14691	49.6	296	2.43	40838 -	13.9
L 22-110	11572 -	39.8 -	291	1.87	42653 -	12.3
L 22-112	14068	59.1	241	2.83 +	41064 -	14.7
L 22-114	14580	54.3	269	2.62	41745 -	12.5
L 22-115	11269 -	40.8 -	277	1.77	46509	13.1
L 22-116	11993 -	46.4	258	2.92 +	31536 -	12.6
L 22-118	10142 -	38.2 -	261	2.22	34258 -	10.1 -
L 22-124	12335	46.6	267	2.12	43787 -	11.9
L 22-125	8612 -	33.4 -	258	1.68 -	39930 -	12.6
L 22-126	10417 -	36.9 -	281	2.12	34712 -	10.8
L 22-127	14972	50.2	297	2.70	37208 -	11.4
L 22-131	13882	49.5	279	2.43	40838 -	10.7
L 22-133	15200	55.6	273	2.46	45602	11.1

Table 26. On-station nursery plantcane means of the 2022 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	8394	34.6	244	2.08	33804	13.5
L 14 - 267	12596 +	48.0 +	261	2.72 +	35166	11.5 -
HoCP 14-885	16248 +	61.9 +	264	3.05 +	40384	10.2 -
L 15 - 306	9030	34.8	260	2.11	33351	11.3
L 22-106	7122	29.5	241	1.66	35619	13.4
L 22-107	11387	47.5 +	240	2.34	40611	12.6
L 22-109	8103	31.3	259	1.99	31763	14.3
L 22-110	6952	26.4	264	1.44 -	37434	12.1
L 22-112	9798	42.7	230	2.28	37661	12.4
L 22-114	8373	36.0	230	2.23	31763	13.0
L 22-115	5620	23.5	240	1.36	34485	12.2
L 22-116	7546	32.8	231	1.80	36073	12.3
L 22-118	8354	30.6	274 +	1.75	34939	12.1
L 22-124	10067	39.0	258	2.09	37661	13.6
L 22-125	6008	22.7	265	1.57 -	29267	13.0
L 22-126	7858	30.4	259	2.13	28813	12.0 -
L 22-127	6556	24.6	267	1.66	29494	9.8 -
L 22-131	8028	28.9	279 +	1.51 -	38115	10.3 -
L 22-133	9098	35.4	257	1.97	36073	13.5

Table 27. On-station nursery plantcane means of the 2022 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	10447	38.6	271	1.96	39703	13.1
L 14 - 267	11284	40.4	280	2.09	38569	12.3
HoCP 14-885	15317 +	48.0	319 +	2.13	44921	10.6 -
L 15 - 306	14034 +	49.9	282	2.24	44694	11.2 -
L 22-106	11337	39.8	285	1.85	42879	13.1
L 22-107	12425	46.8	265	2.08	45148	12.9
L 22-109	9459	33.8	280	1.70	41745	13.5
L 22-110	7881	26.7 -	295 +	1.36 -	39703	13.0
L 22-112	7744	34.3	226 -	2.26	30401	13.1
L 22-114	13587 +	52.9 +	259	2.47	43560	13.1
L 22-115	9129	35.6	255	1.63	43787	13.6
L 22-116	12867	52.0 +	248 -	2.19	47417	12.0
L 22-118	12006	41.9	286	2.19	38342	13.3
L 22-124	15252 +	52.5 +	290	2.04	53769	12.9
L 22-125	12557	50.4 +	249	1.77	56946	13.4
L 22-126	10398	38.3	272	2.37	32897	12.1
L 22-127	13268	44.9	295 +	2.19	41291	10.2 -
L 22-131	13094	46.1	284	1.82	51274	11.2 -
L 22-133	13587 +	51.6 +	265	2.27	45375	12.6

Table 28. On-station nursery plantcane means of the 2022 “L” assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A. -Ardoyne Farm) in 2023.

Variety	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs./A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
L01 - 299	12229	45.1	268	2.08	43106	13.1
L 14 - 267	13097	48.2	272	2.52 +	38266	11.6 -
HoCP 14-885	17348 +	62.4 +	283	2.66 +	46888	10.4 -
L 15 - 306	12158	43.7	276	2.30	38115	11.2 -
L 22-106	12077	45.3	265	2.06	42501	13.9
L 22-107	12689	48.7	260	2.35	41669	12.6
L 22-109	10751	38.2	278	2.04	38115	13.9
L 22-110	8802 -	31.0 -	283	1.55 -	39930	12.5
L 22-112	10537	45.4	232 -	2.46	36376	13.4
L 22-114	12180	47.7	252	2.44	39023	12.9
L 22-115	8673 -	33.3	257	1.58 -	41594	12.9
L 22-116	10802	43.7	246 -	2.31	38342	12.3
L 22-118	10167	36.9	274	2.05	35846	11.8
L 22-124	12551	46.0	272	2.08	45073	12.8
L 22-125	9059	35.5	257	1.67 -	42048	13.0
L 22-126	9558	35.2	271	2.21	32141	11.6 -
L 22-127	11599	39.9	286	2.19	35998	10.4 -
L 22-131	11668	41.5	281	1.92	43409	10.7 -
L 22-133	12628	47.6	265	2.23	42350	12.4

2023 LOUISIANA “Ho” NURSERY VARIETY TRIALS

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In the USDA Sugarcane Research Unit’s sugarcane variety program, promising experimental varieties are assigned permanent numbers three years after selection in the seedling stage. These varieties are planted in replicated yield trials (randomized complete block design with two replications) in the same year permanent variety numbers are assigned. Because assignments take place later in the year when most farmers have finished their plantings, these nursery trials are planted on research stations. In 2023, trials were planted at USDA’s Ardoyne Farm in Schriever, LSU AgCenter’s Iberia Research Station in Jeanerette and Sugar Research Station in St. Gabriel. Plots in these trials are 16 feet long by six feet (one row) wide with a four-foot alley between plots. A minimum of three commercial varieties are planted in each test for comparison purposes. The following year, experimental varieties advanced for further testing are combined with varieties from the LSU AgCenter program (“L” series) and planted in replicated nursery yield trials on commercial farms that represent the different regions of the sugarcane belt.

In the spring and summer, team members rate nursery test plots for yield traits such as population, stalk height, stalk diameter, erectness, etc. During the rating process, notes are taken on the presence of any diseases in varieties as well as any damage present from insects or other pests. Mature, millable stalks are counted in each plot in late July or early August. A 10-stalk sample is hand-cut from plots of active varieties during the harvest season. Samples from USDA nurseries are analyzed at the Juice and Milling Quality Laboratory at the USDA Ardoyne Farm, where they are weighed to determine stalk weight and processed for sucrose analysis. Estimates of theoretical recoverable sugar (TRS) per ton of cane are calculated based on Brix (% w/w) and pol reading (Z°) values, while estimated yields of cane per acre, sugar per acre, and number of stalks per acre are calculated based on results from juice analyses, mature millable stalk counts, and mean stalk weight. Varieties with yields equal to or higher than the control varieties and not susceptible to diseases are advanced for further testing.

Table 1 lists the planting and harvest dates of USDA nursery evaluations. Because of travel restrictions due to COVID 19, in 2020 two nursery trials were planted at Ardoyne Farm (one on heavy soil and one on light soil) and one trial was planted at St. Gabriel Research Station. A nursery trial was planted on heavy soil at Ardoyne Farm in 2021, but because of soil conditions there was very poor germination. Thus, it was decided not to collect data from this test. There was no 3rd stubble test at Iberia Research Station in 2023. Results of trials harvested in 2023 are in tables 2 to 15. Varieties where both the cross and selection were done in Houma were assigned a prefix of “Ho”. Varieties where a cross was made at the USDA facility in Canal Point, FL and selection was done in Houma have a “HoCP” prefix. Varieties having a “HoL” prefix are derived from a cross made at the LSU Sugar Research Station in St. Gabriel and selected from the USDA farm. Statistical analyses were run for each test and for each crop combined across locations using PROC MIXED procedures in SAS (version 9.4). Because L 01-299 occupies more acreage than any other variety in the industry, it is highlighted in each table and all other varieties are compared to it. Yield values that are significantly higher or lower ($P=0.05$) than values for L 01-299 are noted with a ‘+’ or ‘-’, respectively.

Table 1. Planting and harvest dates of “Ho” nursery tests in 2023.

Series	Location ^{1/}	Soil Series ^{2/}	Planting	Harvest Dates			
				2020	2021	2022	2023
2019	AFL	CbA	11/07/19	12/21	12/03	11/15	10/23
2019	STG	Csl	11/21/19	12/15	12/15	11/02	11/17
2020	AFH	ShA	11/17/20		12/02	10/12	10/23
2020	AFL	CbA	11/04/20		12/20	11/17	11/15
2020	STG	Csl	11/19/20		12/16	11/21	11/17
2021	IRS	BscI	11/08/21			10/25	11/20
2021	STG	Csl	11/10/21			11/21	11/17
2022	AFH	ShA	10/27/22				11/30
2022	IRS	BscI	11/01/22				11/20
2022	STG	Csl	11/02/22				11/28
2023	AFL	CbA	11/03/23				
2023	IRS	BscI	11/07/23				
2023	STG	Csl	11/17/23				

¹AFH = Ardoyne Farm heavy soil in Schriever, AFL = Ardoyne Farm light soil in Schriever, IRS = Iberia Research Station in Jeanerette, STG = Sugar Research Station in St. Gabriel

²Bsc = Baldwin silty clay loam, CbA = Cancienne silt loam, Csl = Commerce silt loam, ShA = Schriever clay

Table 2. Nursery third-stubble means of the 2019 “HoCP” assignment series on a Cancienne silt loam soil at the Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	9718	38.7	251	1.66	46623
HoCP 96-540	7281	32.0	228	1.70	37662
HoCP 09-804	12391	51.0	243	1.57	65227 +
L 12-201	10846	46.7	232	2.40 +	39023
Ho 12-615	9817	43.1	225	1.44	59215
HoCP 19-947	11585	49.2	235	1.99 +	49346
Means	10273	43.4	236	1.79	49516

Table 3. Nursery third-stubble means of the 2019 “HoCP” assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	9232	33.6	275	1.27	52862
HoCP 96-540	8202	31.3	262	1.47	43220
HoCP 09-804	9877	35.9	276	1.26	57059
L 12-201	7803	27.8	281	1.76	30628
Ho 12-615	9837	37.5	263	1.19	63072
HoCP 19-947	11105	38.8	285	1.63	47417
Means	9353	34.2	274	1.44	48696

Table 4. Nursery third-stubble means of the 2019 “HoCP” assignment series across locations (Ardoyne Farm & Sugar Research Station) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	9556	37.0	259	1.53	48703
HoCP 96-540	7741	31.6	245	1.58	40441
HoCP 09-804	11134	43.4	259	1.41	61143 +
L 12-201	9324	37.2	257	2.08 +	34825 –
Ho 12-615	9827	40.3	244	1.31	61143 +
HoCP 19-947	11345	44.0	260	1.81 +	48381
Means	9833	39.0	254	1.62	49123

Table 5. Nursery second-stubble means of the 2020 “HoCP” assignment series on a Cancienne silt loam soil at the Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	14107	54.5	260	1.95	55698
HoCP 09-804	14232	54.8	260	1.89	57853
L 12-201	12660	50.3	252	2.62	38229 –
Ho 12-615	14095	53.8	262	1.76	61143
Ho 13-739	13974	54.5	257	2.11	51501
HoCP 20-501	11832	46.2	257	1.98	46510 –
HoCP 20-521	13040	51.6	253	2.00	51614
HoCP 20-527	12504	49.8	252	1.99	50026
HoCP 20-568	11505	45.3	254	1.75	51954
Means	13105	51.2	256	2.00	51614

Table 6. Nursery second-stubble means of the 2020 “HoCP” assignment series on a Schriever clay soil at the Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	9276	44.2	210	1.68	52862
HoCP 09-804	7399	36.9	201	1.40	52862
L 12-201	8928	39.3	227	1.86	41972
Ho 12-615	4235 –	22.5 –	188 –	1.07	42086
Ho 13-739	9407	44.6	212	1.90	46850
HoCP 20-501	6304 –	36.4	174 –	1.77	41178
HoCP 20-521	8607	43.2	199	1.75	49572
HoCP 20-527	6522 –	31.1 –	210	1.72	36300
HoCP 20-568	7320	39.6	184 –	1.85	45148
Means	7555	37.5	201	1.66	45425

Table 7. Nursery second-stubble means of the 2020 “HoCP” assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	13712	51.3	267	1.38	74189
HoCP 09-804	10992	39.5	279	1.32	61030
L 12-201	11208	40.7	275	1.85	44014 –
Ho 12-615	10831	40.5	268	1.05	77365
Ho 13-739	9603	33.4	288	1.35	49006 –
HoCP 20-501	10746	38.9	282	1.49	48438 –
HoCP 20-521	11589	42.4	273	1.32	63639
HoCP 20-527	9472	35.7	265	1.36	53883 –
HoCP 20-568	10084	36.4	277	1.33	55017 –
Means	10925	39.9	275	1.37	58509

Table 8. Nursery second-stubble means of the 2020 “HoCP” assignment series across locations (Ardoyne Farm Light & Heavy soil and Sugar Research Station) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	12365	50.0	246	1.67	60916
HoCP 09-804	10875	43.7	246	1.53 –	57248
L 12-201	10932	43.4	251	2.11 +	41405 –
Ho 12-615	9720	38.9	239	1.29 –	60198
Ho 13-739	10995	44.2	252	1.78	49119 –
HoCP 20-501	9404	40.8	238	1.80	45375 –
HoCP 20-521	11079	45.7	242	1.69	54942
HoCP 20-527	9500	38.8	242	1.69	46736 –
HoCP 20-568	9636	40.4	239	1.64	50706 –
Means	10521	42.9	244	1.69	51849

Table 9. Nursery first-stubble means of the 2021 “Ho” and “HoCP” assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	9839	37.2	265	1.67	44581
Ho 13-739	6782	27.5	247	1.59	34485
L 14-267	7459	30.0	250	1.69	34712
HoCP 14-885	10917	41.9	262	1.85	45149
HoCP 21-608	7265	26.7	272	1.58	33804
Ho 21-616	10497	40.9	258	2.05	40157
HoCP 21-617	8753	32.5	268	1.68	38229
HoCP 21-621	7130	28.1	252	1.24	44922
HoCP 21-629	9056	34.4	264	1.57	43447
HoCP 21-630	10122	42.4	237 –	1.61	52749
HoCP 21-642	11251	42.9	264	2.02	42199
HoCP 21-647	10243	40.7	252	1.96	41518
HoCP 21-652	7061	30.2	237 –	1.71	34485
HoCP 21-655	9872	39.1	253	1.77	44354
HoCP 21-659	6665	25.3	265	1.52	33237
Means	8861	34.6	256	1.70	40535

Table 10. Nursery first-stubble means of the 2021 “Ho” and “HoCP” assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	17259	61.6	280	2.04	60463
Ho 13-739	15980	57.1	281	2.20	51841 –
L 14-267	14878	57.3	260 –	2.25	51387 –
HoCP 14-885	17752	62.6	281	1.89	62618
HoCP 21-608	14320	50.1	286	1.78	56265
Ho 21-616	13366	50.8	262 –	2.00	50480 –
HoCP 21-617	12852	51.5	251 –	1.72	59328
HoCP 21-621	10949	42.5	258 –	1.51	56265
HoCP 21-629	13185	50.9	260 –	1.64	61937
HoCP 21-630	12461	45.7	273	1.45	63299
HoCP 21-642	11482	41.8	273	1.73	48325 –
HoCP 21-647	17607	68.5	256 –	2.28	60122
HoCP 21-652	12073	44.6	271	1.92	46510 –
HoCP 21-655	14385	54.6	263 –	1.82	59782
HoCP 21-659	15105	52.9	286	2.24	47304 –
Means	14123	52.5	269	1.90	55728

Table 11. Nursery first-stubble means of the 2021 “Ho” and “HoCP” assignment series across locations (Iberia Research Station and Sugar Research Station) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	13549	49.4	273	1.86	52522
Ho 13-739	11381	42.3	264	1.90	43163 –
L 14-267	11168	43.6	255	1.97	43049 –
HoCP 14-885	13195	48.8	271	1.86	53883
HoCP 21-608	10792	38.4	279	1.68	45035
Ho 21-616	11932	45.8	260	2.03	45318
HoCP 21-617	10802	42.0	259	1.70	48778
HoCP 21-621	9040	35.3	255	1.38	50593
HoCP 21-629	11120	42.6	262	1.60	52692
HoCP 21-630	11291	44.0	255	1.53	58024
HoCP 21-642	11366	42.3	268	1.87	45262
HoCP 21-647	13925	54.6	254	2.12	50820
HoCP 21-652	9567	37.4	254	1.81	40497 –
HoCP 21-655	12129	46.9	258	1.79	52068
HoCP 21-659	10885	39.1	275	1.88	40270 –
Means	11447	43.4	263	1.80	48132

Table 12. Nursery plant cane means of the 2022 “HoCP” assignment series on a Schriever clay soil at the Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	10266	47.4	217	2.24	42880
Ho 12-615	12093	53.0	229	2.09	50820
HoCP 14-885	16188 +	66.7 +	243	2.74	48665
L 15-306	16440 +	64.0 +	255 +	2.68	47531
HoL 15-508	10687	46.8	223	2.20	41859
HoCP 22-701	9799	47.5	208	1.96	48438
HoCP 22-702	11501	51.6	224	2.22	46283
HoCP 22-703	12171	58.1	210	2.13	54564
HoCP 22-704	14012	53.5	262 +	2.30	46510
HoCP 22-706	11200	45.0	248	2.06	43787
HoCP 22-707	12710	56.3	227	2.69	41632
HoCP 22-708	10880	46.8	233	2.29	40951
HoCP 22-709	12088	46.6	258 +	2.19	42539
HoCP 22-712	11786	53.3	221	2.33	46283
HoCP 22-713	11571	49.6	231	1.92	52749
HoCP 22-715	11351	51.9	219	2.63	39590
HoCP 22-716	8745	37.5	232	1.57 –	47644
HoCP 22-729	13052	62.5 +	209	2.72	45942
HoCP 22-731	10172	44.6	228	2.00	45375
HoCP 22-732	8114	42.0	194	1.83	46056
HoCP 22-733	12075	58.8	204	2.58	45716
HoCP 22-735	9270	45.2	204	1.97	45942
HoCP 22-737	15182 +	69.0 +	221	2.68	51614
HoCP 22-741	12180	51.6	236	2.16	48098
HoCP 22-743	15052 +	59.1	255 +	2.85	41519
HoCP 22-746	9746	40.1	243	1.60 –	51161
HoCP 22-748	12559	59.8	211	2.46	49119
HoCP 22-749	12767	66.3 +	193	2.79	47644
HoCP 22-750	11135	49.2	226	1.83	53769
HoCP 22-751	9576	36.6	262 +	1.98	37321
HoCP 22-752	10638	48.7	218	2.00	48665
HoCP 22-753	11401	47.3	241	1.73	54791
HoCP 22-754	11995	52.6	228	2.52	42199
HoCP 22-756	13492	63.9 +	211	2.71	47757
HoCP 22-757	9584	46.0	209	1.73	52862
HoCP 22-759	11104	49.8	223	2.28	44014
HoCP 22-761	12712	54.2	233	2.23	48551
Means	11765	52.0	227	2.24	46779

Table 13. Nursery plant cane means of the 2022 “HoCP” assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, LA in 2024.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	7942	38.4	207	2.42	31763
Ho 12-615	13261 +	55.7 +	240	1.96	56719 +
HoCP 14-885	16391 +	67.2 +	244	2.89	46510 +
L 15-306	7705	33.8	230	1.80	37548
HoL 15-508	7325	35.2	214	2.19	32216
HoCP 22-701	8956	40.7	224	1.76 –	46056 +
HoCP 22-702	7822	35.6	220	1.87	39363
HoCP 22-703	8989	39.8	225	1.74 –	46510 +
HoCP 22-704	10832	45.8	240	1.79	51047 +
HoCP 22-706	10966	44.8	245 +	2.27	39477
HoCP 22-707	11446	49.5	231	2.43	40838 +
HoCP 22-708	9476	38.2	249 +	1.84	41405 +
HoCP 22-709	9491	39.6	240	2.15	36868
HoCP 22-712	8016	38.6	208	2.64	34939
HoCP 22-713	9486	40.2	233	1.78 –	44354 +
HoCP 22-715	8437	46.3	185	2.22	41518 +
HoCP 22-716	6934	31.0	226	1.33	46283 +
HoCP 22-729	8566	42.0	201	2.28	36414
HoCP 22-731	9196	39.8	230	2.10	38115
HoCP 22-732	6868	32.5	212	1.82	35620
HoCP 22-733	9763	50.2	196	2.40	41972 +
HoCP 22-735	9956	39.8	249 +	2.06	38569
HoCP 22-737	8046	35.9	224	1.73	43106 +
HoCP 22-741	9010	36.7	246	1.77 –	36073
HoCP 22-743	13035 +	53.0	249 +	2.89	36414
HoCP 22-746	11459	50.1	229	2.19	45829 +
HoCP 22-748	12451 +	52.7	238	2.24	46963 +
HoCP 22-749	10200	46.8	217	2.62	35847
HoCP 22-750	6428	28.6	226	1.41 –	40497 +
HoCP 22-751	5479	21.2 –	257 +	1.32 –	31876
HoCP 22-752	5794	31.1	188	1.63 –	37435
HoCP 22-753	8473	33.8	251 +	1.52 –	44808 +
HoCP 22-754	10799	45.2	239	2.51	35960
HoCP 22-756	7306	37.9	193	2.11	36981
HoCP 22-757	10621	40.2	264 +	2.06	37662
HoCP 22-759	9664	46.2	211	2.27	40725 +
HoCP 22-761	9003	41.5	222	2.14	37775
Mean	9386	41.5	227	2.06	40326

Table 14. Nursery plant-cane means of the 2023 “HoCP” assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	17488	66.9	261	2.50	53543
Ho 12-615	13776	61.2	225 –	2.17	56492
HoCP 14-885	21075	76.7	275	2.81	54677
L 15-306	14974	59.6	252	2.23	53429
HoL 15-508	17065	68.9	248	2.44	56492
HoCP 22-701	12076 –	49.8	242	1.93 –	51728
HoCP 22-702	13982	54.4	256	2.02	53770
HoCP 22-703	16143	63.5	255	2.24	56719
HoCP 22-704	12575 –	45.1 –	277	1.85 –	47871
HoCP 22-706	14739	55.4	265	2.16	51501
HoCP 22-707	16073	69.7	231 –	2.47	56492
HoCP 22-708	15239	55.7	273	2.05	54337
HoCP 22-709	14615	54.1	270	2.17	50480
HoCP 22-712	15430	65.1	237 –	2.36	54904
HoCP 22-713	13916	53.5	261	1.65 –	64886 +
HoCP 22-715	12029 –	51.2	235 –	2.33	43900
HoCP 22-716	10462 –	42.5 –	247	1.47 –	57740
HoCP 22-729	16471	71.8	225 –	2.47	57626
HoCP 22-731	13175	48.7 –	269	2.22	43787
HoCP 22-732	13728	56.1	244	2.04	55244
HoCP 22-733	17815	76.1	234 –	2.83	54110
HoCP 22-735	13120	47.6 –	276	1.95 –	48779
HoCP 22-737	16381	63.0	260	2.44	51728
HoCP 22-741	12926	50.3	257	1.97 –	51047
HoCP 22-743	14743	54.7	270	2.43	45602
HoCP 22-746	14087	55.5	254	1.97 –	56265
HoCP 22-748	17511	68.1	258	2.94	46283
HoCP 22-749	17402	73.1	238 –	2.46	59669
HoCP 22-750	12922	50.2	259	1.67 –	58534
HoCP 22-751	9211 –	34.1 –	270	1.46 –	46623
HoCP 22-752	14025	55.1	254	1.64 –	67042 +
HoCP 22-753	20606	75.1	275	2.17	70899 +
HoCP 22-754	16428	63.7	258	2.32	54677
HoCP 22-756	12311 –	57.5	214 –	2.40	47984
HoCP 22-757	14079	51.9	270	1.66 –	62278
HoCP 22-759	12835	51.3	250	2.09	49459
HoCP 22-761	14478	53.9	269	1.83 –	58988
Means	14754	58.1	254	2.15	54205

Table 15. Nursery plant cane means of the 2022 “HoCP” assignment series across locations (Ardoyne Farm, Iberia Research Station & Sugar Research Station) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
L 01-299	11899	50.9	228	2.38	42728
Ho 12-615	13043	56.6	231	2.07	54677 +
HoCP 14-885	17885 +	70.2 +	254 +	2.81 +	49950 +
L 15-306	13040	52.4	246	2.23	46169
HoL 15-508	11692	50.3	228	2.28	43522
HoCP 22-701	10277	46.0	225	1.88 –	48741
HoCP 22-702	11758	49.5	236	2.07	46472
HoCP 22-703	12434	53.8	230	2.03 –	52597 +
HoCP 22-704	12473	48.1	260 +	1.98 –	48476
HoCP 22-706	12302	48.4	253 +	2.16	44922
HoCP 22-707	13410	58.5	230	2.53	46321
HoCP 22-708	11865	46.9	252 +	2.06	45564
HoCP 22-709	12065	46.7	256 +	2.16	43295
HoCP 22-712	12490	55.1	225	2.40	45375
HoCP 22-713	11658	47.8	242	1.78 –	53996 +
HoCP 22-715	10606	49.8	213	2.39	41669
HoCP 22-716	8713 –	37.0 –	235	1.46 –	50556 +
HoCP 22-729	12696	58.8	212	2.49	46661
HoCP 22-731	10848	44.4	242	2.10	42426
HoCP 22-732	9570	43.5	217	1.89 –	45640
HoCP 22-733	13217	61.7 +	211	2.60	47266
HoCP 22-735	10782	44.2	243	1.99 –	44430
HoCP 22-737	14234	59.9	237	2.39	48816
HoCP 22-741	11845	48.1	246	2.00 –	45073
HoCP 22-743	14277	55.6	258 +	2.72 +	41178
HoCP 22-746	11764	48.5	242	1.92 –	51085 +
HoCP 22-748	14174	60.2	235	2.55	47455
HoCP 22-749	13456	62.1 +	216	2.62	47720
HoCP 22-750	10161	42.7	237	1.64 –	50933 +
HoCP 22-751	8089 –	30.6 –	263 +	1.59 –	38607
HoCP 22-752	10152	44.9	220	1.76 –	51047 +
HoCP 22-753	13493	52.0	256 +	1.80 –	56832 +
HoCP 22-754	13074	53.8	242	2.45	44279
HoCP 22-756	11036	53.1	206 –	2.40	44241
HoCP 22-757	11589	47.2	245	1.77 –	50934 +
HoCP 22-759	11201	49.1	228	2.21	44733
HoCP 22-761	12064	49.9	241	2.06	48438
Means	12028	50.7	236	2.15	47103

2023 LOUISIANA VARIETY DEVELOPMENT PROGRAM INFIELD TRIALS

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The infield stage of the variety development program is the first stage in which yield estimates are based on plot weights instead of estimated yields derived from stalk population and stalk weight. Varieties from the LSU AgCenter program (L's) are planted in infield tests the year after assignment while varieties from the USDA program (Ho's) are included two years after assignment. Infield trials are generally planted at three locations. In 2023, tests were planted at USDA's Ardoyne Farm in Schriever (HoCP varieties only) and commercial farms located in Vacherie and Maurice, LA, representing three distinct regions and soil types of the Louisiana sugarcane industry.

Personnel from the variety programs at the USDA and LSU AgCenter work cooperatively to evaluate, plant, and harvest infield tests on commercial farms. The test at Ardoyne Farm in Schriever is conducted by the USDA personnel only. Infield tests are planted in a randomized complete block design with two replications and at least three commercial varieties as controls. The plot size in infield tests are two rows wide by 24 feet long with a four-foot alley between plots. A 10-stalk sample is hand-cut from each plot just prior to combine harvesting and sent to the lab at the Ardoyne Farm, where it is weighed to determine stalk weight and processed through the pre-breaker/press for a determination of sucrose content and fiber content. Brix (% w/w) and pol reading (Z°) values are then used to calculate the yield of theoretical recoverable sugar (TRS) per ton of cane. Plots are weighed with a tractor-pulled weigh-wagon equipped with electronic load cells mounted in the axle and hitch. The weight of harvested cane in each plot, stalk weight, and TRS are used to estimate sugar per acre, tons of cane per acre, sugar per ton of cane, and number of stalks per acre.

Table 1 lists planting and harvest dates of infield evaluations. Results of infield trials are presented in Tables 2 to 17. Third stubble at Blackberry Farm and second stubble at Circle A Farm were plowed out so there was no data for these tests in 2023. Statistical analyses were done for each test and for each series across locations using PROC MIXED procedures in SAS (version 9.4). Because the commercial variety L 01-299 occupies the largest percentage of the acreage in the Louisiana industry, it is highlighted in each table and all other varieties are compared to it. Yield values that are significantly higher or lower ($P=0.05$) than values for L 01-299 are noted with a '+' or '-', respectively.

Table 1. Planting and harvest dates of infield tests in 2023.

‘Ho’ Series	‘L’ Series	Location ^{1/}	Soil Series ^{2/}	Planting Date	Harvest Dates			
					2020	2021	2022	2023
2017		AFH	ShA	9/26/19	12/11	11/16	11/03	12/11
2017	2018	CAF	Co	8/14/19	12/01	11/23	12/01	10/23
2018		AFH	ShA	9/17/20		11/16	11/03	12/11
2018	2019	BLK	CmA	9/09/20		11/03	10/18	10/17
2019		AFH	ShA	10/14/21			12/08	12/11
2019	2020	BLK	CmA	9/27/21			12/07	10/17
2019	2020	CAF	Co	8/19/21			12/01	10/23
2020		AFH	ShA	10/06/22				12/07
2020	2021	BLK	CmA	9/16/22				12/07
2020	2021	CAF	Co	8/18/22				12/14
2021		AFH	ShA	9/22/23				
2021	2022	BLK	CmA	8/25/23				
2021	2022	CAF	Co	8/07/23				

¹AFH = Ardoyne Farm heavy soil in Schriever, BLK = Blackberry Farm in Vacherie, CA = Circle A Farm in Maurice.

²Co = Coteau-Patoutville-Frost silt loam, CmA = Cancienne silt loam, ShA = Schriever clay.

Table 2. Infield third stubble means of the 2017 “Ho” assignment series on a Schriever clay soil at Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	6156	25.6	240	1.93	26578	11.8
HoCP 96-540	6078	26.1	233 –	1.95	26853	11.3
HoCP 09-804	5941	26.4	225 –	1.40 –	39401	13.2 +
L 12-201	7462	28.4	263 +	1.88	30204	10.1 –
Ho 12-615	7105	31.7	224 –	1.23 –	51616	12.4
Ho 17-738	5832	27.6	211 –	1.76	31403	10.9
Means	6429	27.7	233	1.69	34343	11.6

Table 3. Infield third stubble means of the 2017 “Ho” assignment series on a Coteau-Patoutville-Frost silt loam soil at Circle A Farm in Maurice, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	5488	22.0	250	1.02	45463	10.4
HoCP 96-540	3454	15.4	225	1.00	30574	11.5 +
HoCP 09-804	3902	17.4	226	0.76	44865	11.6 +
L 12-201	3520	14.3	246	0.81	37848	10.2
Ho 12-615	3297	14.2	233	0.82	35591	11.4 +
Ho 17-738	3686	16.0	232	0.90	35707	10.1
Means	3891	16.6	235	0.88	38341	10.9

Table 4. Infield third stubble means of the 2017 “Ho” assignment series across two locations (Ardoyne Farm and Circle A Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	5822	23.8	245	1.47	36021	11.1
HoCP 96-540	4766	20.8	229	1.47	28714	11.4
HoCP 09-804	4921	21.9	226	1.08	42133	12.4
L 12-201	5491	21.4	255	1.34	34026	10.2
Ho 12-615	5201	22.9	228	1.03	43604	11.9
Ho 17-738	4759	21.8	221	1.33	33555	10.5
Means	5160	22.1	234	1.29	36342	11.2

Table 5. Infield second stubble means of the 2018 “Ho” assignment series on a Schriever clay soil at Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7324	31.9	232	1.58	42683	11.9
HoCP 09-804	7781	35.4	220	1.36	52548	13.4
L 12-201	7476	29.7	252 +	1.89	31769	10.1 –
Ho 12-615	7330	31.7	231	1.66	38512	12.6
Ho 13-739	5933	27.2	218	1.74	31101	10.6
HoCP 18-803	6568	27.9	236	2.13 +	25981	10.2 –
Means	7069	30.6	231	1.72	37099	11.5

Table 6. Infield second-stubble means of the 2018 “Ho” assignment series on a Cancienne silt loam soil at Blackberry Farm in Vacherie, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	9502	40.2	236	1.85	43881	11.5
HoCP 09-804	7913	35.2	225	1.31	54739	11.9
L 12-201	8674	35.2	246	2.11	33236	8.9
Ho 12-615	8021	37.7	213	1.51	50289	11.7
Ho 13-739	6767	29.5	230	2.09	28339	10.1
HoCP 18-803	8272	37.6	219	1.74	43071	9.1
Means	8191	35.9	228	1.77	42259	10.6

Table 7. Infield second-stubble means of the 2018 “Ho” assignment series across two locations (Ardoyne Farm and Blackberry Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	8413	36.1	234	1.71	43282	11.7
HoCP 09-804	7847	35.3	223	1.33	53644	12.6
L 12-201	8075	32.4	249	2.00	32503	9.5 –
Ho 12-615	7675	34.7	222	1.58	44401	12.2
Ho 13-739	6350	28.3	224	1.91	29720 –	10.4 –
HoCP 18-803	7420	32.7	227	1.93	34526	9.7 –
Means	7630	33.3	230	1.74	39679	11.0

Table 8. Infield first-stubble means of the 2019 “Ho” assignment series on a Schriever clay soil at Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7336	29.5	246	1.81	33040	11.6
Ho 13-739	6330	24.8	257	1.94	25594	11.1
L 14-267	8127	33.0	246	1.93	35180	10.8
HoCP 14-885	6015	21.1	286	1.73	25380	9.8
HoCP19-947	5604	23.2	238	2.24	20614	10.4
Means	6683	26.3	255	1.93	27962	10.7

Table 9. Infield first-stubble means of the 2019 “Ho” and 2020 “L” assignment series on a Cancienne silt loam soil at Blackberry Farm in Vacherie, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	9299	42.8	217	1.83	47227	10.8
Ho 13-739	10569 +	43.5	243	2.40	36806 –	9.8
L 14-267	9529	39.7	240	2.00	39885	9.2
HoCP 14-885	10420 +	41.0	254	2.47	33169 –	9.1
HoCP19-947	9998	38.7	259	2.47	31648 –	9.6
L 20-037	7631 –	34.2 –	223	2.11	32501 –	9.0
L 20-065	8108 –	32.4 –	251	2.27	28477 –	8.9
Means	9365	38.9	241	2.22	35673	9.5

Table 10. Infield first-stubble means of the 2019 “Ho” and 2020 “L” assignment series on a Coteau-Patoutville-Frost silt loam soil at Circle A Farm in Maurice, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	4623	23.4	197	1.01	46982	10.6
Ho 13-739	4423	23.2	190	1.37	34995	11.8 +
L 14-267	4849	26.0	188	1.43	36999	10.9
HoCP 14-885	7036 +	31.0	227	1.18	52740	9.0 –
HoCP19-947	5565	27.1	206	1.43	38489	9.5 –
L 20-037	4046	20.5	202	0.96	42799	10.2
L 20-065	6149	24.0	259 +	1.08	44617	9.9
Means	5242	25.0	210	1.21	42517	10.3

Table 11. Infield first-stubble means of the 2019 “Ho” assignment series across three locations (Ardoyne Farm, Blackberry Farm and Circle A Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7086	31.9	220	1.55	42416	11.0
Ho 13-739	7107	30.5	230	1.90	32465	10.9
L 14-267	7502	32.9	225	1.79	37354	10.3
HoCP 14-885	7824	31.0	256 +	1.79	37096	9.3 –
HoCP19-947	7056	29.7	234	2.04	30250	9.9 –
Means	7315	31.2	233	1.81	35917	10.3

Table 12. Infield first-stubble means of the 2019 “Ho” and 2020 “L” assignment series across two locations (Circle A Farm & Blackberry Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	6961	33.1	207	1.42	47105	10.7
Ho 13-739	7496	33.3	216	1.88	35901	10.8
L 14-267	7189	32.8	214	1.71	38442	10.1
HoCP 14-885	8728	36.0	241	1.83	42955	9.1
HoCP19-947	7782	32.9	232	1.95	35068	9.6
L 20-037	5838	27.3	212	1.54	37650	9.6
L 20-065	7129	28.2	255	1.67	36547	9.4
Means	7303	32.0	226	1.71	39095	9.9

Table 13. Infield plant-cane means of the 2020 “Ho” assignment series on a Schriever clay soil at Ardoyne Farm in Schriever, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7048	31.6	223	2.30	27918	10.4
Ho 12-615	8484	39.2	217	2.24	35403	11.7
HoCP 14-885	8346	30.6	272 +	2.82	21717	8.2 –
L 15-306	9826	41.4	237	2.61	31765	8.5
HoL 15-508	10937	42.6	254 +	2.52	33713	6.6 –
HoCP 20-501	8830	35.9	245	2.38	31244	8.5
HoCP 20-521	7891	35.1	225	2.48	28356	9.7
HoCP 20-527	9290	39.9	232	2.66	30104	9.2
HoCP 20-568	7899	34.6	230	2.69	26492	9.4
Means	8728	36.8	237	2.52	29635	9.1

Table 14. Infield plant-cane means of the 2020 “Ho” and 2021 “L” assignment series on a Cancienne silt loam soil at Blackberry Farm in Vacherie, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	10902	45.5	239	2.24	40692	11.2
Ho 12-615	16112 +	67.2 +	240	2.59	53659	12.0
HoCP 14-885	13699 +	50.6	271 +	2.62	39182	8.8 –
L 15-306	14469 +	56.6 +	256 +	2.72	41763	9.1 –
HoL 15-508	14450 +	50.4	287 +	2.24	45256	7.4 –
HoCP 20-501	13459 +	52.0	259 +	2.67	41758	8.3 –
HoCP 20-521	11727	49.9	235	2.70	37072	10.8
HoCP 20-527	12710	50.6	251	2.58	39380	9.5
HoCP 20-568	12940	51.3	252	2.38	44241	11.3
L 21-078	9415	36.5	258 +	1.69	43576	11.3
L 21-080	8878	39.2	227	2.23	35472	11.0
L 21-095	11888	49.6	240	2.24	44365	11.4
L 21-102	7857 –	33.7 –	234	2.09	32247	11.4
Means	12193	48.7	250	2.38	41436	10.3

Table 15. Infield plant-cane means of the 2020 “Ho” and 2021 “L” assignment series on a Coteau-Patoutville-Frost silt loam soil at Circle A Farm in Maurice, LA in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	4807	21.2	227	1.31	32447	9.8
Ho 12-615	4111	19.7	207	0.98	39733	10.2
HoCP 14-885	3263	14.3	229	1.19	23418	9.7
L 15-306	5253	23.6	218	1.33	34533	9.2
HoL 15-508	5682	25.4	223	1.32	38547	8.4 –
HoCP 20-501	4838	21.6	223	1.52	28616	9.3
HoCP 20-521	5023	24.9	201	1.21	42669	9.5
HoCP 20-527	4532	20.3	220	1.19	33665	9.4
HoCP 20-568	7013	31.3	223	1.42	45910	10.2
L 21-078	3259	15.0	209	0.78 –	37609	11.3 +
L 21-080	4454	19.3	231	1.45	26841	9.0
L 21-095	4597	19.7	233	1.08	36420	10.0
L 21-102	3300	14.9	215	0.97 –	30050	10.4
Means	4626	20.9	220	1.21	34651	9.7

Table 16. Infield plant-cane means of the 2020 “Ho” assignment series across three locations (Ardoyne Farm, Blackberry Farm & Circle A Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7586	32.8	230	1.95	33686	10.5
Ho 12-615	9569	42.0	221	1.94	42932	11.3
HoCP 14-885	8436	31.8	257 +	2.21	28106	8.9 –
L 15-306	9850	40.5	237	2.22	36020	8.9 –
HoL 15-508	10356	39.5	255 +	2.03	39172	7.5 –
HoCP 20-501	9042	36.5	242	2.19	33872	8.7 –
HoCP 20-521	8214	36.6	220	2.13	36032	10.0
HoCP 20-527	8844	37.0	235	2.14	34383	9.4
HoCP 20-568	9284	39.1	235	2.16	38881	10.3
Means	9020	37.3	237	2.11	35898	9.5

Table 17. Infield plant-cane means of the 2020 “Ho” and 2021 “L” assignment series across two locations (Circle A Farm & Blackberry Farm) in 2023.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
L 01-299	7854	33.3	233	1.77	36569	10.5
Ho 12-615	10111	43.4	223	1.78	46696	11.1
HoCP 14-885	8481	32.5	250	1.90	31300	9.3
L 15-306	9861	40.1	237	2.03	38148	9.1
HoL 15-508	10066	37.9	255	1.78	41902	7.9 –
HoCP 20-501	9148	36.8	241	2.09	35187	8.8 –
HoCP 20-521	8375	37.4	218	1.95	39870	10.1
HoCP 20-527	8621	35.5	236	1.88	36523	9.5
HoCP 20-568	9976	41.3	238	1.90	45075	10.7
L 21-078	6337	25.8	234	1.23 –	40592	11.3
L 21-080	6666	29.2	229	1.84	31157	10.0
L 21-095	8243	34.7	236	1.66	40393	10.7
L 21-102	5578	24.3	224	1.53	31149	10.9
Means	8409	34.8	235	1.80	38043	10.0

2023 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS

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The Outfield Variety Trials represent the final stage of testing for experimental sugarcane varieties, assessing their potential for commercial production in Louisiana. These trials contribute to variety advancement and crossing decisions and are conducted through a collaborative effort between the LSU AgCenter, USDA-ARS, and the American Sugar Cane League in accordance to the provisions of the “Three-way Agreement of 2007.” To capture the diverse soil types in the Louisiana sugarcane belt, the trials take place across up to 12 distinct locations.

For an experimental variety to be considered for release, it must match or surpass the performance of commercial varieties in terms of yield and harvestability across different locations, crops, and years. Comprehensive varietal evaluation necessitates both overall yield performance data and performance data under challenging harvest conditions. This report aims to deliver overall yield data, specific location yield data by crop, and multi-year yield analyses for relevant test varieties from the 2023 outfield trials.

Each outfield location employed a randomized complete block design with three replications. Test plots consisted of two rows, each 50 feet long, with a 5-foot alley separating them. All locations utilized a combine harvester for harvesting, and a weigh wagon equipped with load cells mounted on each axle and hitch for weighing each plot. A 10-stalk, whole-stalk sample, topped but unstripped of leaves, was collected from each plot and sent to the USDA-ARS sucrose laboratory for analysis. The samples were hand-cut, weighed, milled, and the juice was evaluated for Brix and pol levels. The final data reported the pounds of theoretical recoverable sugar per ton of cane.

Cane Yield for each plot was estimated by plot weight, reduced by 14% to adjust for leaf trash and 10% for harvester efficiency. Stalk number was calculated by dividing adjusted cane yield by stalk weight. Adjustments made to cane yield resulted in lower estimated stalk numbers than those achieved by growers.

Interpreting yield data from a single year can be misleading, as the relative performance of varieties may fluctuate from one year to another. Similarly, relying solely on across-location means can be deceptive since a variety, whether experimental or commercial, may exhibit inconsistent performance across different locations. Multi-year and multi-location testing help mitigate these issues by averaging out the variable performances. Additionally, relying on mean values alone can be deceiving, as they may not fully capture the variability and the true nature of the data. Mean values are sensitive to extreme values or outliers, which can distort the overall representation of the data. Furthermore, the mean does not provide information about the distribution of data points or the presence of potential patterns or trends.

To gain a more comprehensive understanding of the performance of experimental and commercial varieties, it is essential to consider other statistical measures, such as the median, range, and standard deviation, along with graphical representations like box plots and scatter plots. By incorporating these additional metrics and visualization techniques, a more accurate and nuanced assessment of the data can be achieved.

The most widely grown varieties in Louisiana (listed with % of total acreage in the industry) in 2022 were L 01-299, grown on 53 percent of the production acres, followed by Ho 12-615 (12%), HoCP 96-540 (9%), and HoCP 09-804 (9%).

In the data analysis, L01-299 was used as the check variety and is highlighted in the tables. A linear mixed model is fit for each trait, and to adjust for missing data estimated marginal means (EMMs) are calculated using the 'emmeans' package in R. Pairwise comparisons are performed using the Dunnett's test, with L01-299 serving as the reference variety. Varieties that are significantly higher or lower than L01-299 are denoted by a plus (+) or minus (-), respectively, next to the value for each trait. This approach enables the identification of significant differences among the crop varieties in comparison to the check variety. Fifteen varieties from the 2021 assignment series were introduced to nine outfield locations for seed increase in 2023 (Table 1). Seven experimental and seven commercial varieties were planted at these locations. Thirty-six trials were harvested in 2023 spanning 10 different locations, these included ten plant cane, ten first-ratoon, ten-second ratoon, six third -ratoon.

The 2023 Louisiana sugarcane industry experienced above average temperatures in the early months, followed by an unexpected freeze on March 21st. Spring and summer months were particularly dry, leading to severe drought conditions that heavily affected the western and northern parishes. This drought contributed to lower tonnage for a large portion of the industry. No tropical storms impacted the region. The annual rainfall recorded at Baton Rouge was 51.41 inches, slightly under the long-term average, while New Orleans and Lafayette saw 39.85 inches and 46.49 inches respectively, indicating drier conditions across the region. Harvest began on September 27, 2023, and concluded on January 16, 2024. The final outfield trial was harvested on January 4, 2023.

HoCP17-738 was evaluated in the plant cane through second ratoon this year, which will be eligible for release in 2024. Varieties HoCP18-803 was evaluated in the plant cane and first ratoon, which will be up for release in 2025.

Acknowledgments

The continued advancement of the Louisiana sugarcane industry depends on the dedication and commitment of many individuals throughout the industry. The assistance of Lawrence “Junior” Lovell from the USDA-ARS Sugarcane Research Unit, as well as Gregory Williams from LSU AgCenter is greatly appreciated. Sincere appreciation is expressed to the growers who participate in the many different stages of the Louisiana sugarcane variety improvement program.

Table 1. Commercial and experimental varieties planted in the outfield in 2023.

Commercial Varieties		Experimental Varieties		Experimental Varieties Introduced to the Outfield		
L01-299	HoCP14-885	Ho17-738	HoCP20-501	L 21-078	HoCP 21-608	HoCP 21-642
Ho12-615	L15-306	HoCP18-803	HoCP20-521	L 21-080	Ho 21-616	HoCP 21-647
	HoL15-508	HoCP19-947	HoCP20-527	L 21-095	HoCP 21-617	HoCP 21-652
			HoCP20-568	L 21-102	HoCP 21-621	HoCP 21-655
					HoCP 21-629	HoCP 21-659
HoCP96-540*	HoCP04-838*				HoCP 21-630	
*Only planted in 2 locations						

Table 2. Harvest and planting dates for all Outfield locations harvested in 2023.

Location	Parish		Plant-Cane		First-Ratoon		Second-Ratoon		Third-Ratoon	
		2023 Planting Date	2023 Harvest Date	2022 Planting Date	2023 Harvest Date	2021 Planting Date	2023 Harvest Date	2020 Planting Date	2023 Harvest Date	2019 Planting Date
Heavy Soil										
Al Landry	Iberville	8/24	1/2/2024	9/08	11/20	9/08	11/20	8/17	**	9/11
Allains	St. Mary	8/30	10/24	9/28	10/24	10/22	10/24	9/10	**	9/18
Alma	Pt. Coupee	8/25	10/18	9/07	10/18	9/7	10/18	8/12	**	9/03
Mary	Lafourche	9/15	10/16	9/27	12/06	9/27	10/16	9/11	12/06	9/23
Light Soil										
Brunswick	Pt. Coupee	9/19	12/15	9/12	12/15	9/12	10/31	9/09	10/31	9/12
Glenwood	Assumption	9/18	1/4/2024	9/15	01/04	9/15	11/08	8/19	11/08	9/20
Harper	Rapides	9/13	12/28	9/13	12/05	9/13	12/05	9/14	12/05	9/16
Lanaux	St. John	8/29	12/26	8/16	12/26	8/16	11/27	9/04	11/27	8/23
St. John	St. Martin	9/6	12/1	9/18	11/17	9/19	10/27	8/18	**	8/30
R. Hebert	Iberia	*	11/29	9/26	11/29	9/29	10/26	9/03	10/26	9/18

*No test planted at this location. ** No test harvested at this location.

Table 3. Plant cane sugar per acre for nine commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
L 01-299	5281	7127	9923	5317	7979	8921	5858	7097	9335	4881	7170
HoCP 96-540					5493 -		4423				4958 -
HoCP04-838					6390		6024				6207
HoCP 09-804	5767	7317	10083	7437 +	5876 -	9307	5844	7191	8825	4057	7137
Ho 12-615	5365	8095	7985 -	6396	6775	9261	6353	8582	10765	5550	7512
Ho 13-739	5488	6244	8630	6322	5069 -	7878	5993	7787	9239	4613	6726
HoCP 14-885	6356	6178	11863 +	8324 +	6977	10203	7579 +	9630 +	12214 +	7372 +	8670 +
L 15-306	6023	7954	10137	8989 +	6948	10273	6993	8177	10272	6041	8115
HoL 15-508	5789	4823 -	9287	6285	6036 -	7899	4744	7027	9509	5628	6767
Ho 17-738	5698	5549	8428	7844 +	5906 -	8609	5448	7340	8263	4876	6796
HoCP 18-803	6281	8109	11104	9638 +	9737 +	11112 +	7443	11006 +	10229	6865 +	9153 +
HoCP19-947	6684	6949	10349	6042	7467	7806	5683	8763 +	8647	6896 +	7518

Table 4. Plant cane cane yield for nine commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
L 01-299	25.1	29.9	40.2	29.8	31.7	36.8	26	31.3	36.8	23.1	31.1
HoCP 96-540					21 -		20.3				20.7 -
HoCP04-838					25.7		28.4				27.1
HoCP 09-804	27.6	31.7	39.5	35.4	23.2 -	35	24.8	33.7	35.7	18.7	30.8
Ho 12-615	25.3	35.7	31.5 -	32.9	28.7	41.1	27.6	40.3 +	43.4 +	25.5	33.2
Ho 13-739	24.4	25.3	34.5	30.9	21.4 -	33.5	26.9	35.3	38.8	22	29.3
HoCP 14-885	27.3	26.4	42.5	41 +	26.4	37.5	29.6	38.6 +	44.2 +	29	34.3
L 15-306	25.5	35	40.8	43 +	28	40.5	31.6	35.3	41.9	25.3	34.7
HoL 15-508	24.5	22.6 -	36.7	37.6 +	25.4	31.3	20.7	27.1	39.5	25.6	29.1
Ho 17-738	30.6	26.8	36.7	39.1 +	25.3 -	37.6	25.4	37.3	36.6	25.1	32
HoCP 18-803	29.8	37 +	43.2	45.7 +	40.1 +	42.8	33 +	45.1 +	42.2	29.7 +	38.9 +
HoCP19-947	28.6	28.8	41.1	34.3	30.9	31.6	24.1	37.1	35.4	30.4 +	32.2

Table 5. Plant cane sucrose content for nine commercial and three experimental varieties at ten outfield locations in 2023

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
L 01-299	210	239	247	181	251	243	225	227	253	212	229
HoCP 96-540					262		218				240
HoCP04-838					249		213				231
HoCP 09-804	210	231	255	211 +	254	250	236	214	247	218	231
Ho 12-615	211	228	255	194	237	226	230	215	248	217	226
Ho 13-739	223	248	250	204 +	235	235	222	220	239	210	229
HoCP 14-885	233 +	239	280 +	199	265	272 +	256 +	249 +	276 +	255 +	252 +
L 15-306	237 +	238	249	209 +	250	253	221	233	244	239 +	237
HoL 15-508	238 +	238	252	169	237	252	229	259 +	243	218	233
Ho 17-738	186 -	206 -	231	200	234	229	214	199 -	226 -	194	212 -
HoCP 18-803	211	219	257	208 +	243	260	226	244	242	231	234
HoCP19-947	233 +	242	253	177	242	245	235	235	246	226	233

Table 6. Plant cane stalk weight for nine commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
L 01-299	1.85	1.83	2.38	2.07	1.81	1.87	1.68	1.99	2.42	1.76	1.97
HoCP 96-540					1.67		2.03				1.85
HoCP04-838					1.8		1.81				1.8
HoCP 09-804	1.48	1.56	2.17	1.96	1.54	1.8	1.29	1.74	1.68 -	1.06 -	1.62 -
Ho 12-615	1.33 -	1.71	1.81 -	2.08	1.93	1.79	1.71	2.2	2.24	1.5	1.83
Ho 13-739	1.82	1.5	2.38	1.81	1.96	2.11	2.04	2.32	2.98 +	1.65	2.06
HoCP 14-885	1.93	1.75	2.45	2.56 +	1.83	2.32 +	1.92	2.56 +	2.7	1.79	2.18 +
L 15-306	1.97	2.26	2.57	2.45	2.15	2.09	2.06	2.16	2.23	1.81	2.18 +
HoL 15-508	1.82	1.62	2.26	2.31	1.81	1.89	1.73	1.94	2.12	1.57	1.91
Ho 17-738	1.76	1.83	2.22	2.08	1.99	2.24	1.59	2.17	2.36	1.72	2
HoCP 18-803	1.84	1.98	2.22	2.47	2.2	2.16	1.82	2.15	2.54	1.83	2.12
HoCP19-947	1.7	2.44 +	2.49	2.16	2.27 +	2.33	1.57	2.41	2.51	2.07	2.19 +

Table 7. Plant cane stalk number for nine commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
						(pounds/A)					
L 01-299	27572	33338	33712	29328	36352	39159	31093	31335	30559	26118	31858
HoCP 96-540					23436		20516				21976
HoCP04-838					28562		31407				29984
HoCP 09-804	37499	40993	36530	39320	33621	40685	38697	39465	44872	37319	39023
Ho 12-615	39517	44713	35527	31536	32088	46020	32359	36934	39052	34245	37199
Ho 13-739	27297	33963	29173	134782 +	22806	31727	26333	30485	26418	26726	38971
HoCP 14-885	28273	30058	34723	31860	29088	32801	30908	30588	32995	32325	31442
L 15-306	26933	30972	31835	35279	29198	38403	31179	32683	38452	27620	32043
HoL 15-508	27016	28260	33189	32917	30003	33084	24121	27992	37275	32777	30663
Ho 17-738	34750	29925	33219	38041	26933	33708	32613	34494	31189	29606	32448
HoCP 18-803	33030	38415	39692	38435	37926	39596	37633	43510	33901	32761	37490
HoCP19-947	34596	24473	33025	33208	26819	27615	31022	31222	28135	29206	30011

Table 8. First Ratoon sugar per acre for ten commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
L01-299	6588	6931	10821	8763	7427	9498	7416	10704	8485	5263	8190
HoCP04-838					5556 -		5808				5682 -
HoCP09-804	5678	6252	8603 -	8821	5354 -	9154	6810	8710 -	9410	6180	7497
L12-201	5400	6792	8495 -	7429	5329 -	9258	5962	9328	7315	3999	6931 -
Ho12-615	5596	7198	9862	7415	6370	9003	6218	9629	7223	4727	7324
Ho13-739	5824	5643	8222 -	6771 -	5930	8628	6800	8895 -	7818	4353	6888 -
L14-267	3908 -	6034	8050 -	7694	5849	7512 -	5258 -	7700 -	8359	4024	6439 -
HoCP14-885	6739	6884	10138	6662 -	4924 -	8625	7444	8366 -	9408	5528	7472
L15-306	5762	6006	8298 -	10305	7571	9164	7443	9541	8775	4780	7764
HoL15-508	5191	5259 -	9017 -	8023	6610	8954	7566	6696 -	9063	5528	7191
Ho17-738	5062	6662	7977 -	7029 -	7186	7573 -	7206				7148
Ho17-776							6565	8752 -	8278	5751	6565
HoCP18-803	4958	4939 -	10802	9631	8270	8255	7009	9894	9917	5509	7918

Table 9. First Ratoon cane yield for ten commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood (tons/A)	Harper	Lanaux	R. Hebert	St.John	
L01-299	28.8	29.2	35.7	30.4	27.7	38.4	29.1	41.8	33.6	18.9	31.4
HoCP04-838					22.2		22.4 -				22.3 -
HoCP09-804	24.2	26.5	29.7	30.6	20.8 -	36.3	26.6	35.7	37.2	22.6	29
L12-201	22 -	26.6	29.8	24.6	19.4 -	35.2	22.6 -	36.8	28.4	14.3	26 -
Ho12-615	24.5	32.2	34.9	27.7	24.9	36.5	24.4	38.2	31.1	17.9	29.2
Ho13-739	23.7	21.6 -	28.2 -	23.5 -	22.7	34.9	27.2	37	33.7	16.5	26.9 -
L14-267	16 -	24.9	27.6 -	26.1	22.9	30.3 -	22.8	31.6 -	33	16.8	25.2 -
HoCP14-885	26.7	27.2	33	21.6 -	18.2 -	35.1	26.7	32.8 -	34.1	18.8	27.4 -
L15-306	24.3	25.9	28.8 -	34.6	28.8	35.4	27.1	36	35.2	17.9	29.4
HoL15-508	22.2 -	21.1 -	31.5	27.5	25.1	34.9	30	25.8 -	35.9	21.5	27.6
Ho17-738	24	29.7	29.6	26.8	27.4	33.3	27.7	36.3	32.7	23.2	29.1
Ho17-776							24.8				24.8
HoCP18-803	25.5	22.4 -	38.4	36.4	30.7	32.7	27.4	38.2	37.2	21.1	31

Table 10. First Ratoon sucrose content for ten commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/ton)										
L01-299	229	237	303	288	268	247	255	257	253	279	261
HoCP04-838					252		259				256
HoCP09-804	235	236	289	289	258	252	256	244	254	273	259
L12-201	246	253	284	303	273	263	264	254	257	278	268
Ho12-615	229	225	283	267	256	247	255	251	232 -	264	251
Ho13-739	246	261 +	292	289	262	247	250	241	231 -	263	258
L14-267	243	243	292	295	256	247	231 -	244	254	239 -	254
HoCP14-885	254 +	253	307	308	270	248	279 +	253	274	293	274 +
L15-306	239	232	288	298	263	259	275	265	250	266	264
HoL15-508	234	251	286	293	263	257	252	259	253	255 -	260
Ho17-738	211	222	270 -	262 -	260	227	260	241	254	248 -	246 -
Ho17-776							265				265
HoCP18-803	195 -	219	280 -	265 -	270	253	253	259	267	260	252

Table 11. First Ratoon stalk weight for ten commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood (pounds)	Harper	Lanaux	R. Hebert	St.John	
L01-299	1.51	1.5	1.9	1.6	1.61	1.96	1.52	2.14	1.63	1.47	1.69
HoCP04-838					1.38		1.63				1.5
HoCP09-804	1.13	1.2	1.26 -	1.32	1.14 -	1.74	1.18	1.96	1.78	1.34	1.41 -
L12-201	1.86	1.57	1.86	1.94	1.62	2.07	1.68	2.35	2.18 +	1.48	1.86
Ho12-615	1.17	1.57	1.43 -	1.4	1.52	1.84	1.22	1.95	1.76	1.25	1.51
Ho13-739	1.73	1.35	1.93	1.56	1.83	1.86	1.55	2.68 +	2.43 +	1.53	1.85
L14-267	1.28	1.77	2.03	1.66	1.92	1.85	1.68	2.58	2.47 +	1.66	1.89 +
HoCP14-885	1.62	1.52	1.62	1.72	1.42	1.81	1.58	2.34	2.12 +	1.38	1.71
L15-306	1.35	1.8	1.7	1.84	1.66	1.94	1.83	1.97	2.13 +	1.46	1.77
HoL15-508	1.19	1.3	1.58	1.45	1.39	1.78	1.43	2.16	1.84	1.42	1.55
Ho17-738	1.46	1.61	1.76	1.64	1.44	2.08	1.66	2.31	1.93	1.6	1.75
Ho17-776							1.54				1.54
HoCP18-803	1.32	1.59	1.9	1.94	1.76	2.23	1.64	2.55	2.4 +	1.52	1.89 +

Table 12. First Ratoon stalk number for ten commercial and three experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood (stalks/A)	Harper	Lanaux	R. Hebert	St.John	
L01-299	38389	38774	37645	38422	34693	39552	38458	39090	42154	25654	37283
HoCP04-838					31252		30189				30720
HoCP09-804	42377	43942	49327	48326	36302	42943	45172	36964	41580	33888	42082
L12-201	23548	34522	32468	25333	24286	34334	26980	31973	27922	19234	28060
Ho12-615	43239	41147	48805	39888	32872	40862	40175	39256	35391	29660	39130
Ho13-739	28039	31770	29406	31032	24896	37927	35044	27709	27715	22456	29600
L14-267	25187	28170	27200	31413	24008	34620	27521	24421	26933	20624	27010
HoCP14-885	32749	35579	40988	25207	25710	38905	34190	29050	32537	27073	32199
L15-306	36701	28435	34269	37574	35618	37288	29812	36430	33278	24607	33401
HoL15-508	37823	33121	40839	37761	37104	39554	42032	24437	39314	30413	36240
Ho17-738	33876	36958	33727	33152	37951	32671	33819	31714	34033	28968	33687
Ho17-776							33032				33032
HoCP18-803	39353	27600	40634	39276	35051	29854	34319	30245	30969	28293	33559

Table 13. Second Ratoon sugar per acre for twelve commercial and two experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
HoCP96-540					3378 -		4389 -				3883 -
CP01-1372	2970 -	2333	9429		3898 -	6772 -		7999 -	7885 -	2872	5520 -
L01-299	6746	2976	10684	6165	5892	9672	7039	10435	10520	4356	7448
HoCP04-838					5114		6265				5689
Ho05-961	5426	325 -	6360 -	6400	3674 -	5507 -		4182 -	7819 -	2127 -	4647 -
HoCP09-804	5519	2781	9346	5469	4968	7803 -	7592	8379 -	9245	4161	6526
L12-201	4505 -	3164	10124	5395	5335	7474 -	6165	8869	7770 -	3648	6245 -
Ho12-615	5414	4302	10303	5093	5524	7344 -	6252	10421	8307 -	2536 -	6550
Ho13-739	4590 -	1354	10474	5560	5067	7346 -	6231	9227	8537 -	4216	6260 -
L14-267	3961 -	3030	10682		6610	8187	5292 -	9007	9140	4445	6706
HoCP14-885	5427	3959	10294	5881	6347	8027 -	7499	10060	10679	4022	7219
L15-306	6380	4002	10415		5518	8295	5405	9768	9033	3518	6926
HoL15-508	4160 -	4051	11678	5130	5101	7579 -	5758	8444 -	9428	3531	6486
Ho17-738	4809 -	3435	9552	6017	5078	7181 -	6300	8610 -	8352 -	3249	6258 -

Table 14. Second Ratoon cane yield for twelve commercial and two experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
HoCP96-540					14 -		17.8 -				15.9 -
CP01-1372	11.9 -	9.1	32.7		19.7	27.4 -		29.6 -	33.1 -	11.1	21.8 -
L01-299	28.5	12.9	36.9	28.4	25.2	36.4	27.5	39.8	44.8	16.9	29.7
HoCP04-838					21.7		24.3				23 -
Ho05-961	22.5	1.4 -	23.3 -	29.6	14.8 -	20.6 -		15.9 -	32 -	8.1 -	18.7 -
HoCP09-804	23.9	12.8	34.7	25.9	20.5	29.7 -	29.8	31.6 -	39.9	15.4	26.4
L12-201	18.4 -	12.8	34.9	23.2	21.6	28.6 -	24.4	32.1 -	30.8 -	13.8	24.1 -
Ho12-615	24.3	18.9	38	24.6	24	28 -	24.3	38.1	35.6 -	10.1 -	26.6
Ho13-739	19.3 -	5.9 -	36.9	24.2	20.2	27.9 -	24	35.8	36.1 -	15	24.5 -
L14-267	16.9 -	14.3	37.9		26.8	30.7	22.5	33.6	37.1 -	17.5	26.4
HoCP14-885	21.5 -	15.8	34.3	24.1	23.9	28.3 -	29	34.4	41.3	13.8	26.6
L15-306	26.4	16.3	37.9		22.2	30.8	21.8	35.3	37.5 -	12.8	26.8
HoL15-508	17 -	17.2	41.1	21.8 -	22.5	28.3 -	23.1	29.3 -	38 -	13.5	25.2 -
Ho17-738	22.8	16.1	35.1	28.7	24.4	28.8 -	26.1	32 -	36 -	12.7	26.3

Table 15. Second Ratoon sucrose content for twelve commercial and two experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
HoCP96-540					242		247				245
CP01-1372	250	256 +	288		200 -	247		271	259	250	251
L01-299	237	232	289	217	234	267	256	262	254	237	248
HoCP04-838					237		258				247
Ho05-961	242	227	272	217	250	267		264	265	242	250
HoCP09-804	232	217	270	211	242	263	255	266	267	232	245
L12-201	244	246	291	233	247	261	254	276	253	244	256
Ho12-615	223	228	271	207	230	262	257	275	253	223	244
Ho13-739	238	230	284	230	251	264	259	257	281 +	238	253
L14-267	233	212	282		246	267	236	268	252	233	249
HoCP14-885	252	251	301	244 +	265 +	283	261	292 +	292 +	252	270 +
L15-306	243	244	276		249	269	249	277	275	243	258
HoL15-508	244	236	285	236	227	268	249	288 +	262	244	254
Ho17-738	213 -	215	273	211	208 -	249	241	269	258	213 -	237 -

Table 16. Second Ratoon stalk weight for twelve commercial and two experimental varieties at ten outfield locations in 2023.

Variety	HEAVY				LIGHT						Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
HoCP96-540					1.27		1.71 +				1.49
CP01-1372	1.02	0.82	1.08 -		1.11	1.28		1.32 -	1.9	0.89	1.18 -
L01-299	1.35	0.92	1.52	1.38	1.41	1.46	1.27	2.07	1.84	1.1	1.43
HoCP04-838					1.27		1.46				1.37
Ho05-961	1.46	0.66	1.5	1.58	1.02	1.48		1.35 -	1.84	0.84	1.3
HoCP09-804	1.11	0.68	1.32	1.35	1.14	1.25	0.74 -	1.04 -	1.57	0.95	1.11 -
L12-201	1.5	0.94	2.16 +	1.76	1.36	2.07 +	1.71 +	1.9	2.41 +	1.07	1.69 +
Ho12-615	1.03	0.89	1.6	1.17	1.1	1.49	0.96	1.64	1.63	0.88	1.24
Ho13-739	1.66	0.76	1.93	1.75	1.43	1.88	1.51	1.94	2.38 +	1.07	1.63 +
L14-267	1.32	1.29	1.93		1.73	2.01 +	1.83 +	1.93	2.12	1.36	1.72 +
HoCP14-885	1.36	0.84	1.5	1.27	1.25	1.72	1.45	1.97	2.07	0.96	1.44
L15-306	1.38	1.17	1.88		1.36	1.63	1.43	1.74	2.11	1.11	1.54
HoL15-508	1.27	0.85	1.56	1.45	1.13	1.55	1.25	1.53 -	2.03	0.95	1.36
Ho17-738	1.37	0.88	1.95	1.31	1.21	1.76	1.3	1.52 -	1.92	1.1	1.43

Table 17. Second Ratoon stalk number for twelve commercial and two experimental varieties at ten outfield locations in 2023.

Variety	HEAVY					LIGHT					Overall Mean
	Allains	Alma	Landry	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	St.John	
	(pounds/A)										
HoCP96-540					21808		20762				21285
CP01-1372	24379	22525	61499		36318	43274		44785	24602	24379	36583
L01-299	44052	28456	49205	41571	35597	50531	43121	38568	31590	44052	41184
HoCP04-838					34611		33662				34136
Ho05-961	30903	3655	32008	37283	27537	28588		24229	18855	30903	26429 -
HoCP09-804	43777	36895	54826	39094	36586	48212	338222 +	61582	32347	43777	74318 +
L12-201	24788	27209	32450	26544	32720	27732	28420	35071	24823	24788	28588
Ho12-615	47724	43704	47461	42125	46961	38103	50720	46636	24295	47724	43153
Ho13-739	23256	14987	39126	27759	28800	29883	31814	37603	28393	23256	29236
L14-267	25794	22280	39376		31264	30708	24672	38435	26170	25794	30439
HoCP14-885	32909	38278	45760	37893	38660	33683	40509	35004	28553	32909	37324
L15-306	39011	27586	40211		32467	38160	30896	41077	23250	39011	34357
HoL15-508	26804	42194	53789	31873	40277	36513	37035	40314	28636	26804	37541
Ho17-738	33597	37847	36193	43705	40415	33278	41558	42298	23288	33597	36989

Table 18. Third Ratoon sugar per acre for twelve commercial varieties at six outfield locations in 2023

Variety	HEAVY			LIGHT			Overall Mean
	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	
HoCP96-540	7206 -	3447	7326 -	2840 -	4682 -	5604	5184 -
L01-299	9334	4237	9442	9066	7644	6910	7772
Ho05-961		3974		5845 -	7329	6214	5841 -
HoCP09-804	8040	4480	7783 -	5571 -	8147	6868	6815
L11-183	6478 -	2898	6507 -	2941 -	3883 -	4389 -	4516 -
L12-201	8023	3458	7395 -	4394 -	6485	5157 -	5819 -
Ho12-615	8653	3858	7034 -	3793 -	6567	6352	6043 -
Ho13-739	8171	4030	7396 -	5239 -	7708	6099	6441
L14-267	9099	4292	7774 -	5789 -	7193	6788	6888
HoCP14-885	7761	4283	7653 -	6255 -	8658	7613	7037
L15-306	10418	4443	8341	4831 -	6845	7001	6980
HoL15-508	9346	3988	7696 -	6082 -	4042 -	7828	6497

Table 19. Third Ratoon cane yield for twelve commercial varieties at six outfield locations in 2023

Variety	HEAVY			LIGHT			Overall Mean
	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	
HoCP96-540	26.4 -	13.9	27.6 -	11.6 -	18.5 -	24.7 -	20.4 -
L01-299	33.7	19.1	35.6	35.6	30.7	31.7	31.1
Ho05-961		16.6		22.1 -	30.1	26.7	23.9 -
HoCP09-804	31.3	19.1	31	23.4 -	33.1	30.5	28.1
L11-183	24.2 -	12.9	25.6 -	12.4 -	16.1 -	20.5 -	18.6 -
L12-201	29.5	13.9	27.6 -	17.9 -	24.5	23.6 -	22.8 -
Ho12-615	33.2	16.8	28 -	15.6 -	29.2	29.2	25.3 -
Ho13-739	31.9	17.5	28.2 -	21.7 -	32.1	27.9	26.5
L14-267	34	17.9	29.8	25.9 -	27.6	29.5	27.6
HoCP14-885	26.3 -	16.4	27.4 -	22.7 -	30.3	31.7	25.8 -
L15-306	38	18	30.9	20.3 -	25.4	30.3	27.1
HoL15-508	33.4	16.8	28.8 -	24.8 -	14.7 -	31.2	24.9 -

Table 20. Third Ratoon sucrose content for twelve commercial varieties at six outfield locations in 2023.

Variety	HEAVY			LIGHT			Overall Mean
	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	
HoCP96-540	273	247 +	265	238	253	227	251
L01-299	278	222	266	255	249	218	248
Ho05-961		239		261	244	232	244
HoCP09-804	257	235	251	238	246	225	242
L11-183	267	222	254	232 -	246	213	239
L12-201	272	248 +	268	245	264	218	253
Ho12-615	262	229	251	240	223 -	217	237
Ho13-739	256 -	231	262	242	240	218	242
L14-267	269	239	260	224 -	260	230	249
HoCP14-885	295	262 +	279	275	286 +	241 +	273 +
L15-306	274	247 +	270	240	269	232	255
HoL15-508	280	237	267	246	274 +	251 +	259

Table 21. Third Ratoon stalk weight for twelve commercial varieties at six outfield locations in 2023.

Variety	HEAVY			LIGHT			Overall Mean
	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	
HoCP96-540	1.49	1.08	1.75	1.18	2 +	1.81	1.55
L01-299	1.4	1.2	1.48	1.38	1.4	1.57	1.41
Ho05-961		1.07		1.25	1.6	1.45	1.34
HoCP09-804	1.23	0.89	1.4	0.96	1.45	1.32	1.21
L11-183	1.32	1	1.35	1.06	1.5	1.2	1.24
L12-201	1.68	0.97	1.99 +	1.4	1.65	1.89	1.6
Ho12-615	1.54	0.77	1.37	0.93 -	1.51	1.28	1.23
Ho13-739	1.82	1.06	1.72	1.31	1.94 +	1.56	1.57
L14-267	1.7	1.3	1.6	1.52	1.78	1.95	1.65
HoCP14-885	1.85 +	0.88	1.77	1.16	1.87	1.68	1.54
L15-306	1.52	1.02	1.71	1.2	1.49	1.63	1.43
HoL15-508	1.54	1.11	1.43	1.27	1.63	1.61	1.43

Table 22. Third Ratoon stalk population for twelve commercial varieties at six outfield locations in 2023.

Variety	HEAVY			LIGHT			Overall Mean
	Mary	Brunswick	Glenwood	Harper	Lanaux	R. Hebert	
HoCP96-540	37039	26933	32315	20005	18754	27588	27106
L01-299	50740	31682	49018	51423	42424	40660	44439
Ho05-961		30579		35179	37287	36827	34968
HoCP09-804	51929	42806	44719	48797	45585	47866	46950
L11-183	38561	26433	37944	22713	21705	34509	30311
L12-201	35396	27996	28349	26142	29869	24990	28790
Ho12-615	43636	43236	40846	33935	38241	46076	40995
Ho13-739	36334	32788	32842	33148	33131	35834	34013
L14-267	39873	27589	37263	34815	31872	30313	33553
HoCP14-885	28664	37454	31164	40596	32500	37845	34704
L15-306	52939	35109	36496	33791	34565	37312	38369
HoL15-508	43887	30233	40200	39326	17278	39331	35042

Table 23. Plant cane means from ten outfield locations in 2023: Allains, Alma, Landry, Mary, Brunswick, Glenwood, Harper, Lanaux, R.Hebert, St.John

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
2001299	7170	229	31.1	1.97	31858
1996540	4958 -	240	20.7 -	1.85	21976
2004838	6207	231	27.1	1.8	29984
2009804	7137	231	30.8	1.62 -	39023
2012615	7512	226	33.2	1.83	37199
2013739	6726	229	29.3	2.06	38971
2014885	8670 +	252 +	34.3	2.18 +	31442
2015306	8115	237	34.7	2.18 +	32043
2015508	6767	233	29.1	1.91	30663
2017738	6796	212 -	32	2	32448
2018803	9153 +	234	38.9 +	2.12	37490
2019947	7518	233	32.2	2.19 +	30011

Table 24. First Ratoon means from ten outfield locations in 2023: Allains, Alma, Landry, Mary, Brunswick, Glenwood, Harper, Lanaux, R.Hebert, St.John.

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
2001299	8190	261	31.4	1.69	37283
2004838	5682 -	256	22.3 -	1.5	30720
2009804	7497	259	29	1.41 -	42082
2012201	6931 -	268	26 -	1.86	28060
2012615	7324	251	29.2	1.51	39130
2013739	6888 -	258	26.9 -	1.85	29600
2014267	6439 -	254	25.2 -	1.89 +	27010
2014885	7472	274 +	27.4 -	1.71	32199
2015306	7764	264	29.4	1.77	33401
2015508	7191	260	27.6	1.55	36240
2017738	7148	246 -	29.1	1.75	33687
2017776	6565	265	24.8	1.54	33032
2018803	7918	252	31	1.89 +	33559

Table 25. Second Ratoon means from ten outfield locations in 2023: Allains, Alma, Landry, Mary, Brunswick, Glenwood, Harper, Lanaux, R.Hebert, St.John.

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
1996540	3883 -	245	15.9 -	1.49	21285
20011372	5520 -	251	21.8 -	1.18 -	36583
2001299	7448	248	29.7	1.43	41184
2004838	5689	247	23 -	1.37	34136
2005961	4647 -	250	18.7 -	1.3	26429 -
2009804	6526	245	26.4	1.11 -	74318 +
2012201	6245 -	256	24.1 -	1.69 +	28588
2012615	6550	244	26.6	1.24	43153
2013739	6260 -	253	24.5 -	1.63 +	29236
2014267	6706	249	26.4	1.72 +	30439
2014885	7219	270 +	26.6	1.44	37324
2015306	6926	258	26.8	1.54	34357
2015508	6486	254	25.2 -	1.36	37541

Table 26. Third Ratoon means from six outfield locations in 2023: Mary, Brunswick, Glenwood, Harper, Lanaux, and R. Hebert.

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
1996540	5184 -	251	20.4 -	1.55	27106
2001299	7772	248	31.1	1.41	44439
2005961	5841 -	244	23.9 -	1.34	34968
2009804	6815	242	28.1	1.21	46950
2011183	4516 -	239	18.6 -	1.24	30311
2012201	5819 -	253	22.8 -	1.6	28790
2012615	6043 -	237	25.3 -	1.23	40995
2013739	6441	242	26.5	1.57	34013
2014267	6888	249	27.6	1.65	33553
2014885	7037	273 +	25.8 -	1.54	34704
2015306	6980	255	27.1	1.43	38369
2015508	6497	259	24.9 -	1.43	35042

Table 27. Plant cane means across outfield locations from 2021 to 2023.

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
1996540	4958 -	240	20.7	1.85	21976
2001299	7900	246	31.9	2.09	31066
2004838	7920	253	31.1	1.93	32458
2009804	8137	256	31.7	1.73 -	37671 +
2012615	8707	246	35.2 +	2.06	35150
2013739	7655	254	29.9	2.31 +	31993
2014885	9664 +	271 +	35.6 +	2.37 +	30237
2015306	8709	257	34.0	2.30 +	30025
2015508	8185	262 +	30.9	2.09	29781
2017738	7781	242	32.1	2.17	30053

Table 28. First Ratoon means across outfield locations from 2022 to 2023.

Variety	Sugar per Acre (pounds/A)	Sugar per Ton (pounds/ton)	Cane Yield (tons/A)	Stalk Weight (pounds)	Stalk Number (stalks/A)
2001299	8846	267	32.9	1.77	37665
2004838	7623	267	28.2 -	1.93	30715 -
2009804	8316	270	30.6	1.49 -	41672 +
2012201	7892 -	268	29.3 -	2.19 +	27182 -
2012615	8427	260	32.1	1.63	39783
2013739	7816 -	274	28.3 -	1.99 +	28419 -
2014267	7633 -	271	27.8 -	2.08 +	27083 -
2014885	8828	281 +	31.2	1.93 +	32680 -
2015306	8396	275	30.3 -	1.86	32820 -
2015508	8265	278	29.6 -	1.74	34766 -
2017738	8145	260	31.2	1.86	34108 -

SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION

Mavis Daigle¹, Michael Pontif¹, and Collins Kimbeng¹
Sugar Research Station

The Sugar Research Station Sucrose Laboratory processed 3,645 samples during the 2023 harvest season (Table 1).

A total of 3,302 samples were analyzed using a Spectracane FT-NIR instrument. The samples were shredded using a Dedini shredder then analyzed for Brix, pol, sucrose percent, fiber, moisture, purity, and theoretical recoverable sugar using Near InfaRed (NIR) spectroscopy technology.

Standard laboratory (wet chemistry) procedures were used to analyze 343 samples. The samples were shredded using a Dedini shredder and the juice was extracted using a Honiron sugarcane hydraulic press. Octapol® was used for juice clarification. Brix was measured with a refractometer and pol was measured using a saccharimeter (Autopol 880). Sucrose percent and theoretical recoverable sugar (lbs/ton of cane) were calculated based on the Brix and pol values. The sucrose laboratory processed samples from August 2023 to December 2023.

Table 1. Number of sugarcane samples processed at the Sugar Research Station sucrose laboratory during the 2023 harvest season

Unit/Project Area	Leader	Number of Samples
School of Plant, Environmental, and Soil Sciences	Graduate Research	465
	Niranjana Baisakh	866
	Brenda Tubana	667
Plant Pathology and Crop Physiology	Andre Gama	40
	Tristan Watson	30
LSU AgCenter Southeast Region	Albert Orgeron	277
LSU AgCenter Central Region	Collins Kimbeng	99
Audubon Institute	Peter Gaston	75
LCES	Kenneth Gravois	141
Sugar Research Station/Variety Development	Line Trials	324
	Increase	132
	Nursery	441
Contract Services		88
TOTAL		3,645

LAES SUGARCANE TISSUE CULTURE LABORATORY

A. Parco¹, D. P. Fontenot¹, C. Kimbeng², M. J. Pontif², A. B. Gama², and J. W. Hoy²

¹Certis USA, LLC and ²Sugar Research Station

During 2023-2024 production season, a total of 29,750 sugarcane plantlets that were propagated in the Louisiana Agricultural Experiment Station Tissue Culture Laboratory were turned over to Certis USA, LLC, Kleentek Division for transplanting in the greenhouse at Houma, LA. The number of plantlets transplanted for each sugarcane cultivar is listed in Table 1.

Table 1. Number of tissue culture-derived plantlets of different sugarcane cultivars transplanted in the greenhouse.

Cultivar	Number of Plantlets
L 01-299	6,504
HoCP 14-885	5,132
HoCP 18-803	4,353
L 15-306	3,657
HoL 15-508	3,155
Ho 11-573	2,773
Ho 13-739	2,234
Ho 17-738	1,942
Total	29,750

THE 2023 LOUISIANA SUGARCANE VARIETY SURVEY

Kenneth A. Gravois
Sugar Research Station

Each year a sugarcane variety survey is conducted by county agents in sugarcane-growing parishes of Louisiana to determine variety makeup and distribution. Surveys were obtained from 24 parishes. There was sugarcane grown in West Feliciana parish (Turnbull Island), but this acreage is reported in Pointe Coupee parish. According to USDA-Farm Service Agency (FSA), there were 532,914 acres planted in sugarcane in Louisiana in 2023.

Agents collected acreage according to variety and crop. A total of nine sugarcane varieties, HoCP 96-540, L 01-283, L 01-299, HoCP 04-838, HoCP 09-804, L 11-183, L 12-201, Ho 12-615, Ho 13-739, L 14-267, and HoCP 14-885 were listed along with “Others” in the survey. The category of “Others” included, but was not limited to, small acreages of HoCP 85-845, HoCP 00-950, L 03-371, Ho 05-961, Ho 07-613, L 15-306, HoL 15-508, and potential new sugarcane varieties on primary and secondary seedcane increase stations. The crop was divided into four categories: plant-cane, first-stubble, second-stubble, and third-stubble and older crops.

Total State Acreage

Total sugarcane acreage for each parish, region and the statewide total is shown in Table 1. Statewide, the area planted to sugarcane in 2023 was 532,914 acres, representing an increase of 4.0 % compared to acreage in 2022.

Sugarcane Distribution by Variety

Statewide sugarcane acreage in percent by variety and crop is shown in Table 2. The leading variety for 2023 was L 01-299, which occupied 53% of the Louisiana sugarcane acreage. This percentage was three points lower than the acreage of L 01-299 in 2022 (Gravois, 2023). HoCP 96-540, L 01-283, HoCP 09-804, and Ho 12-615 were next in total acreage, planted on 9%, 4%, 9% and 10%, respectively, of the state’s acreage. The varieties planted in the next largest areas were HoCP 04-838, L 12-201, and Ho 13-739, each occupying 2%, of the state’s acreage, respectively. All other varieties in the survey had 1% or less of the planted area for the 2023 crop. Newly released HoCP 14-885 was planted on 3% of the Louisiana sugarcane acreage, which was a large percentage for a newly released sugarcane variety.

Sugarcane Distribution by Region and Crop

The total sugarcane acreage was highest for the Teche region (199,471 acres), followed by the Northern region (168,136 acres), and the River-Bayou Lafourche region (165,307) [Table 3]. Parishes with the largest acreage increase from the previous year were Acadia, Avoyelles, Evangeline, Iberville, Lafourche, Pointe Coupee, and Rapides. The northern area showed the greatest increase in acreage. It should be noted that the northern sugarcane growing regions had more acreage than the Mississippi River-Bayou Lafourche area.

In 2023, 26.5% of the state’s acreage was grown as third and older stubble crops, which was higher than the acreage of the same category for 2022. In 2023, 23.8%, 25.6%, and 24.1% of the state’s acreage was in plant-cane, first-stubble, and second-stubble crops, respectively. This

was the first time that the third and older stubble class represented the largest acreage class of sugarcane in Louisiana.

For the current survey, plant-cane percentage was highest in the River-Bayou Lafourche region (28.5%). For the third and older stubble crops, the Northern region had the highest percentage at 33.2%, whereas the Bayou Teche region had the lowest acreage devoted to third and older stubble crops at 22.0%.

Sugarcane Distribution by Variety and Crop for the Three Regions

L 01-299 was the most widely grown variety in all three regions in all crop categories (Tables 4-6). The most notable variety trend in sugarcane acreage was the continued planting of L 01-299 and increased older stubble crops devoted to L 01-299. The River-Bayou Lafourche region had a larger percentage of L 01-299 (56.8%) than the Northern and Bayou Teche regions, 52.3% and 50.3%, respectively. The Northern region had more acres devoted to HoCP 09-804 than the other two regions. HoCP 96-540 was more widely grown (15.6%) in the Bayou Teche region, followed by the northern region and the River-Bayou Lafourche region at 4.5% and 4.6%, respectively. The survey showed more acres of Ho 12-615 planted in the River-Bayou Lafourche region.

Variety Trends

HoCP 96-540, released for commercial planting in 2003, occupied 9% of the state's 2023 acreage, an increase of one percentage point from the previous year. The variety continues to perform well for some growers. The main reasons for decreasing acreage of HoCP 96-540 are lower yield potential in older stubble crops and susceptibility to brown rust. HoCP 96-540 is better adapted to sandier soils. Rust infections can be high in the plant-cane crop. HoCP 96-540 possesses superior cold tolerance.

L 01-283, released for commercial planting in 2008, occupied 4 percent of the Louisiana acreage in 2023. L 01-283 has excellent stubbling ability, good sugar yield, erectness, and cold tolerance. Naturally occurring, environmentally induced off-types have been increasing in L 01-283. The variety has performed best in well-drained sandier soils along with good fertility programs, all of which reduce stress. The variety is especially susceptible to late-season infections of brown rust disease, especially after mild winters.

L 01-299 was released in 2009. The variety has outstanding stubbling ability and is well suited for both light and heavy soils. The variety has an erect growth habit and is not the best shading variety. L 01-299 has difficulty establishing after planting in lighter sandier soils (sharp or cold sands). When cut for harvest, the variety stubbles extremely well. Early spring growth of L 01-299 plantcane and seedcane is susceptible to several stress factors, such as cool weather, wet soils, damage from herbicides, and poor fertility (especially pH). Brown stripe is a disease that takes advantage of stress factors in L 01-299. Brown stripe disease can be reduced by burning/removing dead growth in plantcane and seedcane along with a good soil fertility program. L 01-299 responds well to ripening with glyphosate.

HoCP 04-838 was released in 2011. This variety has good sugar recovery and stubbles well, with its most notable attribute being superior cold tolerance. HoCP 04-838 has consistently been

the top performing variety based on juice quality in cold tolerance trials conducted after severe freezes.

HoCP 09-804 was released to growers in 2016. This variety has a high population of small diameter stalks with excellent sugar yield potential. HoCP 09-804 is early maturing and performs well in stubble crops. HoCP 09-804 can be sensitive to glyphosate applications, which show up as bleached (white) shoots in the spring. Based on the variety survey, HoCP 09-804 was preferred in the northern sugarcane producing parishes.

L 11-183 was released to growers in 2018. The new variety was derived from the cross HoCP 92-624 x LCP 85-384. Stalks of L 11-183 are larger, and the population is lower than L 01-299. The variety has good sugar yield and is considered a mid-maturing variety. L 11-183 has a good disease package. The variety tends to lodge. Sugar yield in L 11-183 has been lower in older stubble crops. Regrowth has been negatively affected in older stubble crops following freezes.

L 12-201 was released in 2019. The new variety was derived from the cross HoCP 96-540 x L 97-128. It is characterized as having a moderate population of larger diameter stalks. The yield potential and disease package are very good. L 12-201 has average stubbling ability.

Ho 12-615 was released in 2019. The new variety was derived from the cross HoCP 96-540 x TucCP 77-42. This variety is characterized as having a high population of small diameter stalks. The yield potential and disease package are very good. In multiple sugarcane variety freeze trials, Ho 12-615 was rated as having poor cold tolerance. Stubble stands in the spring can be erratic, sometimes due to glyphosate ripeners applied the previous fall.

Ho 13-739 was released in 2020. The variety has good sugar yield potential and growers particularly like its high sugar content. Ho 13-739 is noted for a good disease package and early high sucrose content.

L 14-267 was released in 2021. L 14-267 has a good disease package and sugar yield. One of the parents of L 14-267 is L 01-283, which provided good stubbling ability and a few off-types in the new variety. L 14-267 had very good sugar yield in third stubble outfield yield trials. This variety does not shade the row well.

HoCP 14-885 was released in 2021. HoCP 14-885 has been widely planted based on limited initial seed cane acreage. The new variety has very good sucrose content, excellent yield potential, and low fiber content. Hogs will be attracted to this variety. The variety will lodge in bad weather and has a poor cold tolerance rating. In outfield variety trials, the new variety had excellent sugar yield in all crops including third stubble. HoCP 14-885 was widely planted in 2023.

L 15-306 and HoL 15-508. Two new sugarcane varieties were released in 2022. Seed cane was distributed through the American Sugar Cane. Growers are encouraged to continue to expand both new varieties to see where each might be a fit in their farming operation. Both varieties have excellent stubbling ability.

Relying on a single variety can lead to changing disease reactions and insect infestations. Growers are cautioned to diversify their sugarcane variety choices. With the release of many new sugarcane varieties in recent years, growers have several good choices to diversify their sugarcane plantings in 2024.

ACKNOWLEDGMENTS

We acknowledge the assistance of the county agents for conducting the sugarcane variety survey in their parishes. We also thank the sugarcane growers and/or their consultants who took the time and effort to respond to the survey. We also acknowledge the assistance of the USDA-FSA offices in the sugarcane parishes for certified acreages.

REFERENCES

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Table 1. Total area planted to sugarcane in Louisiana by region and parish, 2023.¹

REGION	PARISH	2023 ACREAGE
Bayou Teche	Acadia	6,151
Bayou Teche	Calcasieu	185
Bayou Teche	Cameron	27
Bayou Teche	Iberia	57,686
Bayou Teche	Jefferson Davis	388
Bayou Teche	Lafayette	8,942
Bayou Teche	St. Martin	31,958
Bayou Teche	St. Mary	46,941
Bayou Teche	Vermilion	47,193
Northern	Avoyelles	22,206
Northern	Concordia	363
Northern	Evangeline	1,621
Northern	Pointe Coupee	78,090
Northern	Rapides	21,359
Northern	St. Landry	28,208
Northern	West Baton Rouge	16,289
River-Bayou Lafourche	Ascension	18,428
River-Bayou Lafourche	Assumption	35,447
River-Bayou Lafourche	Iberville	40,304
River-Bayou Lafourche	Lafourche	28,124
River-Bayou Lafourche	St. Charles	1,276
River-Bayou Lafourche	St. James	26,352
River-Bayou Lafourche	St. John the Baptist	6,603
River-Bayou Lafourche	Terrebonne	8,775
	Total	532,914

¹ Acreage based on USDA-FSA estimates obtained by the county agents.

Table 2. Estimated statewide sugarcane percentage by variety and crop, all regions, 2023.¹

Variety	Plant-cane	First-stubble	Second-stubble	Third-stubble and older	Total
	-----Acreage-----				%
HoCP96-540	9,617.3	11,278.3	11,672.3	12,949.2	8.5
L01-283	2,238.8	2,556.6	4,771.2	8,725.6	3.4
L01-299	58,115.3	65,826.2	67,661.6	90,533.5	52.9
HoCP04-838	1,392.2	2,850.7	3,914.2	2,999.0	2.1
HoCP09-804	6,064.3	10,674.3	14,406.9	16,149.8	8.9
L11-183	1,440.1	1,528.9	2,606.2	2,026.1	1.4
L 12-201	1,946.1	4,661.5	3,075.7	1,253.1	2.1
Ho 12-615	19,223.3	22,563.3	10,939.9	2,253.2	10.3
Ho 13-739	5,469.7	4,000.3	1,296.2	23.2	2.0
L 14-267	1,336.9	703.4	61.9	17.9	0.4
HoCP 14-885	13,699.9	4,062.7	172.7	5.1	3.4
Others	6,436.1	5,665.5	7,654.1	4,393.9	4.5
% Crop	23.8	25.6	24.1	26.5	532,914

¹ Based on information obtained in variety surveys by county agents.

Table 3. Estimated sugarcane distribution by region and crop in Louisiana, 2023.¹

Crop	Bayou Teche	River-Bayou Lafourche	Northern	State Total
Plant-cane Area (acres) Percent (%)	43,839 22.0	47,111 28.5	36,030 25.3	126,980 23.8
First-stubble Area (acres) Percent (%)	59,269 29.7	37,033 22.4	40,069 23.8	136,371 25.6
Second-stubble Area (acres) Percent (%)	52,444 26.3	39,499 27.3	36,291 21.6	128,234 24.1
Third-stubble and older Area (acres) Percent (%)	43,919 22.0	41,664 23.9	55,746 33.2	141,329 26.5
Total area (acres) Percent (%)	199,471 37.4	165,307 31.0	168,136 31.6	532,914

¹ Based on information obtained in variety surveys by county agents.

Table 4. Estimated area planted to sugarcane in percent by variety and crop for the Bayou Teche region, 2023.¹

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second- stubble crop (%)	Third- stubble crop & older (%)	Total (%)
HoCP 96-540	15.9	13.0	15.3	19.4	15.6
L 01-283	3.8	2.4	3.6	4.4	3.4
L 01-299	48.7	47.2	50.7	55.7	50.3
HoCP 04-838	1.6	3.4	3.9	1.5	2.7
HoCP 09-804	6.8	8.3	10.4	8.9	8.7
L 11-183	3.0	1.6	2.5	3.1	2.5
L 12-201	0.7	2.1	1.4	0.5	1.3
Ho 12-615	5.6	10.0	5.7	1.4	6.0
Ho 13-739	1.2	2.3	1.3	0.0	1.3
L 14-267	0.2	0.6	0.1	0.0	0.2
HoCP 14-885	6.6	4.0	0.1	0.0	2.7
Others	5.9	5.1	4.9	5.2	5.2

¹ Based on information obtained in variety surveys by county agents.

Table 5. Estimated area planted to sugarcane in percent by variety and crop for the River-Bayou Lafourche region, 2023.¹

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second- stubble crop (%)	Third- stubble crop & older (%)	Total (%)
HoCP 96-540	2.9	4.7	4.4	4.6	4.1
L 01-283	0.5	2.3	4.0	7.9	3.6
L 01-299	45.0	58.3	56.2	69.3	56.8
HoCP 04-838	0.5	0.9	2.9	2.5	1.7
HoCP 09-804	2.5	3.2	6.5	7.0	4.7
L 11-183	0.1	1.3	2.6	1.1	1.2
L 12-201	2.0	4.4	3.0	0.7	2.5
Ho 12-615	24.8	16.5	10.2	2.8	13.9
Ho 13-739	3.7	3.2	0.6	0.0	1.9
L 14-267	1.7	0.4	0.1	0.0	0.6
HoCP 14-885	11.4	2.2	0.1	0.0	3.8
Others	4.7	2.8	9.2	4.1	5.2

¹ Based on information obtained in variety surveys by county agents.

Table 6. Estimated area planted to sugarcane in percent by variety and crop for the Northern region, 2023.¹

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second- stubble crop (%)	Third- stubble crop & older (%)	Total (%)
HoCP96-540	3.5	4.6	5.2	4.5	4.5
L01-283	1.0	0.7	3.6	6.3	3.2
L01-299	43.1	40.6	52.0	66.7	52.3
HoCP04-838	1.2	1.3	2.0	2.3	1.8
HoCP09-804	5.3	11.5	17.5	16.7	13.2
L11-183	0.2	0.2	0.8	0.4	0.4
L 12-201	1.9	4.5	3.1	1.3	2.6
Ho 12-615	14.2	26.3	10.7	0.8	11.9
Ho 13-739	8.8	3.7	1.0	0.0	3.0
L 14-267	1.2	0.5	0.0	0.0	0.4
HoCP 14-885	15.1	2.2	0.1	0.0	3.8
Others	4.5	4.0	3.9	0.8	3.0

¹ Based on information obtained in variety surveys by county agents.

Table 7. Louisiana sugarcane variety trends, by variety and years, all regions, 2018-2023¹.

	Area planted to sugarcane by variety and year (%)						
Variety	2018	2019	2020	2021	2022	2023	1 Year Change
HoCP96-540	20	15	12	10	8	9	+1
L01-283	14	14	10	10	8	4	-4
L01-299	51	56	59	58	56	53	-3
HoCP04-838	5	4	3	3	3	2	-1
HoCP09-804	3	5	9	10	11	9	-2
L11-183	<1	<1	1	2	1	1	0
L 12-201		<1	<1	1	2	2	0
Ho 12-615		<1	<1	3	6	10	+4
Ho 13-739			<1	<1	1	2	+1
L 14-267					<1	<1	0
HoCP 14-885					1	3	+2

¹ Based on annual variety surveys by county agents, 2018-2023.

PERFORMANCE OF FLORIDA SUGARCANE VARIETIES IN LOUISIANA

Kenneth Gravois
Sugar Research

Sugarcane varieties developed in Florida are unadapted to Louisiana soils and growing conditions. However, Florida sugarcane varieties have been used by breeders to expand the germplasm base of Louisiana sugarcane varieties, often appearing as grandparents or older generations in the lineage of Louisiana sugarcane varieties. Additionally, the *Br11* QTL (quantitative trait loci) confers resistance to brown rust disease and is more prevalent in Florida sugarcane varieties. Before using a sugarcane variety for crossing, it is important to evaluate those varieties under Louisiana growing conditions.

Each year a few stalks of Florida sugarcane varieties are obtained from the Kleentek quarantine greenhouse and used to plant a small seed cane increase at the Sugar Research Station, St. Gabriel, LA. Yield trials are planted each subsequent year during August. Each test was planted as a randomized complete block (two replications) design. Plots were paired rows that were 25 feet in length, and a four-foot alley separated plots. The soil type was a Commerce silt loam. In 2023, a new trial was planted on August 31st.

Standard cultural practices were followed during each growing season. No glyphosate ripeners were applied to the trials. The second and third stubble trials were harvested on October 5, 2023; the first stubble trial was harvested on October 9, 2023; the plantcane trial was harvested on November 20, 2023. Plots were combine-harvested and weighed to determine cane yield (tons/acre). A 6-stalk sample was hand-cut out of each plot for a quality analysis using NIR to estimate fiber content (%), and TRS (theoretical recoverable sugar [lbs./ton of cane]). Sugar yield was estimated as the product of cane yield and sucrose content.

Each year the data are summarized and sent to the sugarcane breeders.

Table 1. Plantcane Florida variety yield trial harvested on November 20, 2023, at the Sugar Research Station, St. Gabriel, LA.

Variety	Sugar Yield	Cane Yield	TRS	Fiber
Plantcane	lbs./acre	tons/acre	lbs./ton of cane	%
CP09-1385	9979	44.2	226	12.8
CP09-4758	10465	43.3	242	13.2
CP10-1208	9680	44.4	218	14.0
CP10-1619	8476	37.0	228	12.9
HO12-615	12244	53.3	229	14.0
HOCP09-804	10378	43.5	239	11.2
HOCP14-885	9894	46.6	212	13.7
L01-299	10177	43.8	233	13.3
TUCCP77-42	11381	50.2	227	13.4

Table 2. First Stubble Florida variety yield trial harvested on October 9, 2023, at the Sugar Research Station, St. Gabriel, LA.

Variety	Sugar Yield	Cane Yield	TRS	Fiber
Plantcane	lbs./acre	tons/acre	lbs./ton of cane	%
CP09-1385	4970	29.3	170	11.2
CP09-4758	5903	36.2	164	10.8
CP10-1208	4565	29.1	157	12.1
CP10-1619	4814	30.4	159	11.6
HO12-615	6245	34.3	181	12.9
HOCP09-804	7303	35.7	205	13.3
HOCP14-885	7992	40.0	200	9.7
L01-299	8832	45.0	196	12.9
TUCCP77-42	7318	43.9	167	14.7

Table 3. Second stubble Florida variety yield trial harvested on October 5, 2023, at the Sugar Research Station, St. Gabriel, LA.

Variety	Sugar Yield	Cane Yield	TRS	Fiber
Second Stubble	lbs./acre	tons/acre	lbs./ton of cane	%
CP01-1372	4513	27.6	163	9.6
CP09-1385	2814	17.6	159	11.9
CP09-4758	5130	30.8	166	10.7
CP10-1208	4245	29.3	146	11.9
CP10-1619	4352	29.4	148	11.4
HO12-615	5648	30.7	186	13.4
HOCP09-804	5599	28.4	198	14.0
HO14-885	7225	36.8	195	9.9
L01-299	8442	43.0	196	12.6

Table 4. Third stubble Florida variety yield trial harvested on October 5, 2023, at the Sugar Research Station, St. Gabriel, LA.

Variety	Sugar Yield	Cane Yield	TRS	Fiber
Second Stubble	lbs./acre	tons/acre	lbs./ton of cane	%
CP01-1372	4216	30.6	139	10.2
CP06-2042	1208	9.0	135	12.7
CP07-2137	1979	13.5	142	11.6
CP07-2320	605	3.7	166	9.4
CP08-1110	1595	10.2	152	12.1
CP08-1968	1981	14.9	133	11.9
CP96-1252	4070	28.3	147	11.1
HO12-615	3960	23.6	167	12.6
HOCP09-804	6387	32.5	196	14.9
L01-299	5727	32.3	177	12.1

STALK COLD TOLERANCE OF COMMERCIAL VARIETIES AT ARDOYNE FARM DURING THE 2023-2024 HARVEST SEASON

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INTRODUCTION

Sugarcane is produced in 79 countries, with exposure to damaging frosts occurring in over 20 of them. The mainland of the United States is most frequently affected, specifically the Louisiana sugarcane growing region. The potential for winter freezes has forced Louisiana to adapt to a short growing season (7-9 months) and short milling season (about 3 months). To measure post-freeze deterioration of stalks of commercial and experimental varieties, a collaborative study, was conducted at the USDA-ARS Ardoyne Farm in Schriever, LA between USDA-ARS, Sugarcane Research Unit, American Sugar Cane League, and the LSU AgCenter.

MATERIALS AND METHODS

In general, a variety is considered to have “good” cold tolerance if sugar crystallizes from the juice of the variety four weeks after a freeze event with temperatures between 24-26°F. Crystallization will not occur in a variety with “poor” stalk tolerance at the same temperature range.

Each year sugarcane variety trials are established to estimate stalk cold tolerance on a Sharkey clay soil at the USDA-ARS Ardoyne Farm. Commercial variety HoCP 04-838, which exhibits excellent cold tolerance, is included as a control. This experiment included eight commercial varieties (L 01-299, HoCP 04-838, HoCP 09-804, HoCP12-615, Ho13-739, HoCP 14-885, L 15-306, HoL 15-508,) and the experimental variety HoCP 17-738. The trial is planted as a randomized complete block design with 4 replications with each plot three rows wide (18 feet), and 32 feet long, with a 5-foot alley between plots. Plots are managed by following recommended cultural practices.

When a hard freeze occurs (26° F or lower for over four hours), a field inspection is done to determine the severity of the freeze and the need to proceed with testing. Samples are cut from the second row (interior row) of each plot prior to or immediately following the freeze, which serves as a baseline for comparison. Depending on the severity of the freeze, post-freeze weather conditions and the timing of the freeze (harvest or post-harvest), the test is sampled weekly or bi-weekly post-freeze. Each sample consists of 10 stalks hand-cut at the base but not stripped of leaves. Leaves above the leaf whorl were removed to keep the growing point intact. Samples were weighed to estimate stalk weight (lb./stalk) and processed at the USDA’s Juice and Milling Quality Laboratory using the pre-breaker/-press method. Juice was analyzed for Brix by refractometer and juice pol by polarimetry. Purity was estimated as: (juice sucrose/juice Brix)*100. The pressed sample residue (bagasse) was weighed, dried, and weighed again to determine moisture content. From these values Brix%cane, sucrose%cane, and fiber content were estimated. These data were used to estimate theoretical recoverable sugar (lbs./ton of cane) [TRS].

Additional juice analyses were done. Juice samples were analyzed to determine pH. Titratable acidity (ml of 0.1 N NaOH/10 ml juice to take the pH to 8.3) was estimated using 50 ml of juice and converting back to 10 ml. Total soluble polysaccharides (gums) was estimated by the phenol-sulfuric acid method.

Data from these three analyses along with juice purity and TRS were used to rank the varieties based on % change over the sampling period and final values.

RESULTS AND DISCUSSION

The first freeze of the 2023-2024 harvest season occurred on the nights of January 16 and 17, 2024. The minimum temperature within the trial was 23.3° F on January 16 and 18.5 on January 17. On January 16 subfreezing temperatures occurred for nine hours, with temperatures dipping below 26°F for 3 hours and 30 minutes. January 17 was colder; subfreezing temperatures occurred for 16 hours and 45 minutes with temperatures dipping below 26°F for 12 hours and 30 minutes. A field inspection that morning showed evidence of damage to internal stalk tissue and the terminal buds of all varieties. Freeze cracks were visible on some varieties with weeping eyes occurring on most varieties. Daytime temperatures following the freeze event were mild for January, with a high reaching the low 70s on four occasions. Typically, warmer temperatures following a freeze event increase the rate of deterioration.

Samples were harvested on January 17, 2024, and two weeks post freeze on February 1. Results for juice purity, TRS, pH, titratable acidity, and total soluble polysaccharides are shown in Tables 1-5.

Reductions in TRS averaged -61.2 lbs. per ton or -23.7%. HoCP 04-838 (-36.3 lbs.) was the only variety that did not show a loss of greater than 40 lbs. (Table 2). Three varieties, HoCP 14-885, HoCP 12-615 and Ho 13-739; had losses in sucrose content of more than 70 lbs per ton of cane.

The average decrease in juice purity was -12.0 percentage points (pp.) or -13.4% (Table 3). HoCP 04-838 experienced the lowest reduction in juice purity (-6.5 pp.). HoCP 12-615 had the greatest reduction in juice purity (-16.2 pp.), followed by HoL 15-508 (-15.3 pp.).

The average drop in pH was 1.08 or -19.7% (Table 3). HoCP 04-838 continued to prove its cold tolerance showing a pH drop of 0.72. The varieties with the largest reduction in pH were HoL 15-508 (-1.62) and HoCP 14-885 (-1.25).

Post-freeze changes in titratable acidity averaged an increase of 1.69 ml/10 ml of cane juice (Table 5). HoCP 04-838 (0.61 ml) and Ho 13-739 (0.79 ml) were the only varieties that had an increase of less than 1 ml/10 ml of cane juice. The varieties with the greatest highest titratable acidity were HoL 15-508 (3.80 ml) and HoCP 14-885 (2.18 ml).

Post-freeze changes in soluble polysaccharides averaged across all varieties showed an increase of 25445 ppm (Table 6). L 01-299 showed the lowest increase of soluble polysaccharides (5708 ppm). The varieties with the greatest increase in soluble polysaccharides were HoL15-508 (56735 ppm) and HoCP 14-885 (44646 ppm).

Using the five criteria to measure stalk cold tolerance, varieties were ranked based on the second sampling date. Because the first sampling date occurred after the two freezes, some deterioration was observed in varieties for the first sampling date. Rankings were summed to provide an overall ranking for each variety, and variety cold tolerance classification was based on these summed ranks (Table 6).

Table 1. Post-freeze changes in sucrose content (TRS) of eight commercial varieties and candidate variety Ho 17-738 in a plant-cane crop following freezing temperatures (18.5°F) at the USDA-ARS research farm in Schriever, Louisiana during the 2023-2024 harvest.

Variety	TRS (lbs./ton)		Actual and percent change		Rank ^{2/}
	Harvest Dates		Change ^{1/}	%	
	17-Jan	01-Feb			
HoCP 04-838	249	213	-36.3	-14.5	1
L 01-299	255	203	-51.6	-20.2	3
HoCP 09-804	262 +	197	-64.5	-24.6	4
HoCP 12-615	254	179 -	-74.4	-29.3	8
Ho 13-739	244	172 -	-72.0	-29.5	7
HoCP 14-885	273 +	197	-75.6	-27.7	9
L 15-306	275 +	209	-66.0	-24.0	5
HoL 15-508	271 +	202	-68.6	-25.3	6
HoCP 17-738	237	188 -	-49.0	-20.6	2
Average	258	196	-61.2	-23.7	

^{2/}Change represents the difference between initial sampling date and the final sampling date.

^{3/}Rank based on least amount of change from initial sampling date.

Table 2. Post-freeze changes in juice purity of eight commercial varieties and candidate variety Ho 17-738 in a plant-cane crop following freezing temperatures (18.5°F) at the USDA-ARS research farm in Schriever, Louisiana during the 2023-2024 harvest.

Variety	Juice Purity (%)		Actual and percent change		Rank ^{2/}
	Harvest Dates		Change ^{1/}	%	
	17-Jan	01-Feb			
HoCP 04-838	89.5	83.0	-6.5	-7.3	1
L 01-299	90.0	79.4	-10.6	-11.8	3
HoCP 09-804	89.7	78.6 -	-11.1	-12.4	4
HoCP 12-615	89.1	72.9 -	-16.2	-18.2	9
Ho 13-739	89.1	74.3 -	-14.8	-16.7	7
HoCP 14-885	90.3	76.0 -	-14.3	-15.8	6
L 15-306	90.6	78.0 -	-12.6	-13.9	5
HoL 15-508	89.9	74.6 -	-15.3	-17.0	8
HoCP 17-738	88.3 -	78.1 -	-10.2	-11.5	2
Average	89.6	77.6	-12.0	-13.4	

Table 3. Post-freeze changes in juice pH of eight commercial varieties and candidate variety Ho 17-738 in a plant-cane crop following freezing temperatures (18.5°F) at the USDA-ARS research farm in Schriever, Louisiana during the 2023-2024 harvest.

Variety	pH(%)		Actual and percent change		Rank ^{2/}
	Harvest Dates		Change ^{1/}	%	
	17-Jan	01-Feb			
HoCP 04-838	5.56	4.84	-0.72	-12.9	1
L 01-299	5.53	4.64	-0.89	-16.1	2
HoCP 09-804	5.43 -	4.32 -	-1.11	-20.5	6
HoCP 12-615	5.32 -	4.29 -	-1.04	-19.5	5
Ho 13-739	5.47 -	4.51 -	-0.96	-17.5	4
HoCP 14-885	5.52	4.27 -	-1.25	-22.6	8
L 15-306	5.45 -	4.26 -	-1.19	-21.8	7
HoL 15-508	5.48	3.86 -	-1.62	-29.6	9
HoCP 17-738	5.36 -	4.44 -	-0.92	-17.2	3
Average	5.46	4.38	-1.08	-19.7	

Table 4. Post-freeze changes in titratable acidity of eight commercial varieties and candidate variety Ho 17-738 in a plant-cane crop following freezing temperatures (18.5°F) at the USDA-ARS research farm in Schriever, Louisiana during the 2023-2024 harvest.

Variety	Titratable Acidity (ml 0.1 N NaOH/10 ml juice)		Actual and percent change		Rank ^{2/}
	Harvest Dates				
	17-Jan	01-Feb	Change ^{1/}	%	
HoCP 04-838	1.68	2.29	0.61	36.3	1
L 01-299	1.50 -	2.85	1.35	90.3	5
HoCP 09-804	1.92	3.22 +	1.30	67.4	4
HoCP 12-615	2.00 +	3.95 +	1.95	97.5	6
Ho 13-739	1.50 -	2.29	0.79	52.3	2
HoCP 14-885	1.69	3.87 +	2.18	129.4	8
L 15-306	1.68	3.66 +	1.98	118.2	7
HoL 15-508	1.53	5.33 +	3.80	248.0	9
HoCP 17-738	2.03 +	3.27 +	1.24	61.2	3
Average	1.72	3.41	1.69	97.9	

Table 5. Post-freeze changes in soluble polysaccharides of 8 commercial varieties and candidate variety Ho 17-738 in a plant-cane crop following freezing temperatures (18.5°F) at the USDA-ARS research farm in Schriever, Louisiana during the 2023-2024 harvest.

Variety	Soluble Polysaccharides (ppm/Brix)		Actual and percent change		Rank ^{2/}
	Harvest Dates				
	17-Jan	01-Feb	Change ^{1/}	%	
HoCP 04-838	5374	20065	14692	273	3
L 01-299	5154	10862	5708	111	1
HoCP 09-804	4937	30815 +	25878	524	5
HoCP 12-615	4941	31626 +	26685	540	6
Ho 13-739	6773 +	17300	10527	155	2
HoCP 14-885	4156 -	48802 +	44646	1074	8
L 15-306	3754 -	26636	22882	610	7
HoL 15-508	3615 -	60350 +	56735	1569	9
HoCP 17-738	5472	26724	21252	388	4
Average	4908	30353	25445	582.8	

Table 6. Sugarcane variety ranking based on last sampling date juice quality traits and classification of stalk deterioration response to sub-freezing temperatures at the USDA-ARS Sugarcane Research Unit in Houma, LA in January 2024.

	TRS	Juice Purity	pH	Titrateable Acidity	Soluble Polysaccharides	Sum of Ranks	Classification
Variety	lbs/ton	%		ml 0.1 N NaOH/10 ml juice	ppm/Brix		
	Ranking						
HoCP 04-838	1	1	2	2	3	8	Good
L 01-299	3	2	3	3	1	12	Good
HoCP 09-804	6	5	4	4	6	25	Moderate
HoCP 12-615	8	6	8	8	7	37	Poor
Ho 13-739	9	3	2	2	2	17	Good
HoCP 14-885	6	7	7	7	8	35	Poor
L 15-306	2	8	6	6	4	26	Moderate
HoL 15-508	4	9	9	9	9	40	Poor
HoCP 17-738	7	4	5	5	5	26	Moderate