

## AN OVERVIEW OF 2010 ACTIVITIES IN THE LSU AG CENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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The main objective of the Louisiana State University Agricultural Center (LSU AgCenter) Sugarcane Variety Development Program is to contribute to the profitability of the Louisiana sugarcane industry by developing improved sugarcane varieties.

Sugarcane variety development at the LSU AgCenter is a team effort carried out by scientists from a diversity of disciplines (Table 1). The LSU AgCenter and the United States Department of Agriculture (USDA) sugarcane variety development 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 outfield test stages of the program (Table 2). Outfield testing is conducted by personnel from the LSU AgCenter, the USDA, and the American Sugar Cane League. Upon recommending a variety for commercial release, seed increase is carried out by the American Sugar Cane League and generally commences when varieties are introduced to the outfield 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”.

Table 1. Members of the LSU AgCenter Sugarcane Variety Development Team in 2010.

<b>Team Member</b>	<b>Budgetary Unit</b>	<b>Responsibility</b>
Collins Kimbeng	Sugar Research Station	Program Leader
Michael Pontif	Sugar Research Station	Crossing, Selection and Variety Testing
Sonny Viator	Iberia Research Station	Variety Testing
Niranjan Baisakh	School of Plant, Soil and Environmental Sciences	Molecular Breeding
Gene Reagan	Entomology	Insect Resistance
Jeff Hoy	Plant Pathology	Disease Resistance
Jim Griffin	School of Plant, Soil and Environmental Sciences	Herbicide Tolerance
Brenda Tubana	School of Plant, Soil and Environmental Sciences	Agronomy
Todd Robert	Sugar Research Station	Variety Testing
Gert Hawkins	Sugar Research Station	Sucrose Laboratory
Dexter Fontenot	Sugar Research Station	Photoperiod & Crossing
David Sexton	Sugar Research Station	Variety Testing (Outfield)

Success in developing improved sugarcane varieties is heavily dependent on the availability of novel genetic variation created through targeted crosses. Cultivated sugarcane does not flower naturally in Louisiana because of the cool fall temperatures 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 May 30 and continued until September 10, 2010. Leading up to flowering, temperatures during initiation were conducive to flowering, which resulted in good flowering in 2010 with tassels produced on 987 of 1,533 stalks. Crossing lasted from September 5 to October 26, 2010 with a total of 662 crosses for the year. Germination tests showed that a total of 278,768 viable seeds were produced during the 2010 crossing campaign of which, 101,959 were obtained from bi-parental crosses, 163,619 from polycrosses and, 13,190 from selfing. A majority of these crosses will be planted to the field in 2011.

From the 2009 crossing campaign, a total of 76,095 seedlings from 215 crosses were planted to the field in April of 2010. Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In addition, seedlings were planted in a cross appraisal trial. Individual seedling selection will be carried out in 2011 when these seedlings are in the first stubble crop.

The winter season of the 2010 crop was abnormally cold for Louisiana, with the average air and soil temperatures from October 1, 2010 through March 31, 2011 ranging from 40 - 62 °F and 50 - 58 °F, respectively. The comparative average temperatures registered for the same time period the year before were 45 - 69 °F and 56 - 63 °F, respectively. Of 76,213 seedlings from the 2008 crossing series that survived the transplantation process, only 52% (39,329) survived the winter compared with 87% the preceding year. Individual seedling selection on these 39,329 first-stubble seedlings occurred in September of 2010. Family selection, based on accumulated data from family appraisal studies and visual assessment of seedling populations, was used to discard ten percent of families prior to selection. A total of 1,730 clones (4 % selection rate) were selected and planted in single row, unreplicated, 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 evaluation of the visually selected clones for Brix using a hand held refractometer.

Established procedures were used to advance superior clones of the 2007 crossing series from the first-line to single row, unreplicated 16-foot, second-line trials (388 clones; 21% selection rate) and of the 2006 crossing series from second-line to two (light and heavy soils), single row, un-replicated, 16-foot increase plots (119 clones; 35% selection rate). Preliminary visual ratings for cane yield and plant type were done in August. Clones with acceptable ratings were further evaluated for lodging and/or broken tops, borer damage, disease symptoms, pith, and Brix/sugar per ton. From the 2005 crossing series, 34 experimental varieties judged to be superior to the checks were assigned permanent variety designations (“L”) in the fall of 2010 (Table 2). These newly assigned experimental varieties were entered into replicated nursery trials (2 replicates, 16-foot plots) at three locations (Sugar Research Station, Iberia Research Station and USDA-ARS Ardoyne Farm). In addition, the experimental varieties were exchanged in the fall of 2010 to plant cooperative infield and off-station nursery tests the following year.

Experimental varieties were replanted in infield and nursery tests (15 varieties of the 2009 assignment series), introduced to the outfield tests (5 varieties of the 2008 assignment series), and planted in outfield tests (one experimental varieties, L 07-57) (Table 2). Breeding personnel assisted Dr. Jeff Hoy and Dr. Gene Reagan to enter experimental varieties in the sugarcane smut and sugarcane borer resistance tests, respectively.

Infestation levels from the most common pests and diseases of sugarcane were generally low in 2010. Brown rust was not seen at significant levels among experimental varieties throughout different stages of the program. For example, only 0.4 percent of varieties were dropped in the first line trial because of rust while none was dropped in the second line. The incidence of smut was also low among experimental varieties in the program. One percent and 3.5% of clones were dropped in the first and second line trials, respectively, because of smut. Very few incidences of leaf scald were recorded among experimental varieties. The number of clones dropped for pith and lodging was also below average throughout different stages of the program. Sugarcane borer infestations were extremely light at the Sugar Research Station and no insecticide applications were made at the Station in 2010.

The 2010 season was generally favorable for growing sugarcane. No major storms impacted the crop. Therefore, the fields were not too wet and the crop was not lodged. Planting and harvesting of experimental varieties went as planned without incidence. All experimental varieties were harvested by the end of December 2010.

Representatives of the Variety Release Committee met on May 5<sup>th</sup> 2010, at the office of the American Sugar Cane League in Thibodaux, Louisiana and decided to release L 03-371. Seed was made available to growers from the American Sugar Cane League's secondary stations.

The decision regarding the further testing and seed increase of candidate varieties in the program was determined at the Variety Advancement Committee meeting. The 2010 meeting was held on August 12<sup>th</sup> 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 2. Number of “L” varieties by assignment series for each stage of testing in 2010.

Assignment Series	Stage of Testing	Number of experimental varieties
L 2004	Outfield – Replanted and harvested as plantcane, first stubble, and second stubble	0
L 2005	Outfield – Replanted and harvested as plantcane and first stubble Off-station nurseries and infield – 3 <sup>rd</sup> stubble harvested	0
L 2006	Outfield – Replanted and harvested as plantcane On-station nurseries - 3 <sup>rd</sup> stubble harvested Off-station nurseries and infield – 2 <sup>nd</sup> stubble harvested.	0
L 2007	Outfield – Planted On-station nurseries - 2 <sup>nd</sup> stubble harvested Off-station nurseries and infield - 1 <sup>st</sup> stubble harvested	1
L 2008	Outfield – Introduced On-station nurseries - 1 <sup>st</sup> stubble harvested Off-station nurseries and infield - plantcane harvested.	5
L 2009	On-station nurseries - plantcane harvested Off-station nurseries and infield planted	15
L 2010	Assignment On-station nurseries planted	34

## **2010 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM**

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Photoperiod and crossing are the first stages in the LSU AgCenter's Sugarcane Variety Development Program. For the Variety Development Program to be productive, success must first be achieved at the photoperiod treatment and crossing stages. Unfortunately, sugarcane does not flower naturally under Louisiana growing conditions thus, the Variety Development Program must rely on artificial photoperiod treatment to induce as well as synchronize flowering. Proper photoperiod induction in addition to proper hybridization techniques are key factors for the production of viable seed from targeted crosses. Targeted crosses are the optimum and most desirable combinations that will be advanced to the seedling stage of the Sugarcane Variety Development Program. Seeds from targeted crosses must be viable or alive to produce adequate germination. This seed will then be advanced to the seedling stage of the Sugarcane Variety Development Program.

Cuttings of potential parent varieties used for the 2010 crossing season were planted in the fall of 2009. After establishing the plants from the cuttings, the plants were fertilized biweekly with a 400 ppm solution of Peter's 20-20-20. In late January 2010, the cuttings were then transferred to can culture. In April, the cans were moved from the greenhouse to the photoperiod rail carts. Soluble fertilizer applications were continued on a biweekly basis. Fertilization was discontinued in early- to mid-May to condition the plants for floral induction. Two additional applications of dry granular fertilizer (8-24-24, one Tbs/can) were applied to the cans during July and August. A reduced nitrogen ratio makes a higher C:N ratio, which is more desirable for the transition of the plant from the vegetative to the floral stage.

Natural lighting and six light-tight chambers were used for photoperiod treatments. To prevent overwhelming the crossing facilities, two flowering peaks were planned for September 23 and October 8 although these two flowering peaks can be advanced or delayed because of certain climatic factors. Records of varietal flowering, past photoperiod response, and pollen production were used to determine the most appropriate photoperiod treatment for each variety. The first photoperiod treatments began on May 30. All photoperiod treatments (time from artificial sunrise to natural sunset) were initiated with a minimum of 34 consecutive days of 12 ½ hours of constant day length. After the initial constant photoperiod days, day length was shortened by one minute per day. Treatments differed by the number of days with constant day length and the date on which the decline of photoperiod was initiated. All photoperiod treatments were discontinued on September 10, 2010, when natural day length was 12 ½ hours and decreasing.

Photoperiod treatments require pulling the carts out of the photoperiod bays at their appropriate time each morning to receive full sunlight. On certain days when the weather was severe, the carts were pushed back into the photoperiod chambers to protect the plants from wind damage. The doors were partially opened to allow natural light to enter the chambers.

Flowering percentage of total stalks were average on the photoperiod carts in 2010 (Tables 1-2). Total flowering percentage for the six bays was 64%, which was comprised of 1,533 stalks of which 987 produce tassels. Although the flowering percentage was excellent in 2010, successful seed production is comprised of a multitude of factors. An adequate germination rate provided the Variety Development Program with sufficient seed production. In 2010 as in previous years, seedlings were produced from hybridization techniques that used sugarcane yield components, borer resistance, and disease resistance as some of the criteria to determine which cross combination of breeding clones increased the likelihood of producing a variety.

Close attention was made once again to maintain high relative humidity within the crossing greenhouse; high relative humidity has been proven in past studies to increase seed set. High relative humidity is maintained with the use of a misting system that has been installed inside of the crossing greenhouse. High temperatures in the crossing house can also result in poor seed set as temperatures in excess of 95°F have adverse effects on pollen viability. Temperatures between 85-95°F were maintained in the greenhouse along with 85-98% relative humidity.

The flowering season in 2010 began during the first week of September. 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 can be a slight deviation for first flower due to temperature during the photoperiod induction phase, varietal characteristics, and the photoperiod treatments. Crossing began on September 5 and ended on October 26, 2010. A total of 987 tassels of 84 clones were used to produce 662 crosses. Germination rate was estimated based on the germination of 0.5 g of seed that was germinated under greenhouse conditions in early December. A total of 278,768 viable seed were produced in 2010. A total of 101,959 seed were produced from bi-parental crosses, and 163,619 seed were produced from polycrosses (Table 3).

Table 1. Summary of the 2010 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			
1	B	12-Jun	44	26-Jul	72	87	211±1	93	66
1	C	12-Jun	44	26-Jul	72	87	213±1	86	49
2	A	12-Jun	44	26-Jul	72	87	218±1	86	71
2	B	12-Jun	44	26-Jul	72	87	214±1	88	67
2	C	12-Jun	44	26-Jul	72	87	212±1	79	58
3	A	30-May	37	6-Jul	87	102	231±1	93	71
3	B	30-May	37	6-Jul	87	102	227±1	93	54
3	C	30-May	37	6-Jul	87	102	225±2	81	46
4	A	30-May	37	6-Jul	87	102	225±1	81	77
4	B	30-May	37	6-Jul	87	102	227±1	86	60
4	C	30-May	37	6-Jul	87	102	228±2	74	65
5	A	30-May	41	10-Jul	82	97	222±1	81	84
5	B	30-May	41	10-Jul	82	97	228±2	81	52
5	C	30-May	41	10-Jul	82	97	225±1	82	54
6	A	30-May	41	10-Jul	82	97	224±1	85	76
6	B	30-May	41	10-Jul	82	97	228±2	82	68
6	C	30-May	41	10-Jul	82	97	226±1	91	68

Table 2. Summary of can, variety, and flower information on 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-----								
84	324	277	1533	987	4.73±1.02	3.56±1.44	5.20±2.10	72.11±10.96

† Based upon cans with tassels.

‡ Rating of 1 to 4 being male and 5 to 9 being female.

§ Days from decline date to flowering.

Table 3. Summary of 2010 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	323	101,959	315±644	315±644	24±42
Polycross	259	163,619	631±1207	631±1207	38±49
Self	80	13,190	164±311	164±311	15±32
Total	662	278,768	421±901	421±901	31±46

Table 4. Varietal flowering summary in 2010 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	39	267	85±2	8	25	18	72
HO05-961	40±1	267	83±7	7	30	2	7
HO06-530	41±1	274	89±1	3	16	7	44
HO06-537	40	288	97	8	15	1	7
HO06-563	42	256	70±1	3	29	23	79
HO07-604	43	.	.	.	19	.	.
HO07-613	40±1	260	75±2	5±1	19	12	63
HO07-617	42±1	265	70±9	5±1	15	6	40
HO08-706	41±1	256	69±1	4	11	11	100
HO08-709	40±1	260	72±3	8	11	8	73
HO08-711	44	279	78±4	8	10	4	40
HO08-719	44	.	.	.	3	.	.
HO08-728	44	267	59±1	7±1	10	10	100
HO95-988	39	260	77±1	5	35	22	63
HOCP00-930	40±1	260	74±2	8	24	21	88
HOCP00-950	41	258	72±1	8	57	51	89
HOCP01-517	39±1	267	89±4	3	10	4	40
HOCP01-523	41±1	263	76±1	4	20	7	35
HOCP02-618	38	260	77±1	4	16	13	81
HOCP02-623	40±1	260	76±2	3	20	17	85
HOCP04-838	40	254	72±2	5	36	34	94
HOCP04-847	40±1	263	77±1	8	19	12	63
HOCP05-902	42±1	263	82±5	8±1	14	4	29
HOCP08-726	44	267	62±2	6±1	7	5	71
HOCP08-729	44	.	.	.	3	.	.
HOCP85-845	40	265	81±3	4	30	19	63
HOCP91-552	41±1	252	60±1	4	17	17	100
HOCP92-618	38±1	265	82±4	3	15	6	40
HOCP92-624	40	248	62±1	8	32	32	100
HOCP92-648	41±1	267	65±7	8	13	6	46
HOCP95-951	41±1	258	70±2	6±1	13	11	85
HOCP96-540	40	265	78±1	3	59	48	81
HOCP97-609	40±1	270	82±3	5±2	12	3	25
HOL08-720	41±1	263	67±4	7	10	8	80
HOL08-723	44	272	63	8	11	10	91
L01-283	41	274	89±2	3	58	31	53
L01-299	41	254	71±1	3	58	39	67
L01-315	42	258	63±3	8	11	7	64
L03-371	42	.	.	.	14	.	.
L05-448	42±1	252	63±1	4	12	11	92
L05-457	42±1	250	60±1	8	23	23	100
L06-001	41±1	256	71±2	3	25	21	84
L06-038	39±1	252	69±1	4	11	10	91
L06-040	41±1	256	72±3	6±1	16	14	88
L07-057	41±1	248	60±1	4	21	12	57
L07-068	42	284	93	8	17	1	6



Table 4. Continue.

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L08-075	41±1	274	83	5	14	1	7
L08-077	42	.	.	.	15	.	.
L08-088	39±1	277	96±6	7	14	4	29
L08-090	42±1	248	57±1	5±1	12	12	100
L08-092	39±1	286	95	8	13	1	8
L09-096	44	274	70±7	6	4	2	50
L09-099	44	274	63	3	5	1	20
L09-103	41	270	81±1	4±1	4	3	75
L09-105	41	254	63	6	6	6	100
L09-106	37	250	64±1	5±1	3	3	100
L09-107	41	263	73±1	3	6	2	33
L09-112	43	270	69±6	5±1	11	7	64
L09-114	43±1	.	.	.	7	.	.
L09-117	41	.	.	.	4	.	.
L09-118	37	265	93±15	4	3	2	67
L09-119	37	.	.	.	5	.	.
L09-120	37	.	.	.	7	.	.
L09-121	43±1	267	74±6	5±1	8	5	63
L09-122	37	256	71±1	6±1	4	4	100
L09-123	42±1	260	64±2	5	9	9	100
L09-125	37	260	82±9	7	6	2	33
L09-130	37	263	89±8	4	5	4	80
L09-131	43	265	75±7	4	10	6	60
L94-426	38	258	79±3	5	21	14	67
L94-428	38	260	83±3	4±1	15	9	60
L94-432	41	265	84±3	3	14	11	79
L94-433	40	274	91±2	8	17	9	53
L97-128	41	256	68±1	7	48	47	98
L98-207	41±1	258	77±2	3	32	11	34
L98-209	39±1	258	68±3	8	15	7	47
L99-226	41	252	70±2	4	51	42	82
L99-233	42	252	61±1	4	59	46	78
LCP81-010	42±1	254	65±2	6	23	20	87
LCP85-384	41	258	74±1	3	56	37	66
LCP86-454	41	252	64±2	4	6	5	83
N-27	39	258	76±2	8	22	17	77
TUCCP77-042	40±1	263	79±1	7	19	15	79
US01-040	41±1	270	84±1	3	7	2	29

Table 5. Crosses and seed made in 2010 sorted by cross number.

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL10-001	HOCP92-624	10P1	2508	XL10-048	L09-105	HOCP91-552	0
XL10-002	L07-057	10P1	714	XL10-049	HOCP91-552	HOCP91-552	1458
XL10-003	L08-090	10P1	9392	XL10-050	HOCP04-838	10P2	819
XL10-004	HOCP92-624	L07-057	647	XL10-051	HOCP91-552	10P2	1219
XL10-005	L05-457	L07-057	301	XL10-052	L05-448	10P2	579
XL10-006	L07-057	L07-057	100	XL10-053	L99-233	10P2	2555
XL10-007	HOCP92-624	L08-090	552	XL10-054	L97-128	L09-122	0
XL10-008	L05-457	L08-090	745	XL10-055	L06-040	L09-122	20
XL10-009	L07-057	L08-090	163	XL10-056	L06-001	L09-122	0
XL10-010	L08-090	L08-090	1269	XL10-057	HO06-563	L09-122	492
XL10-011	HOCP92-624	L09-106	1787	XL10-058	L09-122	L09-122	37
XL10-012	L05-457	L09-106	572	XL10-059	LCP81-010	HO08-706	2012
XL10-013	L09-106	L09-106	673	XL10-060	L05-457	HO08-706	290
XL10-014	HOCP91-552	L05-448	2190	XL10-061	HOCP92-624	HO08-706	1454
XL10-015	HOCP92-624	L05-448	896	XL10-062	L99-226	HO08-706	702
XL10-016	L05-448	L05-448	17	XL10-063	HO08-706	HO08-706	0
XL10-017	HOCP91-552	L07-057	4268	XL10-064	LCP81-010	HOCP04-838	40
XL10-018	L99-226	L07-057	138	XL10-065	L99-226	HOCP04-838	86
XL10-019	L07-057	L07-057	11	XL10-066	L05-457	HOCP04-838	572
XL10-020	HOCP91-552	L99-233	27	XL10-067	HOCP92-624	HOCP04-838	153
XL10-021	HOCP92-624	L99-233	3646	XL10-068	HOCP04-838	HOCP04-838	349
XL10-022	L99-233	L99-233	133	XL10-069	L99-226	L99-233	1851
XL10-023	HOCP91-552	LCP86-454	947	XL10-070	L05-457	L99-233	352
XL10-024	HOCP92-624	LCP86-454	359	XL10-071	HOCP92-624	L99-233	1287
XL10-025	LCP86-454	LCP86-454	0	XL10-072	L99-233	L99-233	538
XL10-026	L09-106	HOCP04-838	493	XL10-073	L05-457	L99-226	1047
XL10-027	L09-105	HOCP04-838	0	XL10-074	HOCP92-624	L99-226	1255
XL10-028	HOCP92-624	HOCP04-838	1662	XL10-075	L99-226	L99-226	166
XL10-029	L99-233	HOCP04-838	324	XL10-076	L99-233	10P3	668
XL10-030	HOCP04-838	HOCP04-838	46	XL10-077	L99-226	10P3	102
XL10-031	L99-233	LCP86-454	36	XL10-078	L05-457	10P3	2155
XL10-032	HOCP92-624	LCP86-454	397	XL10-079	HOCP92-624	10P3	1610
XL10-033	L09-105	LCP86-454	0	XL10-080	L97-128	HO06-563	129
XL10-034	LCP86-454	LCP86-454	32	XL10-081	L98-209	HO06-563	108
XL10-035	HOCP92-624	L01-299	444	XL10-082	HOCP00-950	HO06-563	45
XL10-036	L09-105	L01-299	0	XL10-083	HO06-563	HO06-563	55
XL10-037	LCP81-010	L01-299	1350	XL10-084	HOCP00-950	L06-001	63
XL10-038	L01-299	L01-299	0	XL10-085	L99-226	L06-001	564
XL10-039	L09-105	L07-057	0	XL10-086	L97-128	L06-001	177
XL10-040	HOCP92-624	L07-057	1229	XL10-087	L06-001	L06-001	22
XL10-041	L99-233	L07-057	368	XL10-088	HOCP04-838	L06-038	32
XL10-042	L07-057	L07-057	42	XL10-089	HOCP00-950	L06-038	6
XL10-043	L09-105	L99-226	0	XL10-090	L99-226	L06-038	535
XL10-044	HOCP92-624	L99-226	2204	XL10-091	L06-038	L06-038	0
XL10-045	L99-226	L99-226	466	XL10-092	L09-122	L01-299	20
XL10-046	HOCP92-624	L05-448	711	XL10-093	N27	L01-299	43
XL10-047	HOCP92-625	10P1	240	XL10-094	L94-426	L01-299	31

Table 5. Continue.			
Cross	Female	Male	Seed
XL10-095	L01-299	L01-299	0
XL10-096	HOCPP04-838	LCP81-010	199
XL10-097	L06-040	LCP81-010	42
XL10-098	L98-207	LCP81-010	455
XL10-099	L01-315	LCP81-010	71
XL10-100	LCP81-010	LCP81-010	283
XL10-101	L97-128	HOCPP95-951	181
XL10-102	L98-207	HOCPP95-951	299
XL10-103	HOCPP95-951	HOCPP95-951	167
XL10-104	HO06-563	10P4	172
XL10-105	L01-299	10P4	52
XL10-106	L06-038	10P4	0
XL10-107	LCP81-010	10P4	587
XL10-108	LCP85-384	10P4	425
XL10-109	HOCPP00-950	L01-299	11
XL10-110	HOCPP05-902	L01-299	28
XL10-111	L09-125	L01-299	312
XL10-112	L94-428	L01-299	0
XL10-113	L94-426	L01-299	75
XL10-114	L99-226	L01-299	725
XL10-115	L01-299	L01-299	12
XL10-116	L97-128	L06-001	396
XL10-117	HOCPP00-930	L06-001	483
XL10-118	HOCPP00-950	L06-001	191
XL10-119	HOCPP04-838	L06-001	1176
XL10-120	N27	L06-001	5274
XL10-121	L06-001	L06-001	0
XL10-122	HO07-613	L06-038	28
XL10-123	HOCPP02-618	L06-038	0
XL10-124	L99-226	L06-038	2782
XL10-125	L06-040	L06-038	200
XL10-126	HOCPP00-930	L06-038	321
XL10-127	L06-038	L06-038	0
XL10-128	HOCPP00-950	LCP85-384	23
XL10-129	L01-299	LCP85-384	97
XL10-130	L09-123	LCP85-384	391
XL10-131	L94-428	LCP85-384	720
XL10-132	N27	LCP85-384	212
XL10-133	L97-128	LCP85-384	104
XL10-134	LCP85-384	LCP85-384	249
XL10-135	HO95-988	L99-226	67
XL10-136	HOCPP00-930	L99-226	452
XL10-137	HOCPP00-950	L99-226	2654
XL10-138	N27	L99-226	2483
XL10-139	L97-128	L99-226	542
XL10-140	HOCPP04-838	L99-226	449

Cross	Female	Male	Seed
XL10-141	L99-226	L99-226	364
XL10-142	HO95-988	HOCPP02-623	39
XL10-143	L01-299	HOCPP02-623	87
XL10-144	HOCPP04-838	HOCPP02-623	659
XL10-145	L01-315	HOCPP02-623	242
XL10-146	L97-128	HOCPP02-623	173
XL10-147	HOCPP02-623	HOCPP02-623	183
XL10-148	L97-128	HOCPP95-951	581
XL10-149	L98-209	HOCPP95-951	999
XL10-150	L06-040	HOCPP95-951	379
XL10-151	HOCPP04-838	HOCPP95-951	192
XL10-152	HOCPP95-951	HOCPP95-951	1119
XL10-153	N27	10P5	295
XL10-154	HOCPP02-623	10P5	1008
XL10-155	HOCPP04-838	10P5	736
XL10-156	L01-299	10P5	213
XL10-157	L06-040	10P5	159
XL10-158	L97-128	10P5	280
XL10-159	L98-209	10P5	750
XL10-160	HOCPP95-951	10P5	3421
XL10-161	L97-128	10P6	538
XL10-162	L06-038	10P6	15
XL10-163	L01-299	10P6	287
XL10-164	L09-123	10P6	614
XL10-165	L06-001	10P6	324
XL10-166	HO08-709	10P6	1072
XL10-167	L98-207	10P6	4072
XL10-168	L09-122	10P6	0
XL10-169	HOCPP95-951	10P6	1870
XL10-170	L99-226	10P6	187
XL10-171	HO07-613	L94-426	148
XL10-172	HOCPP00-930	L94-426	162
XL10-173	HOCPP00-950	L94-426	16
XL10-174	HOCPP04-847	L94-426	63
XL10-175	N27	L94-426	1958
XL10-176	L94-426	L94-426	53
XL10-177	HOCPP00-930	L98-207	702
XL10-178	HOCPP00-950	L98-207	101
XL10-179	HOCPP05-902	L98-207	415
XL10-180	HOL08-720	L98-207	31
XL10-181	L98-207	L98-207	297
XL10-182	HOCPP00-930	L99-226	340
XL10-183	HOCPP00-950	L99-226	29
XL10-184	HOCPP01-523	L99-226	524
XL10-185	L06-001	L99-226	720
XL10-186	TUCCP77-042	L99-226	13

Table 5. Continue			
Cross	Female	Male	Seed
XL10-187	L99-226	L99-226	523
XL10-188	HOCPP00-950	LCP85-384	70
XL10-189	HOCPP04-847	LCP85-384	291
XL10-190	L05-457	LCP85-384	78
XL10-191	TUCCP77-042	LCP85-384	56
XL10-192	N27	LCP85-384	214
XL10-193	LCP85-384	LCP85-384	298
XL10-194	HOCPP00-950	HO95-988	34
XL10-195	L05-457	HO95-988	83
XL10-196	L08-090	HO95-988	251
XL10-197	HOCPP00-930	HO95-988	761
XL10-198	HO95-988	HO95-988	13
XL10-199	HOCPP00-930	L01-299	88
XL10-200	HOCPP00-950	L01-299	9
XL10-201	HOCPP04-847	L01-299	128
XL10-202	L05-457	L01-299	210
XL10-203	L07-057	L01-299	9
XL10-204	L01-299	L01-299	20
XL10-205	HO06-563	10P7	262
XL10-206	HO95-988	10P7	732
XL10-207	HOCPP00-930	10P7	580
XL10-208	HOCPP00-950	10P7	460
XL10-209	HOCPP02-618	10P7	439
XL10-210	HOCPP04-838	10P7	75
XL10-211	L01-299	10P7	172
XL10-212	N27	10P7	1319
XL10-213	LCP85-384	10P7	240
XL10-214	HO06-563	10P8	39
XL10-215	HOCPP00-950	10P8	64
XL10-216	HOCPP02-618	10P8	29
XL10-217	L94-426	10P8	1215
XL10-218	LCP85-384	10P8	524
XL10-219	N27	10P8	2024
XL10-220	HO06-563	10P9	21
XL10-221	HO95-988	10P9	2294
XL10-222	HOCPP00-950	10P9	230
XL10-223	HOCPP02-618	10P9	127
XL10-224	L01-299	10P9	319
XL10-225	L09-123	10P9	687
XL10-226	L09-130	10P9	764
XL10-227	L94-426	10P9	0
XL10-228	L98-207	10P9	502
XL10-229	LCP85-384	10P9	294
XL10-230	LCP86-454	10P9	1360
XL10-231	HOCPP92-624	HOCPP96-540	118
XL10-232	HO07-617	HOCPP96-540	0

Cross	Female	Male	Seed
XL10-233	HOCPP00-950	HOCPP96-540	65
XL10-234	N27	HOCPP96-540	2415
XL10-235	HOCPP04-847	HOCPP96-540	198
XL10-236	HOCPP96-540	HOCPP96-540	713
XL10-237	L05-457	HO95-988	381
XL10-238	L06-040	HO95-988	213
XL10-239	L07-057	HO95-988	424
XL10-240	HOCPP92-624	HO95-988	1669
XL10-241	TUCCP77-042	HO95-988	0
XL10-242	HO95-988	HO95-988	38
XL10-243	HO08-709	L08-090	423
XL10-244	HOCPP00-950	L08-090	0
XL10-245	HOCPP04-847	L08-090	33
XL10-246	L06-040	L08-090	58
XL10-247	L07-057	L08-090	38
XL10-248	N27	L08-090	112
XL10-249	TUCCP77-042	L08-090	0
XL10-250	L08-090	L08-090	259
XL10-251	HOCPP04-847	HOCPP02-623	138
XL10-252	HOCPP91-552	HOCPP02-623	2233
XL10-253	HOCPP92-624	HOCPP02-623	210
XL10-254	L05-457	HOCPP02-623	245
XL10-255	L07-057	HOCPP02-623	32
XL10-256	HOCPP02-623	HOCPP02-623	0
XL10-257	HOCPP91-552	L09-107	1591
XL10-258	HOCPP92-624	L09-107	107
XL10-259	L05-457	L09-107	201
XL10-260	L09-107	L09-107	12
XL10-261	HOCPP96-540	10P10	10227
XL10-262	L01-299	10P10	658
XL10-263	L99-233	10P10	126
XL10-264	LCP85-384	10P10	272
XL10-265	HO95-988	10P10	0
XL10-266	HOCPP85-845	10P10	480
XL10-267	L94-432	10P10	157
XL10-268	L09-131	10P10	66
XL10-269	L09-118	10P10	59
XL10-270	HOCPP01-523	10P11	177
XL10-271	HOCPP02-618	10P11	283
XL10-272	HOCPP85-845	10P11	1194
XL10-273	HOCPP92-618	10P11	20
XL10-274	HOCPP92-624	10P11	1464
XL10-275	HOCPP96-540	10P11	8482
XL10-276	L01-299	10P11	1378
XL10-277	L08-090	10P11	1695
XL10-278	L94-428	10P11	433

Table 5. Continue.			
Cross	Female	Male	Seed
XL10-279	L94-432	10P11	375
XL10-280	L99-233	10P11	1251
XL10-281	HO05-961	L01-299	111
XL10-282	HOL08-720	L01-299	16
XL10-283	HO07-613	L01-299	147
XL10-284	TUCCP77-042	L01-299	0
XL10-285	HOCPP00-950	L01-299	0
XL10-286	HOCPP08-726	L01-299	0
XL10-287	L01-299	L01-299	0
XL10-288	HOL08-720	L06-001	241
XL10-289	HO08-706	L06-001	0
XL10-290	HOCPP00-950	L06-001	137
XL10-291	HOCPP92-648	L06-001	21
XL10-292	L98-209	L06-001	136
XL10-293	L06-001	L06-001	0
XL10-294	CP83-644	L08-090	25
XL10-295	HO08-728	L08-090	172
XL10-296	HOCPP00-950	L08-090	0
XL10-297	L97-128	L08-090	6
XL10-298	L98-209	L08-090	0
XL10-299	L08-090	L08-090	273
XL10-300	HOCPP04-847	HOCPP04-838	61
XL10-301	HOL08-720	HOCPP04-838	397
XL10-302	L09-121	HOCPP04-838	0
XL10-303	HOCPP00-950	HOCPP04-838	0
XL10-304	CP83-644	HOCPP04-838	32
XL10-305	N27	HOCPP04-838	115
XL10-306	HOCPP04-838	HOCPP04-838	179
XL10-307	L98-209	HOCPP01-523	0
XL10-308	LCP81-010	HOCPP01-523	504
XL10-309	CP83-644	HOCPP01-523	59
XL10-310	HO08-728	HOCPP01-523	52
XL10-311	HOL08-720	HOCPP01-523	460
XL10-312	L06-040	HOCPP01-523	73
XL10-313	HOCPP01-523	HOCPP01-523	15
XL10-314	HO08-728	HO95-988	0
XL10-315	HOCPP04-847	HO95-988	45
XL10-316	HOCPP85-845	HO95-988	30
XL10-317	HOCPP92-648	HO95-988	0
XL10-318	HOL08-720	HO95-988	161
XL10-319	L05-457	HO95-988	0
XL10-320	HO95-988	HO95-988	0
XL10-321	HOCPP85-845	L99-233	874
XL10-322	HOL08-720	L99-233	632
XL10-323	HO08-728	L99-233	78
XL10-324	L01-315	L99-233	388

Cross	Female	Male	Seed
XL10-325	L05-457	L99-233	483
XL10-326	L99-233	L99-233	392
XL10-327	LCP81-010	10P12	2441
XL10-328	HOCPP85-845	10P12	46
XL10-329	L01-315	10P12	2035
XL10-330	L05-457	10P12	265
XL10-331	HOCPP01-517	10P12	582
XL10-332	HOCPP02-618	10P12	413
XL10-333	HOCPP04-838	10P12	205
XL10-334	HOCPP91-552	10P12	2728
XL10-335	HOCPP96-540	10P12	4051
XL10-336	L09-123	10P12	811
XL10-337	L99-233	10P12	1421
XL10-338	HOCPP92-618	10P12	267
XL10-339	HOCPP02-618	10P13	33
XL10-340	HOCPP04-838	10P13	0
XL10-341	HOCPP85-845	10P13	303
XL10-342	HOCPP91-552	10P13	2054
XL10-343	HOCPP95-951	10P13	148
XL10-344	HOCPP96-540	10P13	1776
XL10-345	L01-315	10P13	90
XL10-346	L05-457	10P13	461
XL10-347	L09-123	10P13	36
XL10-348	L09-131	10P13	127
XL10-349	L94-432	10P13	596
XL10-350	L99-233	10P13	16
XL10-351	LCP81-010	10P13	0
XL10-352	TUCCP77-042	L06-040	0
XL10-353	HO07-613	L06-040	0
XL10-354	HO07-617	L06-040	0
XL10-355	HO08-728	L06-040	0
XL10-356	CP83-644	L06-040	0
XL10-357	L06-040	L06-040	0
XL10-358	LCP81-010	L09-103	0
XL10-359	HO07-613	L09-103	0
XL10-360	CP83-644	L09-103	0
XL10-361	L09-103	L09-103	0
XL10-362	N27	L94-428	0
XL10-363	HO08-709	L94-428	0
XL10-364	L05-457	L94-428	0
XL10-365	L94-428	L94-428	0
XL10-366	LCP81-010	L99-226	0
XL10-367	TUCCP77-042	L99-226	0
XL10-368	HO08-709	L99-226	0
XL10-369	HOCPP92-624	L99-226	11
XL10-370	L99-226	L99-226	0

Table 5. Continue.			
Cross	Female	Male	Seed
XL10-371	LCP81-010	HOCP08-726	17
XL10-372	L01-315	HOCP08-726	0
XL10-373	L94-426	HOCP08-726	0
XL10-374	HOCP08-726	HOCP08-726	0
XL10-375	HOCP96-540	10P14	1207
XL10-376	CP83-644	10P14	0
XL10-377	L99-233	10P14	113
XL10-378	LCP81-010	10P14	489
XL10-379	HOCP85-845	10P14	317
XL10-380	HOCP92-618	10P14	31
XL10-381	L05-448	10P14	82
XL10-382	L09-112	10P14	131
XL10-383	L94-432	10P14	233
XL10-384	TUCCP77-042	10P14	6
XL10-385	US01-040	10P14	0
XL10-386	HOCP91-552	10P14	661
XL10-387	L99-233	10P15	20
XL10-388	LCP85-384	10P15	0
XL10-389	CP83-644	10P15	0
XL10-390	HOCP02-623	10P15	49
XL10-391	HOCP85-845	10P15	180
XL10-392	HOCP92-618	10P15	8
XL10-393	HOCP96-540	10P15	1782
XL10-394	L05-448	10P15	92
XL10-395	L06-040	10P15	131
XL10-396	L09-112	10P15	8
XL10-397	L94-426	10P15	0
XL10-398	L94-432	10P15	492
XL10-399	LCP85-384	HOCP00-950	0
XL10-400	HOCP00-950	LCP85-384	0
XL10-401	L97-128	L01-299	0
XL10-402	L01-299	L97-128	0
XL10-403	CP83-644	HO08-706	0
XL10-404	HOL08-723	HO08-706	0
XL10-405	HO08-706	HO08-706	88
XL10-406	HOCP92-648	L09-131	0
XL10-407	N27	L09-131	87
XL10-408	L09-131	L09-131	0
XL10-409	HO95-988	10P16	61
XL10-410	HOCP04-838	10P16	199
XL10-411	HOCP95-951	10P16	67
XL10-412	HOCP96-540	10P16	603
XL10-413	L01-299	10P16	59
XL10-414	L05-448	10P16	0
XL10-415	L08-090	10P16	417
XL10-416	L99-226	10P16	235

Cross	Female	Male	Seed
XL10-417	L99-233	10P16	141
XL10-418	L97-128	L09-112	0
XL10-419	HO08-709	L09-112	0
XL10-420	HOCP00-930	L09-112	7
XL10-421	HOCP00-950	L09-112	0
XL10-422	HOCP04-847	L09-112	0
XL10-423	L09-112	L09-112	0
XL10-424	L97-128	L09-121	0
XL10-425	HO08-709	L09-121	0
XL10-426	HOL08-723	L09-121	0
XL10-427	L09-103	L09-121	10
XL10-428	L09-121	L09-121	0
XL10-429	HOCP08-726	HOCP85-845	0
XL10-430	L97-128	HOCP85-845	0
XL10-431	HOL08-723	HOCP85-845	0
XL10-432	L09-096	HOCP85-845	0
XL10-433	LCP81-010	HOCP85-845	0
XL10-434	HOCP85-845	HOCP85-845	0
XL10-435	HO08-709	L94-432	338
XL10-436	HOL08-723	L94-432	81
XL10-437	TUCCP77-042	L94-432	0
XL10-438	HO08-728	L94-432	173
XL10-439	L94-432	L94-432	9
XL10-440	HOL08-723	HO07-617	0
XL10-441	L97-128	HO07-617	0
XL10-442	HO08-728	HO07-617	0
XL10-443	HOCP00-950	HO07-617	0
XL10-444	CP83-644	HO07-617	251
XL10-445	LCP81-010	HO07-617	20
XL10-446	HO07-617	HO07-617	0
XL10-447	L97-128	HO06-530	0
XL10-448	HO08-728	HO06-530	0
XL10-449	CP83-644	HO06-530	0
XL10-450	HOL08-723	HO06-530	0
XL10-451	N27	HO06-530	265
XL10-452	LCP81-010	HO06-530	536
XL10-453	HO06-530	HO06-530	0
XL10-454	LCP81-010	L01-283	0
XL10-455	CP83-644	L01-283	0
XL10-456	HOCP92-648	L01-283	0
XL10-457	L01-283	L01-283	0
XL10-458	L99-226	10P17	193
XL10-459	LCP85-384	10P17	1241
XL10-460	HOCP96-540	10P17	531
XL10-461	L01-299	10P17	616
XL10-462	L05-448	10P17	61

Table 5. Continue.			
Cross	Female	Male	Seed
XL10-463	L06-001	10P17	291
XL10-464	HOCP00-930	10P17	16
XL10-465	L97-128	10P17	0
XL10-466	HOCP04-838	10P17	64
XL10-467	HOCP00-930	10P17	93
XL10-468	L99-233	10P17	98
XL10-469	L09-099	10P17	378
XL10-470	L99-226	10P18	13
XL10-471	L99-233	10P18	61
XL10-472	LCP85-384	10P18	570
XL10-473	HOCP00-930	10P18	1376
XL10-474	HOCP04-838	10P18	41
XL10-475	HOCP92-618	10P18	10
XL10-476	HOCP95-951	10P18	86
XL10-477	HOCP96-540	10P18	766
XL10-478	L01-299	10P18	0
XL10-479	L05-448	10P18	41
XL10-480	L06-001	10P18	15
XL10-481	HOL08-723	10P18	267
XL10-482	L94-428	10P18	0
XL10-483	L94-433	10P19	9
XL10-484	L97-128	10P19	186
XL10-485	L99-226	10P19	0
XL10-486	LCP85-384	10P19	632
XL10-487	HO07-613	10P19	98
XL10-488			0
XL10-489	HOCP04-838	10P19	267
XL10-490	HOCP96-540	10P19	832
XL10-491	L01-299	10P19	18
XL10-492	L05-448	10P19	0
XL10-493			0
XL10-494	HOCP00-950	HO07-613	22
XL10-495	HOCP07-617	HO07-613	0
XL10-496	HOL08-723	HO07-613	126
XL10-497	L08-088	HO07-613	77
XL10-498	L94-433	HO07-613	40
XL10-499	LCP81-010	HO07-613	1439
XL10-500	N27	HO07-613	41
XL10-501	HO07-613	HO07-613	67
XL10-502	L94-433	HO08-706	27
XL10-503	LCP81-010	HO08-706	1997
XL10-504	N27	HO08-706	1630
XL10-505	HO08-706	HO08-706	7
XL10-506	L99-233	HOCP96-540	58
XL10-507	L99-226	HOCP96-540	0
XL10-508	HOCP01-517	HOCP96-540	12

Cross	Female	Male	Seed
XL10-509	HOCP00-950	HOCP96-540	3
XL10-510	L09-131	HOCP96-540	42
XL10-511	HO06-530	HO06-563	12
XL10-512	HO08-709	HO06-563	26
XL10-513	HOCP04-838	HO06-563	0
XL10-514	L01-283	HO06-563	0
XL10-515	HO06-563	HO06-563	70
XL10-516	HOCP04-838	L94-428	0
XL10-517	L01-283	L94-428	0
XL10-518	L06-001	L94-428	0
XL10-519	L06-040	L94-428	0
XL10-520	L94-433	L94-428	0
XL10-521	L94-428	L94-428	14
XL10-522	HO06-563	10P20	241
XL10-523	HOCP04-838	10P20	0
XL10-524	L01-283	10P20	86
XL10-525	L06-001	10P20	92
XL10-526	L99-226	10P20	46
XL10-527	LCP85-384	10P20	2096
XL10-528	HO95-988	HO06-530	0
XL10-529	HOCP00-950	HO06-530	0
XL10-530	HOCP04-847	HO06-530	9
XL10-531	CP83-644	HO06-530	12
XL10-532	HO06-530	HO06-530	67
XL10-533	HO06-563	HO08-706	95
XL10-534	HOCP00-930	HO08-706	134
XL10-535	HOCP00-950	HO08-706	5
XL10-536	HOCP08-726	HO08-706	18
XL10-537	HOCP97-609	HO08-706	143
XL10-538	L94-433	HO08-706	72
XL10-539	HO08-706	HO08-706	30
XL10-540	HOCP00-950	10P21	136
XL10-541	HOCP01-517	10P21	195
XL10-542	HOCP85-845	10P21	183
XL10-543	HOCP92-624	10P21	606
XL10-544	L09-112	10P21	1646
XL10-545	L99-226	10P21	242
XL10-546	LCP85-384	10P21	47
XL10-547	HO07-613	10P21	321
XL10-548	HOCP00-930	10P22	124
XL10-549	HOCP02-623	10P22	47
XL10-550	HOCP96-540	10P22	3825
XL10-551	L01-283	10P22	106
XL10-552	L06-001	10P22	17
XL10-553	L98-207	10P22	86
XL10-554	HOCP02-623	10P23	0

Table 5. Continue.			
Cross	Female	Male	Seed
XL10-555	HOCP96-540	10P23	1655
XL10-556	L01-283	10P23	0
XL10-557	L01-299	10P23	15
XL10-558	L94-433	10P23	0
XL10-559	L06-001	10P23	0
XL10-560	HO05-961	L01-283	0
XL10-561	HO95-988	L01-283	32
XL10-562	HOCP00-950	L01-283	11
XL10-563	L94-426	L01-283	0
XL10-564	L01-283	L01-283	20
XL10-565	HO06-563	10P24	424
XL10-566	HOCP00-950	10P24	209
XL10-567	LCP85-384	10P24	875
XL10-568	L06-001	10P24	39
XL10-569	HOCP04-838	10P24	0
XL10-570	HOCP02-623	10P24	914
XL10-571	HOCP00-930	10P25	179
XL10-572	HOCP02-623	10P25	86
XL10-573	HOCP96-540	10P25	757
XL10-574	L01-283	10P25	8
XL10-575	L06-001	10P25	27
XL10-576	CP83-644	L99-233	651
XL10-577	HOCP00-950	L99-233	0
XL10-578	HOCP92-648	L99-233	394
XL10-579	L07-068	L99-233	216
XL10-580	HOCP00-930	HOCP01-523	30
XL10-581	HOCP05-902	HOCP01-523	0
XL10-582	HOCP97-609	HOCP01-523	13
XL10-583	HOCP01-523	HOCP01-523	0
XL10-584	CP83-644	HOCP96-540	287
XL10-585	HO95-988	HOCP96-540	62
XL10-586	HOCP00-950	HOCP96-540	0
XL10-587			0
XL10-588	CP83-644	L01-299	83
XL10-589	HO95-988	L01-299	23
XL10-590	HOCP00-950	L01-299	0
XL10-591	HO06-530	10P26	1542
XL10-592	HO07-613	10P26	41
XL10-593	HO07-617	10P26	0
XL10-594	HO01-517	10P26	139
XL10-595	HOCP85-845	10P26	213
XL10-596	L09-121	10P26	18
XL10-597	L99-226	10P26	29
XL10-598	HOCP85-845	10P27	43
XL10-599	HOCP96-540	10P27	1310
XL10-600	L94-432	10P27	766

Cross	Female	Male	Seed
XL10-601	L94-433	10P27	0
XL10-602	L98-207	10P27	581
XL10-603	LCP85-384	10P27	328
XL10-604	TUCCP77-042	10P27	84
XL10-605	HOCP00-950	10P27	218
XL10-606	HOCP00-950	L01-283	0
XL10-607	L08-088	L01-283	13
XL10-608	L08-092	L01-283	0
XL10-609	L09-112	L01-283	76
XL10-610	L09-121	L01-283	196
XL10-611	L01-283	L01-283	371
XL10-612	CP83-644	L94-428	1302
XL10-613	HOCP00-930	L94-428	997
XL10-614	HOCP05-902	L94-428	114
XL10-615	L94-428	L94-428	1369
XL10-616	HO07-613	10P28	187
XL10-617	HOCP85-845	10P28	964
XL10-618	HOCP92-618	10P28	97
XL10-619	L94-432	10P28	1754
XL10-620	L01-283	10P28	292
XL10-621	LCP85-384	10P28	249
XL10-622	L94-433	L99-226	45
XL10-623	HO08-711	L99-226	65
XL10-624	L09-096	L99-226	171
XL10-625	HO06-537	HOCP85-845	17
XL10-626	CP83-644	HOCP85-845	845
XL10-627	HOCP85-845	HOCP85-845	0
XL10-628	TUCCP77-042	10P29	198
XL10-629	L01-283	10P29	2685
XL10-630	HOCP02-623	10P29	1211
XL10-631	HOCP96-540	10P29	2190
XL10-632	L06-001	10P29	190
XL10-633	HO95-988	10P30	213
XL10-634	HOCP01-517	10P30	95
XL10-635	L01-283	10P30	895
XL10-636	L01-299	10P30	25
XL10-637	TUCCP77-042	10P30	0
XL10-638	HO95-988	L06-040	0
XL10-639	L08-088	L06-040	0
XL10-640	L06-040	L06-040	0
XL10-641	HO08-711	HOCP85-845	0
XL10-642	HOCP00-930	HOCP85-845	0
XL10-643	HOCP85-845	HOCP85-845	0
XL10-644	US01-040	10P31	476
XL10-645	LCP85-384	10P31	1092
XL10-646	L94-432	10P31	1956



Table 5. Continue.

Cross	Female	Male	Seed
XL10-647	L09-118	10P31	1965
XL10-648	TUCCP77-042	10P31	426
XL10-649	HO08-711	10P32	0
XL10-650	HOCP04-838	10P32	261
XL10-651	L01-283	10P32	1806
XL10-652	LCP85-384	10P32	751
XL10-653	L09-131	10P33	0
XL10-654	L94-433	10P33	0

Cross	Female	Male	Seed
XL10-655	HO07-617	10P33	0
XL10-656	L01-283	10P33	53
XL10-657	HOCP96-540	10P33	0
XL10-658	L08-088	10P34	94
XL10-659	L09-130	10P34	339
XL10-660	HOCP05-902	10P34	1505
XL10-661	L01-283	10P34	430
XL10-662	HOCP96-540	10P34	22

## **SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2010**

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### *SUMMARY*

In the selection phase of the LSU AgCenter's Sugarcane Variety Development Program, superior clones are advanced through the 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 76,095 seedlings from 215 crosses were planted in the field in the spring of 2010. The majority of these seedlings are progeny of biparental crosses among commercial and elite experimental varieties. In the fall of 2010, family selection was practiced on the 39,329 stubble seedlings surviving the winter. This selection resulted in the planting of 1,730 first-line trial plots. At the same time, superior clones were also selected and advanced through subsequent stages (388 to second line trials, 119 to the increase stage). Assignments of permanent "L10" numbers were given to the 34 best clones of the 2005 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 single stool, 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 76,095 seedlings from 215 crosses of the 2009 crossing series were planted to the field in the spring of 2010 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2010, individual selection was practiced on the 39,329 stubble single stools of the 2008 crossing series that survived the winter. The 1,730 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 1,836 first-line trial plots of the 2007 crossing series were rated for cane yield and pest resistance in August of 2010 (Table 3). After screening for cane yield rating, acceptable clones were further evaluated for pest resistance (diseases and borer injury) stalk quality, and Brix (Table 3). This second stage of advancement was concluded with the planting of 388 clones in single row, 16-foot, second line trials plots.

Stalk counts were made on the 341 plant-cane second line trial plots of the 2006 crossing series in August 2010. Based on these counts and sucrose lab data collected in 2009, 119 clones were planted in two, single row, 16-foot plots representing the increase stage of the program (Table 4). One replication was planted in light soil and the other in heavy soil. These clones will be candidates for assignment in 2011. Of the 157 candidates from the first stubble crop of the second line trial plots, the best 34 clones from the 2005 crossing series were assigned permanent AL10" numbers (Table 5). These newly assigned AL10" varieties were then planted in replicated nursery trials at three on station locations (Sugar Research Station, Iberia Research Station, USDA-ARS Ardoyne Farm).

The advancement summary of clones from crosses made in 2005 through 2009 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 2010 by the Louisiana, "L," Sugarcane Variety Development Program's personnel.

Crossing series	Crosses		Plants transplanted	Over-wintered plants	Advanced to			
	Progeny test	Selection program			1st line	2nd line	Increase	On-station Nurseries (L10 Assignments)
	----- number of clones -----							
X05	60	128	79395	50655	2000	334	157	34
X06	120	178	84307	51867	2623	341	119	
X07	70	132	81474	70878	1836	388		
X08	--	153	76213	39329	1730			
X09	60	215	76095					

Table 2. Dates of seedling and line trials planted or harvested in 2010.

Crossing Series	Test	Crop	Date Planted	Date Harvested
X09	Seedlings	Planted	4/14 – 4/21	
X09	Progeny Test	Planted	4/20	
X08	Seedlings	First Stubble	4/15 - 4/23	
X08	First Line Trials	Planted	9/17/10	
X07	First Line Trials	Plant-cane	9/10/09	
X06	First Line Trials	First Stubble	10/09- 10/15/08	11/02/10
X07	Second Line Trials	Planted	9/23/10	
X06	Second Line Trials	Plant-cane	10/1/09	11/30/10
X05	Second Line Trials	First Stubble	10/21/08	10/11/10
X04	Second Line Trials	Second Stubble	9/20/07	10/20/10
X06	Light Soil Increase	Planted	9/23/10	
X05	Light Soil Increase	Plant-cane	10/21/09	12/2/10
X04	Light Soil Increase	First Stubble	10/02/08	11/5/10
X03	Light Soil Increase	Second Stubble	9/21/07	10/6/10
X06	Heavy Soil Increase	Planted	9/23/10	
X04	Heavy Soil Increase	First Stubble	10/02/08	11/5/10
X03	Heavy Soil Increase	Second Stubble	9/21/07	10/6/10

Table 3. Numbers of experimental clones dropped for identified faults in the 2007 crossing series first-line trials.

Trait	Fault	
	Frequency	Percent
----- 1836 clones enter first round of evaluation -----		
Initial Selection (Rating)	1112	60.6
----- 724 clones enter second round of evaluation -----		
Pith / Tube	75	4.1
Short	10	0.5
Smut	19	1.0
Rust	7	0.4
Lodge	112	6.1
Other	13	0.7
----- 236 clones dropped -----		
-----488 clones enter third round of evaluation -----		
Brix	100	5.4
Clones advanced	388	21.1

Table 4. Number of experimental clones dropped for identified faults in the 2006 crossing series of the plant-cane second line trial prior to advancement to the increase stage.

Trait	Fault	
	Frequency	Percent
----- 341 clones enter first round of evaluation -----		
Stalk count <75 per plot & observations	141	41.3
Lodged	32	9.3
Pith / Tube	34	10.0
Smut	12	3.5
Diameter	2	0.5
Short	2	0.5
Broken	3	0.8
----- 222 clones dropped -----		
Clones advanced to Increase stage	119	34.1

Table 5. Yield data of the 2010 “L” assignments made in the first- stubble second line trials.

Variety	Female	Male	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
HOC96-540	LCP86-454	LCP85-384	7150	37.8	189	2.17	35393	11.1
L99-226	CP89-846	LCP81-030	12337	56.0	218	2.71	40838	11.3
L01-283	L93-365	LCP85-384	8237	39.6	208	2.18	36300	11.8
L10-132	HOC96-540	L99-233	10044	47.0	214	2.05	45829	13.0
L10-133	HOC02-618	L99-226	8231	39.4	209	1.83	43106	13.6
L10-134	HOC96-540	L99-233	8207	41.8	196	2.12	39476	11.3
L10-135	L94-433	05P3	8606	46.6	184	2.57	36300	11.0
L10-136	US79-010	L99-226	6561	31.4	209	1.52	41291	12.8
L10-137	HOC92-624	HOC91-552	11750	51.0	231	2.39	42653	12.5
L10-138	HOC92-624	L99-233	12533	63.0	199	2.50	50366	13.2
L10-139	HOC92-624	L99-233	7027	37.8	186	1.79	42199	12.4
L10-140	L97-128	HOC96-540	6333	35.1	181	2.06	34031	12.4
L10-141	L91-281	HOC96-540	8158	41.1	199	2.13	38569	12.4
L10-142	HOC92-624	LCP85-384	7835	36.7	213	2.49	29494	12.4
L10-143	HOC02-620	L94-426	7909	41.7	189	1.84	45375	11.7
L10-144	HOC92-624	L99-233	8875	45.5	195	1.70	53543	10.6
L10-145	HOC92-624	LCP85-384	9647	47.7	202	1.91	49913	12.6
L10-146	LCP81-010	L04-410	8431	37.2	227	1.93	38569	10.2
L10-147	LCP81-010	L04-410	8996	43.2	208	2.07	41745	11.3
L10-148	L97-128	HOC96-540	12098	54.4	222	2.24	48551	12.3
L10-149	L97-128	HOC96-540	7461	35.9	208	1.32	54450	13.4
L10-150	HOC02-618	L99-233	6406	34.0	188	1.85	36754	12.5
L10-151	US79-010	L99-226	7762	40.5	192	1.96	41291	12.7
L10-152	HOC92-624	L99-226	6789	32.7	207	1.85	35393	13.6
L10-154	LCP81-010	LCP85-384	7648	37.9	202	1.67	45375	13.5
L10-155	HOC02-618	L99-233	7075	38.8	182	1.84	42199	11.5
L10-156	L97-128	L99-233	11998	48.9	245	2.20	44468	12.7
L10-157	HOC92-648	L99-233	10206	46.4	220	2.30	40384	10.7
L10-158	CP83-644	L02-316	9035	42.2	214	2.00	42199	12.2
L10-159	US79-010	HOC96-540	9382	46.0	204	2.09	44014	12.6
L10-160	HOC96-561	L99-233	10556	47.5	222	1.54	61710	12.9
L10-161	HOC02-618	L99-233	7117	33.6	212	1.85	36300	13.6
L10-162	L91-281	HOC96-540	8507	41.3	206	1.98	41745	11.7
L10-163	L97-128	L99-226	8556	36.3	236	2.05	35393	13.2
L10-164	L97-128	HOC96-540	10663	59.0	181	2.26	52181	11.4
L10-165	N-27	HOC96-540	7978	43.8	182	1.93	45375	11.8
L10-166	N-27	HOC96-540	8296	45.5	182	2.28	39930	11.2

Table 6. Advancement summary of crosses in the 2005 through 2008 crossing series.

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
2005 Crossing Series										
CP79-348	L98-207	237	2	50	0	29	0	31	0	41
CP83-644	L02-316	930	15	51	3	64	2	67	1	87
HO91-572	HOC91-572	723	0	24	0	29	0	31	0	41
HO91-572	HOC91-572	464	0	24	0	29	0	31	0	41
HO95-988	HOC95-988	122	7	82	1	77	1	90	0	41
HO95-988	HOC95-988	665	0	24	0	29	0	31	0	41
HOC90-930	05P4	237	0	24	0	29	0	31	0	41
HOC90-930	HOC90-930	974	0	24	0	29	0	31	0	41
HOC90-930	HOC90-930	418	0	24	0	29	0	31	0	41
HOC90-930	L99-226	146	0	24	0	29	0	31	0	41
HOC90-930	LCP82-089	217	0	24	0	29	0	31	0	41
HOC90-950	HOC90-950	124	0	24	0	29	0	31	0	41
HOC92-618	L04-425	180	0	24	0	29	0	31	0	41
HOC92-618	L99-226	910	78	92	16	92	5	82	1	89
HOC92-618	L99-233	379	76	99	30	99	12	99	3	97
HOC92-620	L94-426	110	8	88	3	97	1	92	1	99
HOC92-623	HOC92-623	173	0	24	0	29	0	31	0	41
HOC92-652	HOC92-610	68	0	24	0	29	0	31	0	41
HOC93-757	L04-425	141	0	24	0	29	0	31	0	41
HOC95-845	L02-328	477	13	60	3	73	3	85	0	41
HOC98-846	HOC98-846	153	10	85	4	96	2	95	0	41
HOC98-846	L02-316	330	0	24	0	29	0	31	0	41
HOC98-846	L94-426	444	16	69	1	60	0	31	0	41
HOC91-552	05P1	798	1	48	0	29	0	31	0	41
HOC91-552	05P2	374	12	65	2	71	2	80	0	41
HOC91-552	05P3	253	0	24	0	29	0	31	0	41
HOC91-552	L99-233	1021	0	24	0	29	0	31	0	41
HOC92-624	HOC92-610	657	19	63	0	29	0	31	0	41
HOC92-624	HOC92-623	537	0	24	0	29	0	31	0	41
HOC92-624	HOC98-846	718	0	24	0	29	0	31	0	41
HOC92-624	HOC91-552	2620	68	58	6	60	2	64	1	82
HOC92-624	HOC96-540	1633	58	69	2	58	1	62	0	41
HOC92-624	HOC98-741	316	17	81	2	73	1	72	0	41
HOC92-624	L02-316	214	0	24	0	29	0	31	0	41
HOC92-624	L99-226	465	39	91	11	95	2	75	1	92
HOC92-624	L99-233	1060	45	75	9	78	4	74	1	85
HOC92-624	L99-233	2199	89	72	20	80	6	70	2	84
HOC92-624	LCP85-384	401	9	55	0	29	0	31	0	41
HOC92-624	LCP85-384	1844	94	79	22	85	13	88	2	87
HOC92-624	LCP85-384	221	6	60	0	29	0	31	0	41
HOC92-624	US01-040	159	0	24	0	29	0	31	0	41

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOC92-648	HOC92-623	168	0	24	0	29	0	31	0	41
HOC92-648	L99-233	236	40	97	4	91	4	97	1	96
HOC92-648	LCP85-384	216	4	52	2	81	1	78	0	41
HOC93-767	L99-226	111	3	60	1	79	0	31	0	41
HOC95-951	L99-233	142	27	98	8	98	0	31	0	41
HOC95-951	L99-233	379	26	86	6	89	5	96	0	41
HOC96-540	03P18	127	0	24	0	29	0	31	0	41
HOC96-540	HOC98-846	1006	0	24	0	29	0	31	0	41
HOC96-540	L99-226	1565	0	24	0	29	0	31	0	41
HOC96-540	L99-233	1116	30	60	3	62	2	67	2	91
HOC96-561	HOC92-652	204	0	24	0	29	0	31	0	41
HOC96-561	HOC98-781	403	0	24	0	29	0	31	0	41
HOC96-561	L99-226	204	0	24	0	29	0	31	0	41
HOC96-561	L99-233	449	28	84	3	75	3	87	1	93
HOC97-609	LCP85-384	674	0	24	0	29	0	31	0	41
L00-270	HOC97-609	19	0	24	0	29	0	31	0	41
L01-299	HOC98-846	184	13	87	0	29	0	31	0	41
L01-299	HOC91-552	228	12	80	0	29	0	31	0	41
L01-299	HOC96-540	203	21	95	1	71	1	79	0	41
L02-316	HOC96-540	434	0	24	0	29	0	31	0	41
L02-316	HOC98-781	170	0	24	0	29	0	31	0	41
L02-316	L04-410	77	0	24	0	29	0	31	0	41
L02-316	L99-226	121	0	24	0	29	0	31	0	41
L03-387	L99-226	1589	53	67	5	63	1	63	0	41
L03-387	US01-040	183	4	55	1	72	1	82	0	41
L03-396	HOC96-540	128	0	24	0	29	0	31	0	41
L03-396	L99-233	159	12	89	4	96	1	85	0	41
L04-425	HOC92-610	630	0	24	0	29	0	31	0	41
L91-281	HOC96-540	654	26	72	5	76	3	76	2	95
L91-281	L01-299	245	20	90	0	29	0	31	0	41
L92-312	L99-226	362	0	24	0	29	0	31	0	41
L94-433	05P3	450	42	93	2	68	1	68	1	92
L94-433	HOC92-618	735	0	24	0	29	0	31	0	41
L94-433	HOC96-540	291	0	24	0	29	0	31	0	41
L94-433	L99-226	1368	0	24	0	29	0	31	0	41
L94-433	L99-233	206	9	77	2	82	2	94	0	41
L97-128	HOC92-618	145	0	24	0	29	0	31	0	41
L97-128	HOC92-652	101	0	24	0	29	0	31	0	41
L97-128	HOC98-846	243	18	89	4	90	2	91	0	41
L97-128	HOC91-552	205	9	77	3	89	1	78	0	41
L97-128	HOC96-540	542	0	24	0	29	0	31	0	41



Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L97-128	HOCP96-540	485	55	96	11	93	9	98	4	98
L97-128	L02-316	214	0	24	0	29	0	31	0	41
L97-128	L03-374	418	0	24	0	29	0	31	0	41
L97-128	L04-410	534	0	24	0	29	0	31	0	41
L97-128	L99-226	1063	107	94	25	94	10	93	1	85
L97-128	L99-226	868	37	76	0	29	0	31	0	41
L97-128	L99-233	1693	147	92	17	83	6	73	1	83
L97-128	L99-233	1050	42	72	5	70	3	71	0	41
L97-128	LCP82-089	88	0	24	0	29	0	31	0	41
L97-128	US01-040	217	9	75	1	69	1	77	0	41
L98-209	HOCP91-552	735	14	52	3	64	2	69	0	41
L98-209	LCP82-089	187	0	24	0	29	0	31	0	41
L99-226	05P2	240	28	96	1	65	1	75	0	41
L99-226	HOCP96-540	615	0	24	0	29	0	31	0	41
L99-226	L94-426	312	0	24	0	29	0	31	0	41
L99-233	05P1	293	0	24	0	29	0	31	0	41
L99-233	05P3	337	8	57	0	29	0	31	0	41
LCP81-010	HOCP03-757	656	22	68	1	59	0	31	0	41
LCP81-010	HOCP89-846	273	1	49	0	29	0	31	0	41
LCP81-010	HOCP91-552	346	0	24	0	29	0	31	0	41
LCP81-010	L03-374	434	0	24	0	29	0	31	0	41
LCP81-010	L04-410	1148	31	60	5	68	2	66	2	90
LCP81-010	L98-207	1768	59	67	12	75	5	71	0	41
LCP81-010	L99-233	2545	83	67	6	61	3	65	0	41
LCP81-010	LCP85-384	705	41	83	9	85	5	89	1	89
LCP85-384	HOCP01-517	456	9	53	0	29	0	31	0	41
LCP85-384	HOCP02-610	264	0	24	0	29	0	31	0	41
LCP85-384	HOCP03-757	102	0	24	0	29	0	31	0	41
LCP85-384	L99-226	277	9	65	3	84	2	89	0	41
LCP85-384	LCP82-089	1381	0	24	0	29	0	31	0	41
LCP86-454	LCP85-384	483	0	24	0	29	0	31	0	41
N-27	HO95-988	1536	0	24	0	29	0	31	0	41
N-27	HOCP96-540	347	14	72	3	78	2	84	2	96
N-27	LCP85-384	420	17	72	8	92	6	96	0	41
TUCCP77-042	L99-226	228	11	78	3	87	2	92	0	41
TUCCP77-042	POLY	462	6	50	6	86	3	86	0	41
US01-039	LCP85-384	469	14	64	2	66	0	31	0	41
US01-040	L99-226	935	23	57	4	66	1	64	0	41
US01-040	US01-040	342	0	24	0	29	0	31	0	41
US02-096	HOCP01-553	452	0	24	0	29	0	31	0	41
US79-010	HOCP96-540	920	53	83	9	82	5	81	1	88

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
US79-010	L99-226	721	48	85	10	88	4	83	2	94
US99-002	HOC99-540	242	5	54	0	29	0	31	0	41
US99-004	L04-425	659	0	24	0	29	0	31	0	41
US99-004	L99-226	784	0	24	0	29	0	31	0	41
<b>2006 Crossing Series</b>										
CP83-644	HOC94-836	239	0	31	0	33	0	37	.	.
CP83-644	HOC99-846	211	20	80	2	80	1	86	.	.
CP83-644	LCP81-010	210	0	31	0	33	0	37	.	.
HO95-988	L99-233	729	56	71	5	77	1	74	.	.
HO95-988	LCP85-384	379	0	31	0	33	0	37	.	.
HOC90-905	HOC94-836	981	0	31	0	33	0	37	.	.
HOC90-930	L04-408	474	44	78	3	76	2	83	.	.
HOC90-930	L99-233	476	47	83	3	76	1	77	.	.
HOC90-933	06P3	447	0	31	0	33	0	37	.	.
HOC90-933	L04-410	433	49	89	5	83	5	97	.	.
HOC90-933	L92-312	215	0	31	0	33	0	37	.	.
HOC90-950	HOC90-930	952	34	63	1	66	0	37	.	.
HOC90-950	HOC91-523	377	36	80	5	84	4	97	.	.
HOC90-950	HOC94-836	166	0	31	0	33	0	37	.	.
HOC90-950	HOC91-552	300	24	73	2	76	0	37	.	.
HOC90-950	L99-226	82	18	99	4	98	1	98	.	.
HOC90-950	LCP85-384	157	24	98	3	91	1	89	.	.
HOC90-950	LCP85-384	193	21	87	1	74	0	37	.	.
HOC91-523	L99-233	215	28	95	2	80	0	37	.	.
HOC91-561	L99-233	196	0	31	0	33	0	37	.	.
HOC91-827	LCP85-384	229	0	31	0	33	0	37	.	.
HOC92-610	L04-410	1217	0	31	0	33	0	37	.	.
HOC92-618	HOC99-825	222	0	31	0	33	0	37	.	.
HOC92-618	L99-226	408	0	31	0	33	0	37	.	.
HOC92-618	L99-226	472	46	82	2	70	1	78	.	.
HOC92-623	HOC91-523	210	0	31	0	33	0	37	.	.
HOC92-623	HOC94-836	236	0	31	0	33	0	37	.	.
HOC92-623	HOC91-552	464	36	72	9	92	4	93	.	.
HOC92-623	HOC96-540	486	0	31	0	33	0	37	.	.
HOC92-652	HOC96-540	237	0	31	0	33	0	37	.	.
HOC94-809	HOC94-829	180	13	69	1	75	1	88	.	.
HOC94-809	L99-233	460	0	31	0	33	0	37	.	.
HOC94-810	HOC96-561	201	0	31	0	33	0	37	.	.
HOC94-824	HOC96-540	492	0	31	0	33	0	37	.	.
HOC94-827	HOC92-623	236	0	31	0	33	0	37	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP04-829	L05-448	141	18	94	3	93	1	91	.	.
HOCP04-843	HOCP04-809	216	0	31	0	33	0	37	.	.
HOCP04-843	L99-233	236	0	31	0	33	0	37	.	.
HOCP04-843	L99-233	657	55	75	12	89	3	85	.	.
HOCP85-845	HOCP96-540	738	0	31	0	33	0	37	.	.
HOCP89-831	HOCP04-836	229	28	92	1	72	0	37	.	.
HOCP89-846	L99-233	223	0	31	0	33	0	37	.	.
HOCP89-846	LCP81-010	242	0	31	0	33	0	37	.	.
HOCP91-552	06P1	114	0	31	0	33	0	37	.	.
HOCP91-552	HOCP04-809	625	0	31	0	33	0	37	.	.
HOCP92-624	HOCP04-824	239	0	31	0	33	0	37	.	.
HOCP92-624	HOCP04-836	243	0	31	0	33	0	37	.	.
HOCP92-624	HOCP04-836	252	0	31	0	33	0	37	.	.
HOCP92-624	HOCP91-552	152	0	31	0	33	0	37	.	.
HOCP92-624	HOCP91-552	504	0	31	0	33	0	37	.	.
HOCP92-624	HOCP96-540	1391	152	87	30	94	10	91	.	.
HOCP92-624	HOCP96-540	465	52	89	0	33	0	37	.	.
HOCP92-624	HOCP96-561	493	0	31	0	33	0	37	.	.
HOCP92-624	L01-299	697	85	92	21	96	6	93	.	.
HOCP92-624	L02-316	232	0	31	0	33	0	37	.	.
HOCP92-624	L04-408	186	0	31	0	33	0	37	.	.
HOCP92-624	L04-410	986	0	31	0	33	0	37	.	.
HOCP92-624	L05-445	214	33	98	0	33	0	37	.	.
HOCP92-624	L05-448	1156	0	31	0	33	0	37	.	.
HOCP92-624	L99-233	1338	0	31	0	33	0	37	.	.
HOCP92-624	LCP81-010	240	0	31	0	33	0	37	.	.
HOCP92-624	LCP85-384	486	63	95	8	87	1	76	.	.
HOCP92-624	LCP85-384	457	53	90	5	82	1	79	.	.
HOCP92-624	LCP85-384	242	36	96	17	99	8	99	.	.
HOCP92-624	LCP85-384	230	27	91	7	97	2	94	.	.
HOCP92-648	HOCP02-623	228	0	31	0	33	0	37	.	.
HOCP92-648	HOCP04-824	245	24	82	5	92	1	82	.	.
HOCP92-648	HOCP04-836	500	0	31	0	33	0	37	.	.
HOCP92-648	L04-410	424	0	31	0	33	0	37	.	.
HOCP92-648	L92-312	241	0	31	0	33	0	37	.	.
HOCP92-648	L99-233	472	45	80	2	70	0	37	.	.
HOCP92-648	LCP85-384	486	29	67	2	69	1	76	.	.
HOCP93-749	HOCP02-618	421	0	31	0	33	0	37	.	.
HOCP95-951	HOCP00-905	488	0	31	0	33	0	37	.	.
HOCP95-951	HOCP04-824	416	0	31	0	33	0	37	.	.
HOCP95-951	HOCP91-552	390	35	77	11	96	5	98	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP95-951	HOCP96-522	238	0	31	0	33	0	37	.	.
HOCP95-951	HOCP96-540	695	0	31	0	33	0	37	.	.
HOCP95-951	L01-299	407	0	31	0	33	0	37	.	.
HOCP95-951	L04-410	230	24	85	5	94	1	84	.	.
HOCP95-951	L04-425	180	0	31	0	33	0	37	.	.
HOCP96-540	06P1	419	0	31	0	33	0	37	.	.
HOCP96-540	06P2	1053	0	31	0	33	0	37	.	.
HOCP96-540	HOCP02-618	211	0	31	0	33	0	37	.	.
HOCP96-561	06P1	231	0	31	0	33	0	37	.	.
HOCP96-561	L04-410	231	0	31	0	33	0	37	.	.
HOCP96-561	L05-448	219	27	94	7	97	1	85	.	.
HOCP97-609	HOCP04-807	232	0	31	0	33	0	37	.	.
HOCP97-609	L01-283	235	29	94	5	93	2	92	.	.
L01-299	HOCP02-610	380	22	66	5	84	2	87	.	.
L01-299	HOCP04-824	160	16	84	3	91	0	37	.	.
L01-299	HOCP96-540	374	36	81	7	90	1	82	.	.
L01-299	L05-448	194	0	31	0	33	0	37	.	.
L01-299	L99-226	189	0	31	0	33	0	37	.	.
L01-315	L01-299	246	22	76	4	86	0	37	.	.
L01-315	LCP81-010	448	42	79	4	78	1	80	.	.
L02-316	06P2	220	14	67	5	95	2	95	.	.
L02-320	06P2	174	0	31	0	33	0	37	.	.
L02-320	HOCP04-824	203	0	31	0	33	0	37	.	.
L02-320	HOCP96-522	121	0	31	0	33	0	37	.	.
L02-320	L99-226	341	0	31	0	33	0	37	.	.
L03-396	HOCP91-552	209	0	31	0	33	0	37	.	.
L03-396	L04-410	479	0	31	0	33	0	37	.	.
L04-407	HOCP96-540	1176	0	31	0	33	0	37	.	.
L04-407	L99-233	324	0	31	0	33	0	37	.	.
L04-408	HOCP04-807	452	0	31	0	33	0	37	.	.
L04-408	HOCP85-845	232	14	67	0	33	0	37	.	.
L04-408	L05-448	464	0	31	0	33	0	37	.	.
L04-408	L99-233	939	71	71	12	83	5	88	.	.
L04-425	06P1	229	0	31	0	33	0	37	.	.
L04-425	06P3	398	0	31	0	33	0	37	.	.
L04-425	HOCP91-552	450	47	85	8	88	3	89	.	.
L04-425	L02-316	179	0	31	0	33	0	37	.	.
L04-425	L99-233	245	0	31	0	33	0	37	.	.
L05-408	HOCP02-623	229	0	31	0	33	0	37	.	.
L05-445	L99-233	211	0	31	0	33	0	37	.	.
L05-445	LCP85-384	130	0	31	0	33	0	37	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L05-448	06P1	221	18	73	2	79	2	94	.	.
L05-450	06P3	238	0	31	0	33	0	37	.	.
L05-451	06P6	219	0	31	0	33	0	37	.	.
L05-451	HOC96-522	200	30	97	2	81	1	87	.	.
L05-451	L99-233	428	39	78	6	85	1	80	.	.
L05-460	HOC94-807	211	0	31	0	33	0	37	.	.
L05-460	HOC85-845	480	26	65	7	85	4	92	.	.
L05-460	HOC96-540	693	0	31	0	33	0	37	.	.
L05-460	L04-410	215	0	31	0	33	0	37	.	.
L05-460	L99-226	386	45	91	2	74	0	37	.	.
L05-460	L99-233	147	0	31	0	33	0	37	.	.
L91-281	HOC89-848	218	0	31	0	33	0	37	.	.
L93-399	HOC04-836	479	0	31	0	33	0	37	.	.
L94-426	HOC04-836	201	0	31	0	33	0	37	.	.
L94-426	L99-233	448	30	69	5	82	1	80	.	.
L94-428	HOC04-824	228	0	31	0	33	0	37	.	.
L94-428	L05-448	1094	0	31	0	33	0	37	.	.
L94-432	L04-410	964	0	31	0	33	0	37	.	.
L94-432	L99-233	466	39	75	2	71	1	78	.	.
L94-433	HOC00-930	220	8	63	0	33	0	37	.	.
L94-433	HOC96-540	947	94	83	16	88	10	96	.	.
L94-433	L04-410	1585	79	65	8	73	4	81	.	.
L97-128	HOC02-623	214	16	70	2	80	0	37	.	.
L97-128	HOC96-540	244	25	84	15	98	1	83	.	.
L97-128	HOC96-540	486	0	31	0	33	0	37	.	.
L97-128	L01-283	134	10	70	0	33	0	37	.	.
L97-128	L01-299	429	64	96	7	86	3	90	.	.
L97-128	L04-410	489	0	31	0	33	0	37	.	.
L97-128	L92-312	161	0	31	0	33	0	37	.	.
L98-197	HOC00-930	227	0	31	0	33	0	37	.	.
L98-197	HOC04-807	235	0	31	0	33	0	37	.	.
L98-197	HOC96-540	477	0	31	0	33	0	37	.	.
L98-207	L94-428	301	0	31	0	33	0	37	.	.
L98-207	LCP81-010	444	2	62	1	67	0	37	.	.
L99-226	L04-410	429	0	31	0	33	0	37	.	.
L99-233	HOC96-540	840	100	92	15	89	8	96	.	.
LCP81-010	HOC96-540	951	0	31	0	33	0	37	.	.
LCP81-010	HOC96-561	679	0	31	0	33	0	37	.	.
LCP81-010	L01-283	819	0	31	0	33	0	37	.	.
LCP81-010	L01-299	480	41	75	0	33	0	37	.	.
LCP81-010	L04-410	723	0	31	0	33	0	37	.	.

Table 6. Continue.

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
LCP81-010	L99-226	1129	100	76	1	66	1	74	.	.
LCP81-010	L99-233	713	47	68	3	70	0	37	.	.
LCP81-010	L99-233	969	47	64	2	67	0	37	.	.
LCP82-089	HOC91-552	228	25	88	2	78	0	37	.	.
LCP82-089	HOC96-561	202	0	31	0	33	0	37	.	.
LCP82-089	L04-408	239	0	31	0	33	0	37	.	.
LCP82-089	L92-312	229	0	31	0	33	0	37	.	.
LCP85-384	06P3	724	0	31	0	33	0	37	.	.
LCP85-384	HO95-988	860	0	31	0	33	0	37	.	.
LCP85-384	HOC96-540	1194	0	31	0	33	0	37	.	.
LCP85-384	L02-325	483	39	73	2	69	1	76	.	.
LCP85-384	L92-312	907	0	31	0	33	0	37	.	.
US01-040	HOC91-552	480	0	31	0	33	0	37	.	.
US01-040	L01-283	228	25	88	1	72	1	84	.	.
US79-010	L99-226	723	79	87	3	69	1	75	.	.
US93-015	HOC91-552	186	0	31	0	33	0	37	.	.
US96-002	HOC96-540	244	0	31	0	33	0	37	.	.
US99-002	LCP85-384	210	0	31	0	33	0	37	.	.
US99-004	HO95-988	467	0	31	0	33	0	37	.	.
2007 Crossing Series										
CP79-348	HOC92-610	950	9	23	2	33	.	.	.	.
CP79-348	L99-226	691	5	19	2	42	.	.	.	.
HO91-572	07P2	214	6	61	0	15	.	.	.	.
HO91-572	HOC96-540	247	8	67	1	50	.	.	.	.
HO95-988	HOC96-540	1210	24	50	7	62	.	.	.	.
HO95-988	L99-233	235	3	30	0	15	.	.	.	.
HO95-988	L99-233	699	16	54	2	42	.	.	.	.
HO95-988	L99-233	466	7	36	2	53	.	.	.	.
HOC90-930	07P2	246	5	50	2	73	.	.	.	.
HOC90-930	HOC92-618	250	16	94	4	93	.	.	.	.
HOC90-930	L00-266	1052	35	70	6	61	.	.	.	.
HOC90-930	L99-233	410	7	43	6	91	.	.	.	.
HOC90-950	HOC96-540	457	6	30	0	15	.	.	.	.
HOC90-950	L06-001	485	34	97	7	90	.	.	.	.
HOC90-950	L99-233	575	13	54	3	60	.	.	.	.
HOC91-523	LCP85-384	836	0	7	0	15	.	.	.	.
HOC92-610	HOC96-540	948	28	65	6	68	.	.	.	.
HOC92-618	L05-450	248	12	85	2	73	.	.	.	.
HOC92-618	L06-001	707	23	70	7	85	.	.	.	.
HOC92-618	L99-226	214	13	94	4	94	.	.	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOC P02-620	HOC P02-623	220	3	33	0	15	.	.	.	.
HOC P02-620	L99-226	480	3	17	0	15	.	.	.	.
HOC P02-620	L99-226	229	6	57	2	80	.	.	.	.
HOC P02-623	HOC P04-803	201	3	36	1	58	.	.	.	.
HOC P02-623	L99-226	252	0	7	0	15	.	.	.	.
HOC P04-809	L99-226	243	14	91	1	51	.	.	.	.
HOC P04-809	L99-233	430	8	48	3	71	.	.	.	.
HOC P04-810	TUC95-25	265	9	74	5	95	.	.	.	.
HOC P04-838	TUC95-25	132	6	82	0	15	.	.	.	.
HOC P05-902	L99-226	481	14	63	3	66	.	.	.	.
HOC P85-845	HOC P96-540	226	4	46	1	54	.	.	.	.
HOC P89-831	HOC P96-540	454	8	46	2	54	.	.	.	.
HOC P89-831	LCP85-384	713	42	92	15	96	.	.	.	.
HOC P89-846	L99-233	450	5	26	1	36	.	.	.	.
HOC P91-552	L99-226	930	4	15	2	36	.	.	.	.
HOC P92-624	HOC P02-623	1011	10	24	1	31	.	.	.	.
HOC P92-624	HOC P91-552	1043	32	66	3	42	.	.	.	.
HOC P92-624	HOC P96-561	970	11	26	2	33	.	.	.	.
HOC P92-624	L01-299	237	9	77	2	79	.	.	.	.
HOC P92-624	L01-299	1102	49	81	9	76	.	.	.	.
HOC P92-624	L04-425	955	78	98	21	97	.	.	.	.
HOC P92-624	L99-226	481	16	70	5	86	.	.	.	.
HOC P92-624	L99-233	1281	24	48	8	66	.	.	.	.
HOC P92-624	LCP85-384	1429	69	85	7	57	.	.	.	.
HOC P93-746	L99-233	249	0	7	0	15	.	.	.	.
HOC P95-951	HOC P05-923	210	9	80	1	56	.	.	.	.
HOC P95-951	HOC P96-540	1160	75	95	6	60	.	.	.	.
HOC P95-951	L01-299	858	58	96	15	94	.	.	.	.
HOC P96-540	HOC P00-950	897	0	7	0	15	.	.	.	.
HOC P96-540	HOC P00-950	642	11	43	1	32	.	.	.	.
HOC P96-540	HOC P89-831	448	0	7	0	15	.	.	.	.
HOC P96-540	L02-325	215	8	76	2	84	.	.	.	.
HOC P96-561	L06-001	735	16	52	2	39	.	.	.	.
HOC P96-561	L06-016	239	7	63	0	15	.	.	.	.
HOC P96-561	L99-226	246	10	79	2	73	.	.	.	.
HOC P96-561	LCP85-384	460	7	36	1	36	.	.	.	.
HOC P99-825	L99-233	434	6	33	1	38	.	.	.	.
HoCP00-950	Poly	183	10	89	0	15	.	.	.	.
L01-283	L99-226	1199	12	24	1	30	.	.	.	.
L01-283	L99-226	246	21	99	0	15	.	.	.	.
L01-283	LCP85-384	741	0	7	0	15	.	.	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L01-299	HOCP96-540	165	8	85	1	65	.	.	.	.
L01-299	L99-233	244	8	70	2	76	.	.	.	.
L01-299	Poly	240	8	70	2	77	.	.	.	.
L02-325	L99-226	1405	23	40	4	40	.	.	.	.
L04-408	HOCP04-803	236	13	89	3	89	.	.	.	.
L04-408	HOCP96-540	1800	48	59	0	15	.	.	.	.
L04-408	TUC95-25	267	12	82	1	48	.	.	.	.
L04-425	L99-226	1172	34	63	7	64	.	.	.	.
L04-434	L01-299	221	17	97	1	55	.	.	.	.
L05-445	L05-450	490	4	21	0	15	.	.	.	.
L05-450	07P2	183	0	7	0	15	.	.	.	.
L05-451	07P1	407	0	7	0	15	.	.	.	.
L05-457	HOCP02-610	245	1	15	0	15	.	.	.	.
L05-457	HOCP91-552	852	11	30	3	47	.	.	.	.
L05-457	HOCP96-540	426	7	40	3	71	.	.	.	.
L05-457	HOCP96-561	245	6	55	2	76	.	.	.	.
L05-457	L01-299	695	12	43	2	42	.	.	.	.
L05-457	L04-425	1096	36	70	10	83	.	.	.	.
L05-457	L04-425	240	8	70	2	77	.	.	.	.
L05-457	L99-226	717	19	57	7	85	.	.	.	.
L05-457	L99-233	240	5	51	0	15	.	.	.	.
L05-457	L99-233	482	13	59	2	51	.	.	.	.
L05-457	L99-233	1036	17	40	3	42	.	.	.	.
L05-457	LCP81-010	248	12	85	6	97	.	.	.	.
L05-459	L99-226	475	24	87	3	68	.	.	.	.
L06-003	L99-233	743	19	57	9	88	.	.	.	.
L06-010	07P2	682	8	27	0	15	.	.	.	.
L06-010	HOCP96-540	1189	57	85	6	58	.	.	.	.
L06-010	L99-226	1053	0	7	0	15	.	.	.	.
L06-010	LCP85-384	251	0	7	0	15	.	.	.	.
L06-010	LCP85-384	655	20	66	0	15	.	.	.	.
L06-025	LCP81-010	236	4	43	0	15	.	.	.	.
L06-026	L99-226	230	10	80	2	80	.	.	.	.
L06-040	HOCP96-540	251	14	91	9	98	.	.	.	.
L91-281	HOCP02-620	199	0	7	0	15	.	.	.	.
L91-281	L06-001	936	14	36	3	45	.	.	.	.
L91-281	LCP85-384	220	13	92	10	99	.	.	.	.
L91-281	LCP85-384	183	3	40	0	15	.	.	.	.
L94-428	L06-023	478	13	59	6	88	.	.	.	.
L97-128	HOCP05-923	220	4	46	2	83	.	.	.	.
L97-128	HOCP96-540	1130	60	88	17	91	.	.	.	.



Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L97-128	HOCP96-540	436	17	78	3	70	.	.	.	.
L97-128	L01-299	247	7	61	1	50	.	.	.	.
L97-128	L04-425	251	0	7	0	15	.	.	.	.
L97-128	L99-233	624	10	40	5	72	.	.	.	.
L97-128	L99-233	1163	8	19	4	47	.	.	.	.
L97-128	L99-233	250	2	21	0	15	.	.	.	.
L98-197	07P2	890	0	7	0	15	.	.	.	.
L98-197	HOCP85-845	244	0	7	0	15	.	.	.	.
L98-197	L99-226	675	0	7	0	15	.	.	.	.
L98-207	L94-428	449	0	7	0	15	.	.	.	.
L98-207	Poly	710	8	26	3	52	.	.	.	.
L98-209	L99-226	596	0	7	0	15	.	.	.	.
L99-233	L99-226	227	3	30	2	82	.	.	.	.
LCP81-010	HOCP00-950	263	14	88	4	92	.	.	.	.
LCP81-010	HOCP02-620	1191	21	46	7	63	.	.	.	.
LCP81-010	HOCP96-540	970	8	21	3	44	.	.	.	.
LCP81-010	L06-016	193	0	7	0	15	.	.	.	.
LCP81-010	L99-233	1120	6	17	0	15	.	.	.	.
LCP81-010	L99-233	1356	11	21	2	32	.	.	.	.
LCP81-010	LCP85-384	1524	22	33	6	49	.	.	.	.
LCP85-384	HOCP00-950	218	3	33	0	15	.	.	.	.
N27	L01-299	1395	32	54	3	36	.	.	.	.
N27	L99-226	928	1	14	0	15	.	.	.	.
N27	L99-226	1544	59	77	10	69	.	.	.	.
N27	LCP85-384	1209	18	36	3	38	.	.	.	.
TUC89-28	HOCP01-517	141	5	75	0	15	.	.	.	.
TUCCP77-042	Poly	382	11	63	4	87	.	.	.	.
US79-010	HOCP96-540	1220	5	15	4	46	.	.	.	.
US79-010	L01-299	693	15	52	4	62	.	.	.	.
US79-010	LCP85-384	494	6	27	3	65	.	.	.	.
US99-004	LCP85-384	235	8	74	2	79	.	.	.	.
2008 Crossing Series										
CB79-318	LCP85-384	191	3	32	.	.	.	.	.	.
CP79-318	LCP85-384	445	17	76	.	.	.	.	.	.
CP83-644	HOCP04-836	938	11	23	.	.	.	.	.	.
HO95-988	L99-233	247	7	60	.	.	.	.	.	.
HOCP00-930	HOCP91-552	866	21	52	.	.	.	.	.	.
HOCP00-930	L00-266	419	8	41	.	.	.	.	.	.
HOCP00-930	L02-353	465	17	74	.	.	.	.	.	.
HOCP00-930	L04-408	874	10	21	.	.	.	.	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOC P00-950	08P2	648	34	90	.	.	.	.	.	.
HOC P00-950	08P4	756	15	44	.	.	.	.	.	.
HOC P00-950	08P6	1070	19	36	.	.	.	.	.	.
HOC P00-950	HOC P96-540	98	5	89	.	.	.	.	.	.
HOC P01-517	L98-207	1261	36	62	.	.	.	.	.	.
HOC P01-523	L98-209	546	17	66	.	.	.	.	.	.
HOC P01-523	L99-233	570	22	77	.	.	.	.	.	.
HOC P01-544	L99-233	540	24	81	.	.	.	.	.	.
HOC P01-558	HOC P92-618	419	10	52	.	.	.	.	.	.
HOC P02-610	08P13	465	16	71	.	.	.	.	.	.
HOC P02-610	08P14	1213	17	26	.	.	.	.	.	.
HOC P02-610	08P15	206	14	95	.	.	.	.	.	.
HOC P02-623	08P13	155	3	41	.	.	.	.	.	.
HOC P02-623	08P28	239	7	62	.	.	.	.	.	.
HOC P02-623	HOC P01-523	451	29	93	.	.	.	.	.	.
HOC P02-623	HOC P91-552	226	4	36	.	.	.	.	.	.
HOC P02-623	HOC P96-540	378	3	19	.	.	.	.	.	.
HOC P03-757	L04-425	210	0	8	.	.	.	.	.	.
HOC P04-827	HO95-988	439	21	86	.	.	.	.	.	.
HOC P04-843	HOC P04-809	233	10	80	.	.	.	.	.	.
HOC P85-845	08P13	575	27	84	.	.	.	.	.	.
HOC P85-845	08P20	709	16	49	.	.	.	.	.	.
HOC P85-845	HOC P96-540	200	6	64	.	.	.	.	.	.
HOC P89-846	08P14	613	21	71	.	.	.	.	.	.
HOC P89-846	08P15	456	5	21	.	.	.	.	.	.
HOC P89-846	HOC P96-540	704	16	49	.	.	.	.	.	.
HOC P91-552	05P2	227	4	36	.	.	.	.	.	.
HOC P92-618	HOC P89-846	207	4	41	.	.	.	.	.	.
HOC P92-618	LCP85-384	657	10	28	.	.	.	.	.	.
HOC P92-624	08P8	1543	19	23	.	.	.	.	.	.
HOC P92-624	08P9	1793	27	28	.	.	.	.	.	.
HOC P92-624	HOC P02-623	245	7	62	.	.	.	.	.	.
HOC P92-624	HOC P04-836	225	6	58	.	.	.	.	.	.
HOC P92-624	HOC P89-846	471	7	28	.	.	.	.	.	.
HOC P92-624	HOC P91-552	195	3	28	.	.	.	.	.	.
HOC P92-624	HOC P96-540	460	7	28	.	.	.	.	.	.
HOC P92-624	HOC P96-561	216	6	60	.	.	.	.	.	.
HOC P92-624	L00-266	379	19	88	.	.	.	.	.	.
HOC P92-624	L01-299	203	6	64	.	.	.	.	.	.
HOC P92-624	L02-316	248	0	8	.	.	.	.	.	.
HOC P92-624	L98-207	395	5	25	.	.	.	.	.	.

Table 6. Continue

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	L99-233	1068	14	25	.	.	.	.	.	.
HOC92-624	LCP85-384	962	17	36	.	.	.	.	.	.
HOC92-648	HOC904-836	617	25	78	.	.	.	.	.	.
HOC92-648	L00-266	857	19	46	.	.	.	.	.	.
HOC92-648	L04-410	734	18	55	.	.	.	.	.	.
HOC92-648	L92-312	149	7	84	.	.	.	.	.	.
HOC92-648	L97-137	224	5	46	.	.	.	.	.	.
HOC92-648	L99-233	205	15	98	.	.	.	.	.	.
HOC92-648	LCP85-384	484	23	86	.	.	.	.	.	.
HOC95-951	08P14	566	6	21	.	.	.	.	.	.
HOC95-951	08P8	1039	32	66	.	.	.	.	.	.
HOC95-951	HOC904-824	199	4	44	.	.	.	.	.	.
HOC95-951	HOC96-522	213	0	8	.	.	.	.	.	.
HOC95-951	HOC96-540	103	0	8	.	.	.	.	.	.
HOC96-540	08P1	394	0	8	.	.	.	.	.	.
HOC96-540	08P4	819	0	8	.	.	.	.	.	.
HOC96-540	08P6	1356	0	8	.	.	.	.	.	.
HOC96-540	HOC902-618	477	0	8	.	.	.	.	.	.
HOC96-540	HOC91-552	1379	41	64	.	.	.	.	.	.
HOC96-540	L02-325	418	0	8	.	.	.	.	.	.
HOC96-540	L99-226	438	16	74	.	.	.	.	.	.
HOC96-540	L99-233	1579	40	55	.	.	.	.	.	.
L01-283	08P22	1136	0	8	.	.	.	.	.	.
L01-283	08P25	154	3	41	.	.	.	.	.	.
L01-283	08P28	439	7	32	.	.	.	.	.	.
L01-299	08P1	508	23	82	.	.	.	.	.	.
L01-299	08P29	350	24	95	.	.	.	.	.	.
L01-299	08P6	416	29	96	.	.	.	.	.	.
L01-299	08P8	329	8	52	.	.	.	.	.	.
L01-299	HOC96-561	148	4	58	.	.	.	.	.	.
L01-315	08P13	226	7	66	.	.	.	.	.	.
L01-315	L05-445	212	13	92	.	.	.	.	.	.
L02-316	08P20	238	21	99	.	.	.	.	.	.
L02-316	08P22	236	15	93	.	.	.	.	.	.
L02-316	HOC96-540	61	2	69	.	.	.	.	.	.
L02-320	HO95-988	322	7	46	.	.	.	.	.	.
L03-396	HOC91-552	185	6	67	.	.	.	.	.	.
L03-396	L04-410	245	8	69	.	.	.	.	.	.
L03-396	LCP85-384	231	4	34	.	.	.	.	.	.
L04-407	L99-233	305	16	90	.	.	.	.	.	.
L04-408	HOC904-807	596	13	46	.	.	.	.	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L04-408	HOCP96-540	28	2	97	.	.	.	.	.	.
L04-425	L99-233	276	10	73	.	.	.	.	.	.
L05-445	L05-450	203	9	81	.	.	.	.	.	.
L05-457	L99-233	407	3	18	.	.	.	.	.	.
L06-010	08P23	599	0	8	.	.	.	.	.	.
L06-010	08P24	311	15	86	.	.	.	.	.	.
L07-057	08P22	618	44	97	.	.	.	.	.	.
L07-059	08P28	374	6	32	.	.	.	.	.	.
L93-399	HOCP04-836	134	6	82	.	.	.	.	.	.
L94-426	08P23	399	16	78	.	.	.	.	.	.
L94-426	HO95-988	77	0	8	.	.	.	.	.	.
L94-426	L99-233	212	0	8	.	.	.	.	.	.
L94-428	L05-448	791	21	58	.	.	.	.	.	.
L94-428	LCP85-384	646	2	17	.	.	.	.	.	.
L94-432	L99-233	756	12	32	.	.	.	.	.	.
L97-128	08P8	780	29	74	.	.	.	.	.	.
L97-128	08P9	382	10	56	.	.	.	.	.	.
L97-137	L99-233	777	18	49	.	.	.	.	.	.
L98-197	08P24	351	0	8	.	.	.	.	.	.
L98-197	HOCP96-540	216	0	8	.	.	.	.	.	.
L98-197	L99-226	748	0	8	.	.	.	.	.	.
L98-197	L99-226	889	2	17	.	.	.	.	.	.
L98-197	LCP82-089	342	0	8	.	.	.	.	.	.
L98-207	08P1	879	22	55	.	.	.	.	.	.
L98-207	08P19	380	0	8	.	.	.	.	.	.
L98-207	08P4	985	25	55	.	.	.	.	.	.
L98-207	08P5	332	0	8	.	.	.	.	.	.
L98-207	08P6	199	0	8	.	.	.	.	.	.
L98-207	LCP81-010	540	13	52	.	.	.	.	.	.
L99-233	HOCP96-540	336	9	58	.	.	.	.	.	.
LCP81-010	08P1	737	29	77	.	.	.	.	.	.
LCP81-010	08P4	358	23	93	.	.	.	.	.	.
LCP81-010	HOCP89-846	275	13	84	.	.	.	.	.	.
LCP81-010	HOCP91-552	183	4	46	.	.	.	.	.	.
LCP81-010	HOCP96-561	226	0	8	.	.	.	.	.	.
LCP81-010	L02-316	758	0	8	.	.	.	.	.	.
LCP81-010	L02-316	328	0	8	.	.	.	.	.	.
LCP81-010	L04-410	843	11	25	.	.	.	.	.	.
LCP81-010	L98-207	739	37	88	.	.	.	.	.	.
LCP81-010	L99-233	370	20	91	.	.	.	.	.	.
LCP81-010	L99-233	395	13	69	.	.	.	.	.	.

Table 6. Continue

Female	Male	Survive	1 st Line		2 nd Line		Increases		Assignments	
			No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
LCP81-010	L99-233	1251	20	32	.	.	.	.	.	.
LCP81-010	LCP82-089	388	4	19	.	.	.	.	.	.
LCP81-010	LCP85-384	213	0	8	.	.	.	.	.	.
LCP85-384	04P4	687	23	69	.	.	.	.	.	.
LCP85-384	08P2	288	12	79	.	.	.	.	.	.
LCP85-384	08P22	390	7	36	.	.	.	.	.	.
LCP85-384	08P33	158	3	41	.	.	.	.	.	.
LCP85-384	08P5	255	4	32	.	.	.	.	.	.
LCP85-384	HOCP96-540	1541	30	41	.	.	.	.	.	.
N27	L01-299	836	19	49	.	.	.	.	.	.
N27	L99-226	181	11	92	.	.	.	.	.	.
N27	LCP85-384	1055	12	21	.	.	.	.	.	.
US79-010	L99-226	233	8	71	.	.	.	.	.	.
US99-004	L99-226	1392	26	41	.	.	.	.	.	.

## **2010 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFIELD 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” or “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), Justin Frederick Farm (Cecilia), Michael Melancon (Cecilia), and Landry Farms (Paincourtville), along with the two infield trial locations at Blackberry Farms (Vacherie) and Sugarland Acres, Inc. (Youngsville). 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 plots with 5-foot alleys. The experimental design for both nursery and infield tests was a randomized complete block with two replications per location. Five commercial check varieties, HoCP96-540, L99-226, L99-233, L01-283 and L01-299 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 2010 sugarcane crop experienced a wide range of growing conditions. Many parts of the sugarcane growing area in Louisiana experienced a summer drought then average rainfall through the end of the year. The planting season had average rainfall and all experiments were planted in a timely manner. The sugarcane crop did experience freezing temperatures in the latter part of the harvest season. The majority of the Louisiana crop was harvested before the deleterious effects of the hard freezes of early January were experienced. Recommended cultural practices were followed at all test locations.

The leading variety grown in Louisiana in 2010 was HoCP96-540, which occupied 47% of the state's sugarcane acreage. Therefore, HoCP96-540 was used as a standard for comparison and is highlighted in the tables. To adjust for missing data, the statistical analysis calculated least square means (SAS 9 Proc Mixed). Mean separation used least square means probability differences where  $P=0.05$ . Varieties that are significantly higher or lower than HoCP96-540 are denoted by a plus (+) or minus (-), respectively, next to the value for each trait.

References:

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

Table 1. 2010 Location, soil texture, and planting and harvest dates for the nursery and infield tests.

Series	Location†	Stage	Soil Texture	Planting Date	Harvest Date	Varieties	
					2010	No. Planted	No. Harvested
2005	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/15/06	10/07/10	25	1
2005	Newton Cane, Inc.	Nursery	Moreland silt loam	08/22/06	09/29/10	43	1
2005	Justin Frederick Farms	Nursery	Baldwin silty clay	08/24/06	09/29/10	43	1
2006	Blackberry Farms	Infield	Commerce silt loam	08/17/07	11/01/10	24	1
2006	Sugarland Acres, Inc.	Infield	Coteau silt loam	11/18/09	10/07/10	24	1
2007	Sugar Research Station	Nursery	Commerce silt loam	10/10/07	10/06/10	33	1
2007	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/07	10/14/10	33	1
2007	Iberia Research Station	Nursery	Baldwin silty clay	10/15/07	10/22/10	33	1
2007	Blackberry Farms	Infield	Commerce silt loam	09/24/08	11/01/10	19	1
2007	Newton Cane, Inc.	Nursery	Moreland silt loam	08/28/08	11/12/10	19	2
2007	Michael Melancon	Nursery	Baldwin silty clay	09/26/08	11/12/10	19	2
2007	Landry Farms	Nursery	Commerce silt loam	09/29/08	11/09/10	19	2
2008	Sugar Research Station	Nursery	Commerce silt loam	10/10/08	11/05/10	21	4
2008	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/08	11/09/10	21	4
2008	Iberia Research Station	Nursery	Baldwin silty clay	10/17/08	11/12/10	21	4
2008	Blackberry Farms	Infield	Commerce silt loam	08/10/09	12/09/10	11	5
2008	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/26/09	12/07/10	11	5
2008	Newton Cane, Inc.	Nursery	Moreland silt loam	08/18/09	11/12/10	25	10
2008	Michael Melancon	Nursery	Baldwin silty clay	08/12/09	11/30/10	25	10
2008	Landry Farms	Nursery	Commerce silt loam	08/19/09	12/08/10	25	10
2009	Sugar Research Station	Nursery	Commerce silt loam	10/26/09	12/08/10	35	15
2009	Ardoyne Farm- U.S.D.A.	Nursery	Commerce silt loam	11/05/09	12/10/10	35	15
2010	Sugar Research Station	Nursery	Commerce silt loam	10/14/10		34	
2010	Ardoyne Farm – U.S.D.A	Nursery	Commerce silt loam	10/13/10		34	
2010	Iberia Research Station	Nursery	Baldwin silty clay	10/21/10		34	
2010	Blackberry Farms	Infield	Commerce silt loam	09/10/10		21	
2010	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/25/10		21	
2010	Newton Cane, Inc.	Nursery	Moreland silt loam	08/26/10		43	
2010	Michael Melancon	Nursery	Baldwin silty clay	08/27/10		43	
2010	Landry Farms	Nursery	Commerce silt loam	09/15/10		43	

† 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), Justin Frederick Farms (Cecilia), Sugarland Acres Inc. (Youngsville), Landry Farms (Paincourtville).



Table 2. Infield third-stubble means of the 2004 “HoCP” assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	7284	32.9	221	1.63	21402	10.6
HoCP96-540	8162	39.3	208	2.00	23482	11.6
L97-128	5988	25.8	232	1.85	19322	12.1
L99-226	7289	34.4	211	1.85	22498	12.6
HoCP04-838	6191	28.3	219	1.54	22045	11.8

Table 3. Nursery third-stubble means of the 2005 “HoCP” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	6632	34.7	191	1.55	45194	11.3
HoCP96-540	6365	32.4	195	2.08	31037	11.0
L97-128	9117	43.9	208	2.23	39386	12.7
L99-226	10052	48.7	204	2.60	38115	11.6
HoCP05-961	7891	34.5	228	1.66	41745	12.7

Table 4. Nursery third-stubble means of the 2005 “HoCP” assignment series on a Baldwin silty clay soil at J. Fredericks Farms in Cecilia, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	3242	22.1	145	1.10	40112	11.5
HoCP96-540	2382	13.7	171	1.52	17969	10.9
L97-128	6531	30.5	213	1.62	37389	12.9 +
L99-226	5285	30.7	171	2.01 +	30674	11.7
HoCP05-961	4836	22.3	214	1.36	32670	12.9 +

Table 5. Infield second-stubble means of the 2005 “HoCP” assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	5734	25.1	229	1.55	21062 +	12.9
Ho95-988	7801 +	33.4 +	234	1.66	23368 +	13.3
HoCP96-540	5104	21.7	235	1.64	13234	12.3
L99-226	7666 +	32.0 +	240	2.00	14823	14.5 +
HoCP05-961	7749 +	31.0 +	250	1.65	18944 +	14.7 +

Table 6. Infield second-stubble means of the 2005 “HoCP” assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	5108	23.9	214	1.30 -	20305 +	11.1 -
Ho95-988	7041	29.8	235	1.75	18679 +	12.2
HoCP96-540	4860	21.1	226	1.70	12176	12.4
L99-226	5562	23.6	233	1.86	14823	12.0
HoCP05-961	6489	25.9	250	1.58	19209 +	13.6 +

Table 7. Infield first-stubble means of the 2007 “L” assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	4909	22.0	222	1.88	13839	12.5
L99-226	8828 +	33.5	264 +	2.70	16033	13.2
L01-283	7942 +	29.5	270 +	1.59	21818	12.0
L07-057	6929	31.8	218	1.90	19549	15.2

Table 8. Nursery first-stubble means of the 2007 “Ho” and “L” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9733	36.7	266	2.30	31944	11.6
L99-226	12538	47.2	266	2.96 +	31944	11.9
L01-283	10118	36.8	273	2.24	32670	11.2
L07-057	7078	28.6	248	1.85 -	31400	13.2 +
Ho07-613	7228	28.2	257	2.21	25773	10.7

Table 9. Nursery first-stubble means of the 2007 “Ho” and “L” assignment series on a, Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	16430	60.2	273	2.89	41745	11.1
L99-226	12631 -	44.0 -	287	2.86	30674 -	12.2
L01-283	14055	54.6	258	2.12 -	51909 +	10.3
L07-057	9595 -	37.7 -	255	2.21 -	33941	12.4 +
Ho07-613	10857 -	42.2 -	259	2.47 -	34122	10.0

Table 10. Nursery first-stubble means of the 2007 “Ho” and “L” assignment series on a, Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	5658	24.6	230	2.17	22688	11.0
L99-226	10361 +	40.5 +	255 +	2.30	35756 +	12.2
L01-283	8105 +	32.2 +	252 +	1.90	34122 +	11.8
L07-057	7515 +	32.8 +	229	1.46	45012 +	11.4
Ho07-613	7069	29.9 +	236	2.13	28314	9.9

Table 11. Nursery second-stubble means of the 2007 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	9317	40.1	232	1.46	55176	11.8
Ho95-988	8013	33.7	238	2.29	29585	12.1
HoCP96-540	10640	46.7	230	2.12	44649	13.4
L99-226	8201	35.1	234	2.47	28859	13.8
L07-057	5942	26.5	227	1.71	31218	14.7

Table 12. Nursery second-stubble means of the 2007 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	7111	31.2	226	1.48 -	42108 +	11.0
Ho95-988	9360	35.4	265	1.86	38115 +	11.4
HoCP96-540	7743	33.2	233	2.10	31581	11.0
L99-226	9248	35.2	263	2.27	31037	11.5
L07-057	6794	28.1	242	1.62 -	34848	12.9

Table 13. Nursery second-stubble means of the 2007 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	7560	34.9	217	1.82	38297	11.2
Ho95-988	6914	32.8	209	2.05	31944	10.1 -
HoCP96-540	8776	40.3	219	2.23	36119	11.8
L99-226	10445	45.7	229	2.72	33578	12.5
L07-057	7131	33.7	214	1.81	37389	13.1

Table 14. Infield plantcane means of the 2007 “Ho” and 2008 “L” assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9559	35.8	267	2.59	14558	13.0
L99-226	14105 +	49.9 +	283 +	3.02	18263 +	12.5
L99-233	12473 +	48.3 +	259	2.18	23444 +	14.7 +
HoCP00-950	11047	37.3	296 +	1.85 -	21062 +	14.2
L01-283	10017	35.7	280	2.11	20986 +	12.2
Ho07-613	11898	42.3	281	2.30	20078 +	11.7
L08-075	10150	37.1	274	1.76 -	22461 +	13.6
L08-088	10228	36.7	278	2.49	19700 +	13.3
L08-090	13095 +	45.8 +	286 +	2.69	22196 +	11.8
L08-092	12143	43.6	278	2.35	20116 +	13.9

Table 15. Infield plantcane means of the 2007 “Ho” and 2008 “L” assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	8822	34.7	254	2.60	14255	12.8
L99-226	10371	38.1	272 +	2.53	16675	11.3 -
L99-233	8445	34.2	247	1.86	22158 +	14.1 +
HoCP00-950	10991	42.0	261	2.39	17734	11.8 -
L01-283	10277	37.0	278 +	1.96	21213 +	11.0 -
Ho07-613	9206	33.8	273 +	2.43	17696	11.8 -
L08-075	10356	41.1	252	1.90	21969 +	12.8
L08-088	11763	44.7	263	2.04	20873 +	11.6 -
L08-090	10310	38.2	270 +	2.50	17583	11.4 -
L08-092	9024	36.4	248	1.99	19814 +	12.5

Table 16. Nursery plantcane means of the 2008 “Ho”, “HoL”, “HoCP”, and “L” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	11768	43.3	271	3.11	28133	11.2
L99-226	10405	37.3	279	2.39 -	31218	11.8
L99-233	11088	41.2	269	2.44 -	33940	12.9
HoCP00-950	10784	41.1	263	2.61	31036	12.1
L01-283	8445	32.1	260	2.02 -	31581	10.7
L08-075	11208	42.5	263	2.08 -	40837 +	12.6
L08-088	9629	37.9	255	2.06 -	36663	12.5
L08-090	14991	56.9	264	2.85	39748 +	10.5
L08-092	9452	36.2	266	2.14 -	33940	13.2
Ho08-706	9652	42.7	227	2.11 -	40837 +	8.3 -
Ho08-709	8211	35.3	234	1.87 -	37934	12.3
Ho08-711	15267	57.6	264	3.00	39022 +	10.9
Ho08-717	12041	49.8	242	2.47 -	40475 +	12.2
HoL08-723	12354	52.5	235	2.59	40656 +	12.5
HoCP08-726	7969	30.4	263	2.50	24321	10.0

Table 17. Nursery plantcane means of the 2008 “Ho”, “HoL”, “HoCP”, and “L” assignment series on a, Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	11538	41.1	282	2.82	29403	11.7
L99-226	13103	47.4	276	3.08	30674	11.0
L99-233	10699	39.3	273	2.19	36300	12.8
HoCP00-950	10433	36.8	284	2.12	34848	11.6
L01-283	10448	37.7	278	2.04	37026	10.5
L08-075	11391	39.9	285	2.16	36845	11.9
L08-088	10917	39.9	274	2.25	36119	12.6
L08-090	12196	45.1	270	2.45	37026	9.4 -
L08-092	14473	49.5	293	2.46	40293	11.6
Ho08-706	13142	47.9	275	2.39	40112	10.1
Ho08-709	10597	39.6	268	2.18	36482	13.6 +
Ho08-711	9830	36.9	265	2.48	29585	9.6 -
Ho08-717	13076	47.5	276	2.42	39386	12.1
HoL08-723	12710	49.4	257	2.38	41564	11.7
HoCP08-726	10443	37.8	276	2.75	27588	10.2

Table 18. Nursery plantcane means of the 2008 “Ho”, ”HoL”, “HoCP”, and “L” assignment series on a, Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	7709	30.6	252	2.07	29766	9.7
L99-226	13017 +	49.2 +	265	3.06 +	32488	10.0
L99-233	7319	31.2	235	1.90	32851	11.1 +
HoCP00-950	6564	24.6	267	2.40	20509	10.0
L01-283	10186	40.7	250	2.16	37752	9.9
L08-075	7792	31.0	252	1.91	32488	9.9
L08-088	8493	33.1	256	2.22	29766	10.4
L08-090	15799 +	58.7 +	269	2.79 +	42108 +	9.6
L08-092	7873	32.2	243	2.12	30129	10.9 +
Ho08-706	9013	36.2	249	1.99	36481	8.5 -
Ho08-709	8270	34.3	243	1.97	34485	10.9 +
Ho08-711	10083	41.3	245	2.69 +	30855	10.0
Ho08-717	9540	40.3	236	1.87	43197 +	11.2 +
HoL08-723	10281	41.0	246	2.20	36844	11.6 +
HoCP08-726	7675	31.0	247	2.52 +	----	9.3

Table 19. Nursery first-stubble means of the 2008 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9323	36.6	254	2.42	30401	12.0
L99-226	12407	44.6	278 +	3.11	28813	14.1 +
L01-283	16875	60.9	276 +	2.36	51274 +	12.1
L08-075	7905	31.0	256	1.60 -	38796 +	12.4
L08-088	13198	50.7	260	2.41	42199 +	13.9 +
L08-090	12300	47.2	260	2.47	38342 +	11.5
L08-092	15900	57.3	278 +	2.55	44921 +	13.4

Table 20. Nursery first-stubble means of the 2008 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	10580	39.9	266	2.06	38796	10.6
L99-226	10457	37.0	282	2.11	35166	12.3 +
L01-283	10674	40.2	266	1.64	49005	10.5
L08-075	5626 -	21.0 -	268	1.59	26771	11.4
L08-088	10395	42.1	247 -	2.37	36300	11.3
L08-090	14262	51.6	276	2.24	45829	10.1
L08-092	10615	37.1	286 +	1.82	40837	12.8 +

Table 21. Nursery first-stubble means of the 2008 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	7215	31.0	233	2.36	26998	11.3
L99-226	13385 +	52.3 +	256	2.91 +	35846	12.0
L01-283	9357	34.4	272	2.07	33351	11.4
L01-299	11176 +	45.2 +	247	2.47	36754	11.4
L08-075	8346	31.1	269	1.93	32443	11.8
L08-088	7808	30.4	256	2.52	24049	11.9
L08-090	9327	34.8	268	2.21	31536	10.3
L08-092	7879	31.4	253	1.87 -	33804	11.6

Table 22. Nursery plantcane means of the 2009 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9322	36.8	251	2.94	24956	11.4
L99-226	12294	47.1	259	3.15	29721	13.8 +
L99-233	9447	38.0	248	2.18 -	35166 +	13.1 +
HoCP00-950	7962	31.8	250	2.74	23141	11.6
L01-283	7169	32.1	224	2.10 -	31082	11.3
L09-099	10066	42.5	237	2.78	30628	13.5 +
L09-105	10594	47.9	221	2.86	33578	12.3
L09-107	15146	59.3 +	254	3.28	36073 +	13.3 +
L09-108	10349	40.2	258	2.24 -	35846 +	12.0
L09-112	12551	49.9	252	3.35	29948	13.0 +
L09-113	10871	41.8	260	2.55	32897	11.0
L09-114	9275	40.4	229	2.33 -	34712 +	12.5
L09-117	11505	42.9	264	2.05 -	41291 +	11.0
L09-118	10303	42.9	240	3.24	26544	12.4
L09-119	7565	31.3	243	1.66 -	37888 +	13.9 +
L09-121	7662	32.5	238	2.15 -	30174	12.8 +
L09-123	8487	35.9	236	2.21 -	32670	11.0
L09-125	10810	41.0	263	2.91	28133	12.9 +
L09-129	8888	35.9	248	1.82 -	39930 +	14.3 +
L09-131	10374	41.4	251	2.05 -	40384 +	12.2



Table 23. Nursery plantcane means of the 2009 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	7271	29.0	252	3.58	16108	10.9
L99-226	10834	39.7	273	3.40	23368	10.9
L99-233	11042	43.0	258	2.21 -	39023 +	12.1
HoCP00-950	11232	41.9	268	2.55 -	32897 +	10.9
L01-283	7319	30.3	242	2.62 -	23141	10.6
L09-099	11717	48.7 +	241	2.56 -	38115 +	11.9
L09-105	8193	35.8	230	2.83 -	24956	12.0
L09-107	1250 -	6.2 -	202 -	2.12 -	5899	11.1
L09-108	10700	41.1	261	2.41 -	34712 +	11.6
L09-112	15257 +	60.8 +	251	3.27	37208 +	12.5
L09-113	5410	20.8	261	2.04 -	20419	9.4
L09-114	9075	36.5	249	2.48 -	29494 +	12.5
L09-117	8203	30.9	267	2.09 -	29721 +	11.0
L09-118	5592	23.6	226	3.24	14520	12.1
L09-119	7359	28.1	260	1.56 -	33804 +	13.3 +
L09-121	7916	32.6	243	2.65 -	24729	11.8
L09-123	9772	42.3	231	3.07	27679	12.2
L09-125	12419 +	45.5	273	2.96 -	30628 +	12.5
L09-129	8624	34.3	250	1.92 -	35619 +	14.2 +
L09-131	4395	16.7 -	255	1.76 -	17469	11.2

Table 24. Nursery third-stubble means of the 2005 “Ho” assignment series across 2 locations (Newton and J. Fredericks Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	4937	28.4	168	1.33 -	42653	11.4
HoCP96-540	4373	23.1	183	1.80	24503	10.9
L97-128	7824	37.2 +	211	1.93	38387	12.8 +
L99-226	7668	39.7 +	187	2.31 +	34394	11.6
Ho05-961	6364	28.4	221	1.51	37208	12.8 +

Table 25. Infield second-stubble means of the 2005 “Ho” assignment series across 2 locations (Blackberry and Sugarland Acres) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	5421	24.5	222	1.42	20683 +	12.0
HoCP96-540	7421	31.6	235	1.70	21024 +	12.8
L97-128	4982	21.4	231	1.67	12705	12.4
L99-226	6614	27.8	236	1.93	14823	13.2
Ho05-961	7119	28.5	250	1.61	19076 +	14.1

Table 26. Infield and nursery first-stubble means of the 2007 “L” and “Ho” assignment series across 5 locations ( Blackberry, Sugarland Acres, Newton, Westfield, and J. Fredericks Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9182	35.9	247	2.30	27554	11.5
L99-226	11090	41.3	267 +	2.70 +	28601	12.4
L01-283	10055	38.3	263	1.95 -	35130	11.3
L07-057	7779	32.7	237	1.85 -	32475	13.0 +
Ho07-613	7690	31.2	247	2.21	25502	10.5

Table 27. Nursery second-stubble means of the 2007 “L” assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A.- Ardoyne Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
LCP85-384	7996	35.4	225	1.59 -	45194	11.3
Ho95-988	8096	34.0	237	2.07	33215	11.2
HoCP96-540	9053	40.1	227	2.15	37450	12.1
L99-226	9298	38.7	242	2.49 +	31158	12.6
L07-057	6622	29.4	227	1.71 -	34485	13.6 +

Table 28. Infield and nursery first-stubble means of the 2007 “L” and “Ho” assignment series across 4 locations (Blackberry, Newton, Westfield, and J. Fredericks Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9182	35.9	247	2.30	27554	11.5
L99-226	11090	41.3	267 +	2.70 +	28601	12.4
L01-283	10055	38.3	263	1.95 -	35130	11.3
L07-057	7779	32.7	237	1.85 -	32475	13.0 +
Ho07-613	7690	31.2	247	2.21	25502	10.5

Table 29. Infield and nursery plantcane means of the 2008 “L” and “Ho”, “HoL”, and “HoCP” assignment series across 5 locations (Blackberry, Sugarland Acres, Newton, Westfield, and J. Fredericks Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9879	37.1	265	2.64	23223	11.7
L99-226	12200 +	44.4	275	2.82	25864	11.3
L99-233	10005	38.9	256	2.11 -	29739 +	13.1 +
HoCP00-950	9964	36.4	274	2.27 -	25038	11.9
L01-283	9874	36.6	269	2.06 -	29712 +	10.8 -
L08-075	10179	38.3	265	1.96 -	30920 +	12.2 +
L08-088	10206	38.5	265	2.21 -	28624 +	12.1 +
L08-090	13278 +	49.0 +	272	2.65	31732 +	10.5 -
L08-092	10593	39.6	266	2.21 -	28858 +	12.4
Ho08-706	10625	42.3	251 -	2.14 -	33591 +	9.5 -
Ho08-709	9049	36.4	249 -	1.99 -	30747 +	12.8 +
Ho08-711	11749	45.3	259	2.70	27601	10.7 -
Ho08-717	11575	45.9 +	252	2.23 -	35466 +	12.4
HoL08-723	11804	47.6 +	247 -	2.37	34135 +	12.5
HoCP08-726	8718	33.1	263	2.57	19978	10.4 -

Table 30. Infield plantcane means of the 2007 “Ho” and 2008 “L” assignment series across 2 locations (Blackberry and Sugarland Acres) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9191	35.3	260	2.60	14407	12.9
L99-226	12238	44.0	277 +	2.77	17469 +	11.9
L99-233	10459	41.3	253	2.02 -	22801 +	14.4 +
HoCP00-950	11019	39.7	279 +	2.12	19398 +	13.0
L01-283	10147	36.4	279 +	2.03 -	21099 +	11.6 -
Ho07-613	10552	38.0	277 +	2.36	18887 +	11.8
L08-075	10253	39.1	263	1.83 -	22215 +	13.2
L08-088	10996	40.7	270	2.26	20286 +	12.5
L08-090	11703	42.0	278 +	2.59	19889 +	11.6 -
L08-092	10583	40.0	263	2.17	19965 +	13.2

Table 31. Nursery first-stubble means of the 2008 “L” assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A.- Ardoyne Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	9040	35.9	251	2.28	32065	11.3
L99-226	12083	44.7	272	2.71 +	33275	12.8 +
L01-283	12302	45.2	271	2.02	44543	11.3
L01-299	12406	49.0	251	2.43	40839	11.8
L08-075	7292	27.7	264	1.71 -	32670	11.9
L08-088	10467	41.1	254	2.43	34183	12.4 +
L08-090	11963	44.6	268	2.31	38569	10.6
L08-092	11465	41.9	272	2.08	39854	12.6 +

Table 32. Nursery plantcane means of the 2009 “L” assignment series across 2 locations (St. Gabriel and U.S.D.A.- Ardoyne Farms) in 2010.

Variety	Sugar per Acre	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	Fiber (%)
HoCP96-540	8296	32.9	252	3.26	20532	11.2
L99-226	11564	43.4	266	3.27	26544	12.3
L99-233	10244	40.5	253	2.19 -	37094	12.6 +
HoCP00-950	9597	36.8	259	2.64	28019	11.3
L01-283	7244	31.2	233	2.36 -	27112	11.0
L09-099	10891	45.6	239	2.67	34372	12.7 +
L09-105	9394	41.9	226 -	2.84	29267	12.2
L09-107	8198	32.8	228 -	2.70	20986	12.2
L09-108	10524	40.7	259	2.32 -	35279	11.8
L09-112	13904	55.4	251	3.31	33578	12.8 +
L09-113	8140	31.3	260	2.29 -	26658	10.2
L09-114	9175	38.4	239	2.40 -	32103	12.5 +
L09-117	9854	36.9	265	2.07 -	35506	11.0
L09-118	7948	33.3	233	3.24	20532	12.2
L09-119	7462	29.7	252	1.61 -	35846	13.6 +
L09-121	7789	32.5	240	2.40 -	27452	12.3
L09-123	9129	39.1	233	2.64 -	30174	11.6
L09-125	11614	43.2	268	2.93	29380	12.7 +
L09-129	8756	35.1	249	1.87 -	37775	14.3 +
L09-131	7384	29.0	253	1.91 -	28927	11.7

## 2010 LOUISIANA “Ho” NURSERY AND INFIELD VARIETY TRIALS

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Three years after selecting in single-stools in the seedling stage, scientists in the SRU’s sugarcane breeding program assign “HoCP” or “Ho” numbers to varieties advanced for further testing. These newly assigned varieties are planted in replicated nursery trials at the SRU’s Ardoyne Farm in Schriever and the LSU AgCenter’s Iberia Research Station in Jeanerette and Sugar Research Station in St. Gabriel. The year after assignment, varieties advanced for further testing are replanted in nursery trials located on commercial sugarcane farms located in Paincourtville, Cecilia, and Bunkie, each representing a different region of the sugarcane belt. Two years after assignment, active varieties are replanted in three infield tests (Ardoyne Farm and additional commercial farms at Vacherie and Youngsville). In addition, two years after assignment, varieties are introduced to primary stations and outfield locations for testing by the SRU, LSU AgCenter, and the American Sugar Cane League.

The SRU’s nursery test plots planted during the year of assignment use a randomized complete block design with two replications. Plots are sixteen-feet long by six feet (one row) wide with a four-foot alleyway between plots. A minimum of three commercial varieties were planted in each test for comparison purposes. In addition to experimental commercial varieties, clones from the SRU’s Recurrent Selection for Borers (RSB) program are included in nursery trials. Yield data collected on RSB clones give breeders needed agronomic information to assist in deciding what crosses should be made with these borer-resistant clones. The year after assignment, varieties from the SRU’S program are combined with varieties from the LSU program and planted in nurseries on commercial farms. Plot length in these tests is increased to 20 feet.

Nursery test plots were rated for agronomic traits in the spring and summer. Stalk counts of mature, millable stalks are made in late July or August. A ten-stalk sample is hand-cut from plots of active varieties during the harvest season. Samples from USDA nurseries are taken to the Juice and Milling Quality Laboratory at the USDA Ardoyne Farm, where they are weighed to determine stalk weight and processed for sucrose analysis. Brix and pol values are used to estimate the yield of theoretical recoverable sugar (TRS) per ton of cane. Estimated yields of cane and 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 acceptable yields (both cane tonnage and sugar per ton) and disease and insect resistance are advanced for further testing.

Infield variety tests are planted at three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville) two years after assignment. Evaluations on commercial farms are conducted cooperatively with the LSU AgCenter sugarcane variety personnel. Infield tests are planted in a randomized complete block design with two replications, and include a minimum of three commercial varieties used as controls. Plot size in infield tests are two rows wide by twenty-four feet long. A 10-stalk sample is hand-cut from each plot just prior to harvesting and sent to the lab at the Ardoyne Farm, where they are weighed and

processed through the pre-breaker/press for sucrose and fiber analysis. Brix and pol values are then used to estimate 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 axles and hitch. The weight of harvested cane in each plot, stalk weights and sucrose analysis were 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 USDA infield and nursery evaluations. Results of infield and-nursery trials can be found in Tables 2 to 16. Statistical analyses were conducted for each test and for each series using PROC MIXED procedures in SAS (version 9.1). For purposes of comparison, HoCP 96-540 is highlighted in each table. Yield values which are significantly higher or lower ( $P=0.05$ ) than values for HoCP 96-540 are noted with a '+' or '-', respectively.

Table 1. 2010 Planting and harvest dates of “Ho” nursery & infield tests.

Series	Location <sup>1/</sup>	Soil Texture <sup>2/</sup>	Test type	Planting Date	Harvest Dates			
					2007	2008	2009	2010
2004	SUG	Cosl	Infield	8/15/06	12/19	12/12	11/18	10/07
2005	AFH	Sc	Infield	9/21/07		11/12	11/09	11/01
2005	BLK	Csl	Infield	8/17/07		12/03	11/03	11/01
2005	SUG	Cosl	Infield	9/10/07		12/12	11/18	10/07
2006	AFH	Sc	Infield	10/03/08			11/09	11/01
2006	BLK	Csl	Infield	9/24/08			12/16	11/01
2007	AFL	Csl	Nursery	10/16/07		12/05	--- <sup>3/</sup>	10/27
2007	IRS	Bsc	Nursery	10/15/07		12/09	11/04	10/29
2007	STG	Sc	Nursery	10/12/07		12/05	11/16	10/28
2007	AFH	Sc	Infield	8/27/09				11/22
2007	BLK	Csl	Infield	8/10/09				12/09
2007	SUG	Cosl	Infield	8/26/09				12/07
2008	AFL	Csl	Nursery	10/31/08			12/11	11/18
2008	IRS	Bsc	Nursery	10/29/08			11/13	10/29
2008	STG	Sc	Nursery	10/30/08			11/24	10/28
2009	AFL	Csl	Nursery	10/22/09				12/09
2009	STG	Sc	Nursery	11/06/09				12/10
2008	AFH	Sc	Infield	9/29/10				
2008	BLK	Csl	Infield	9/10/10				
2008	SUG	Cosl	Infield	8/25/10				
2010	AFL	Csl	Nursery	10/15/10				
2010	IRS	Bsc	Nursery	10/21/10				
2010	STG	Sc	Nursery	10/19/10				

<sup>1/</sup> AFH = Ardoyne Farm heavy soil, AFL = Ardoyne Farm Light soil in Schriever, BLK = Blackberry Farms in Vacherie, IRS = Iberia Research Station in Jeanerette, STG = St. Gabriel Research Station in St. Gabriel, SUG = Sugarland Farms in Youngsville.

<sup>2/</sup> Bsc = Baldwin silty clay, Cosl = Coteau silt loam, Csl = Commerce silt loam, Sc = Sharkey clay

<sup>3/</sup> Not harvested.



Table 2. Infield second-stubble means of the 2005 “Ho” assignment series on a Sharkey clay soil at the Ardoyne Farm in Schriever, LA in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
LCP 85-384	5945	28.4	220	1.57	12629	12.6
Ho 95-988	9098 +	38.7 +	235	1.74	20721	12.8
<b>HoCP 96-540</b>	<b>5797</b>	<b>27.2</b>	<b>214</b>	<b>1.81</b>	<b>17243</b>	<b>12.5</b>
L 99-226	8974 +	35.9 +	250 +	2.20	16940	13.0
Ho 05-961	8527 +	34.8 +	245 +	1.69	19511	13.0

Table 3. Infield second-stubble means of the 2005 “Ho” assignment series across three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville, Louisiana) in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
LCP 85-384	5526	25.3	221	1.47 -	17999	12.2
Ho 95-988	7980 +	34.0 +	235	1.71	20923	12.8
<b>HoCP 96-540</b>	<b>5254</b>	<b>23.3</b>	<b>225</b>	<b>1.72</b>	<b>14218</b>	<b>12.4</b>
L 99-226	7401 +	30.5 +	241 +	2.02 +	15528	13.2
Ho 05-961	7589 +	30.6 +	248 +	1.64	19221	13.7

Table 4. Nursery second-stubble means of the 2007 “Ho” assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>13624</b>	<b>54.7</b>	<b>251</b>	<b>2.41</b>	<b>45148</b>
LCP 85-384	14819	52.1	285 +	2.06	50593
L 97-128	10534	35.7	295 +	1.92	36981
L 99-226	12538	43.3	290 +	2.57	34258
Ho 07-613	12983	45.0	289 +	2.12	42653
Ho 06-9607 <sup>4/</sup>	9868	37.6	264	1.69 -	43560
Ho 06-9608 <sup>4/</sup>	12578	50.4	249	1.47 -	68743 +
Ho 06-9609 <sup>4/</sup>	7119 -	38.7	183 -	1.63 -	47644
Ho 06-9610 <sup>4/</sup>	6526 -	27.3	240	1.22 -	43106

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 5. Nursery second-stubble means of the 2007 “Ho” assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>12527</b>	<b>51.8</b>	<b>240</b>	<b>2.20</b>	<b>47190</b>
LCP 85-384	8647	34.0	250	1.69 -	38796
L 97-128	13087	49.9	260	2.15	46509
L 99-226	13674	49.1	278 +	2.29	42879
Ho 07-613	12230	47.2	259	2.28	41518
Ho 06-9607 <sup>4/</sup>	7733	32.8	236	1.67 -	39476
Ho 06-9608 <sup>4/</sup>	8654	40.7	213	1.36 -	60122
Ho 06-9609 <sup>4/</sup>	8324	46.8	178 -	1.56 -	60122
Ho 06-9610 <sup>4/</sup>	6042 -	27.2	223	1.17 -	44694

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 6. Nursery second-stubble means of the 2007 “Ho” assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>12684</b>	<b>46.3</b>	<b>273</b>	<b>1.66</b>	<b>56038</b>
LCP 85-384	9966	38.2	259	1.55	49005
L 97-128	9812	34.5	283	1.76	39249
L 99-226	9683	34.1	286	1.94	33578
Ho 07-613	10118	35.8	281	1.53	46963
Ho 06-9607 <sup>4/</sup>	5226	21.6	242 -	1.31	32897
Ho 06-9608 <sup>4/</sup>	5165	23.5	219 -	1.15 -	41064
Ho 06-9609 <sup>4/</sup>	5895	30.7	191 -	1.22	49913
Ho 06-9610 <sup>4/</sup>	2558	11.3	224 -	0.83 -	25637

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 7. Nursery second-stubble means of the 2007 “Ho” assignment series across locations (Ardoyne Farm in Schriever, Iberia Research Station in Jeanerette, and Sugar Research Station in St. Gabriel) in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>12945</b>	<b>51.0</b>	<b>255</b>	<b>2.09</b>	<b>49459</b>
LCP 85-384	11144	41.4	265	1.77	46131
L 97-128	11144	40.0 -	279 +	1.94	40913
L 99-226	11965	42.1	285 +	2.26	36905
Ho 07-613	11777	42.7	276 +	1.98	43711
Ho 06-9607 <sup>4/</sup>	7609 -	30.7 -	247	1.56 -	38644
Ho 06-9608 <sup>4/</sup>	8799 -	38.2 -	227 -	1.33 -	56643
Ho 06-9609 <sup>4/</sup>	7113 -	38.7 -	184 -	1.47 -	52559
Ho 06-9610 <sup>4/</sup>	5042 -	21.9 -	229 -	1.07 -	37813

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 8. Infield plant-cane means of the 2007 “Ho” and “L” assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
<b>HoCP 96-540</b>	<b>11133</b>	<b>45.2</b>	<b>246</b>	<b>2.47</b>	<b>20192</b>	<b>12.1</b>
L 99-226	12050	42.9	281 +	3.45 +	17243	13.3
L 99-233	10704	45.1	237	2.14	27263 +	16.2 +
HoCP 00-950	10892	38.7 -	281 +	2.25	20910	12.6
L 01-283	10657	40.8	262	1.93	25259 +	12.3
L 07-057	10385	43.5	239	1.92	23633 +	14.5 +
Ho 07-613	13065 +	49.6	264	2.74	22234	11.8

Table 9. Infield plant-cane means of the 2007 “Ho” assignment series across three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville, Louisiana) in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
<b>HoCP 96-540</b>	<b>9838</b>	<b>38.6</b>	<b>256</b>	<b>2.56</b>	<b>16335</b>	<b>12.6</b>
L 99-226	12176	43.6	279 +	3.00	17394	12.4
L 99-233	10541	42.6	247	2.06 -	24288 +	15.0 +
HoCP 00-950	10976	39.4	280 +	2.16	19902 +	12.9
L 01-283	10317	37.8	273 +	2.00 -	22486 +	11.8
Ho 07-613	11390	41.9	272 +	2.49	20003 +	11.8

Table 10. Nursery first-stubble means of the 2008 “Ho” assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>11661</b>	<b>42.7</b>	<b>267</b>	<b>2.72</b>	<b>30174</b>
L 99-226	15197	50.3	303 +	2.67	38342
L 01-283	13304	45.8	290	1.93 -	47644 +
Ho 08-706	12777	46.4	276	2.07 -	44921 +
Ho 08-709	15059	51.3	294 +	2.08 -	49459 +
Ho 08-711	13421	48.4	278	2.45	39476
Ho 08-717	15794	57.1	277	1.83 -	62844 +
HoL 08-723	14818	53.5	277	2.21	48324 +
HoCP 08-726	12660	41.7	303 +	2.37	35166
Ho 08-730	17362	64.9	268	2.38	54450 +
Ho 08-9616 <sup>4/</sup>	11047	40.4	273	1.85 -	44014
Ho 08-9617 <sup>4/</sup>	11530	43.2	267	1.99 -	43333
Ho 08-9618 <sup>4/</sup>	10578	38.2	277	1.88 -	41291

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 11. Nursery first-stubble means of the 2008 “Ho” assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>10220</b>	<b>42.4</b>	<b>241</b>	<b>2.19</b>	<b>38796</b>
L 99-226	9742	35.4	274 +	2.22	31763
L 01-283	6257 -	22.4 -	279 +	1.58 -	28586
Ho 08-706	5553 -	21.3 -	260	1.39 -	30855
Ho 08-709	8853	36.1	245	1.53 -	47190
Ho 08-711	7493	30.6	245	1.83 -	33578
Ho 08-717	11134	44.7	249	1.51 -	59441 +
HoL 08-723	5966 -	25.0 -	240	1.60 -	31082
HoCP 08-726	9358	32.9	284 +	2.20	29948
Ho 08-9616 <sup>4/</sup>	5928 -	22.8 -	260	1.31 -	34939
Ho 08-9617 <sup>4/</sup>	5058 -	22.1 -	227	1.37 -	32216
Ho 08-9618 <sup>4/</sup>	6075 -	28.0 -	217 -	1.62 -	35393

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 12. Nursery first-stubble means of the 2008 “Ho” assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>12443</b>	<b>50.5</b>	<b>246</b>	<b>2.40</b>	<b>41745</b>
L 99-226	13571	47.7	285 +	2.49	39476
L 01-283	12295	43.6	282 +	2.05	42653
Ho 08-706	10439	40.3	259	2.07	39023
Ho 08-709	12989	49.7	261	1.66 -	60122
Ho 08-711	16206	63.4	255	2.55	49913
Ho 08-717	16480	63.2	261	1.98	63752 +
HoL 08-723	13848	55.6	250	1.87	60349
HoCP 08-726	9828	34.7	283 +	1.93	36981
Ho 08-9616 <sup>4/</sup>	8523	36.0	237	1.48 -	49005
Ho 08-9617 <sup>4/</sup>	6382 -	27.6 -	225	1.44 -	38115
Ho 08-9618 <sup>4/</sup>	7295	34.9	205 -	2.04	33124

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 13. Nursery first-stubble means of the 2008 “Ho” assignment series across locations (Ardoyne Farm in Schriever, Iberia Research Station in Jeanerette, and Sugar Research Station in St. Gabriel) in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>11441</b>	<b>45.2</b>	<b>251</b>	<b>2.43</b>	<b>36905</b>
L 99-226	12837	44.5	287 +	2.46	36527
L 01-283	10619	37.3	284 +	1.85 -	39628
Ho 08-706	9590	36.0	265	1.84 -	38266
Ho 08-709	12300	45.7	267	1.75 -	52257 +
Ho 08-711	12373	47.5	259	2.27	40989
Ho 08-717	14470 +	55.0	262	1.77 -	62013 +
HoL 08-723	11544	44.7	256	1.89 -	46585 +
HoCP 08-726	10616	36.5	290 +	2.17	34031
Ho 08-9616 <sup>4/</sup>	8500 -	33.1 -	257	1.55 -	42653
Ho 08-9617 <sup>4/</sup>	7656 -	31.0 -	240	1.60 -	37888
Ho 08-9618 <sup>4/</sup>	7983 -	33.7 -	233 -	1.85 -	36603

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 14. Nursery plant cane means of the 2009 “Ho” assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>10339</b>	<b>40.7</b>	<b>255</b>	<b>2.61</b>	<b>31309</b>
L 99-226	15890 +	54.8	290 +	3.48 +	31536
L 99-233	14268	51.0	276	2.16	46509 +
L 01-283	12782	48.8	262	2.13	46056 +
HoCP 09-800	13077	48.0	273	2.34	41064 +
HoCP 09-801	12940	47.4	274	2.23	42426 +
HoCP 09-802	10288	38.5	268	2.69	28586
HoCP 09-803	10959	38.1	287 +	1.99 -	38569
HoCP 09-804	11337	41.1	276	1.89 -	42653 +
HoCP 09-805	12457	48.1	259	2.95	32670
HoCP 09-808	11898	48.4	246	2.77	34939
HoCP 09-809	11976	48.8	245	2.43	40384 +
HoCP 09-810	14306	54.0	265	2.89	37661
HoCP 09-811	10325	40.5	255	2.00	41291 +
HoCP 09-813	13009	51.5	252	2.45	41972 +
HoCP 09-814	17347 +	62.3 +	278 +	2.95	42199 +
Ho 09-816	10729	39.8	270	2.39	33351
Ho 09-819	13098	49.9	262	2.41	41291 +
Ho 09-822	12408	46.7	266	2.45	38115
Ho 09-824	11976	45.9	261	2.48	36981
Ho 09-825	11966	45.2	266	2.36	38115
Ho 09-827	14806 +	59.8 +	248	2.76	43106 +
Ho 09-829	12743	57.1 +	224 -	2.91	39249
Ho 09-831	13595	47.2	288 +	3.42 +	27679
Ho 09-832	12431	49.1	253	2.35	41745 +
Ho 09-840	14605	55.2	263	2.03	53996 +
Ho 09-841	12648	48.3	262	2.42	39930 +
HoCP 09-846	14408	55.0	262	2.58	42653 +
Ho 09-847	10953	43.1	254	2.62	33124
Ho 09-848	11979	45.4	262	2.49	36073
Ho 09-850	13980	53.2	263	2.58	41745 +
Ho 09-853	14097	54.3	260	2.81	39476
Ho 09-854	15114 +	63.6 +	238	3.17	40157 +
Ho 09-856	10903	43.8	249	2.80	31536
Ho 09-9401	10454	44.9	234 -	2.37	38342
Ho 09-9619 <sup>4/</sup>	10761	46.9	230 -	2.89	32443
Ho 09-9620 <sup>4/</sup>	6281	28.6	220 -	2.04	28133
Ho 09-9621 <sup>4/</sup>	5790 -	26.2	217 -	2.28	22461 -
Ho 09-9622 <sup>4/</sup>	12086	55.3	219 -	2.57	43106 +
Ho 09-9623 <sup>4/</sup>	9086	37.8	239	2.26	33351

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

Table 15. Nursery plant cane means of the 2009 “Ho” assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>12171</b>	<b>44.8</b>	<b>272</b>	<b>2.49</b>	<b>36073</b>
L 99-226	19725 +	68.6 +	288	4.09 +	33804
L 99-233	14170	56.3	252	2.22	50820 +
L 01-283	11558	42.3	274	2.48	34031
HoCP 09-800	13360	56.5	236	2.62	43333
HoCP 09-801	11993	51.2	234	2.66	38569
HoCP 09-802	13780	53.6	257	2.56	41972
HoCP 09-803	10031	37.2	269	1.69 -	44241 +
HoCP 09-804	13369	49.4	271	2.15	46283 +
HoCP 09-805	14220	60.9 +	232 -	2.83	43106
HoCP 09-808	9943	45.3	219 -	1.97 -	46056 +
HoCP 09-809	12132	51.2	237	2.25	46056 +
HoCP 09-810	15540	62.9 +	247	3.00	41972
HoCP 09-811	9659	39.2	246	1.72 -	45829 +
HoCP 09-813	12971	59.4 +	217 -	2.47	48098 +
HoCP 09-814	14351	63.8 +	223 -	2.78	45829 +
Ho 09-816	11224	48.6	230 -	2.57	37888
Ho 09-819	9009	40.3	221 -	1.75 -	46283 +
Ho 09-822	9949	45.8	218 -	2.39	38342
Ho 09-824	13607	53.8	253	2.67	40384
Ho 09-825	13016	54.2	240	2.02 -	53769 +
Ho 09-827	11429	52.2	219 -	1.97 -	53089 +
Ho 09-829	9298	50.0	186 -	2.78	36073
Ho 09-831	13906	55.2	252	3.20 +	34712
Ho 09-832	13511	56.6	240	2.59	43560
Ho 09-840	11712	43.9	267	1.97 -	44694 +
Ho 09-841	9877	43.4	227 -	2.17	39930
HoCP 09-846	12599	50.9	248	2.55	39930
Ho 09-847	11956	49.2	244	2.82	34939
Ho 09-848	9287	42.9	214 -	3.13 +	27452 -
Ho 09-850	9449	43.8	213 -	2.44	35846
Ho 09-853	12821	52.2	245	2.45	42653
Ho 09-854	10380	45.3	229 -	2.43	37208
Ho 09-856	16024	67.5 +	237	2.96 +	45602 +
Ho 09-9401	9150	40.4	227 -	2.15	37434
Ho 09-9619 <sup>4/</sup>	10638	50.7	206 -	2.45	41291
Ho 09-9620 <sup>4/</sup>	9671	48.0	202 -	2.05	46963 +
Ho 09-9621 <sup>4/</sup>	8780	41.1	213 -	2.37	34712
Ho 09-9622 <sup>4/</sup>	10264	51.4	201 -	2.52	40838
Ho 09-9623 <sup>4/</sup>	12119	52.3	232 -	2.10	49913 +

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.



Table 16. Nursery plant cane means of the 2009 “Ho” assignment series across locations (Ardoyne Farm in Schriever and Sugar Research Station in St. Gabriel) in 2010.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
<b>HoCP 96-540</b>	<b>11255</b>	<b>42.7</b>	<b>263</b>	<b>2.55</b>	<b>33691</b>
L 99-226	17807 +	61.7 +	289 +	3.79 +	32670
L 99-233	14219	53.7	264	2.19	48665 +
L 01-283	12170	45.5	268	2.30	40043
HoCP 09-800	13219	52.3	255	2.48	42199
HoCP 09-801	12466	49.3	254	2.44	40497
HoCP 09-802	12034	46.0	262	2.62	35279
HoCP 09-803	10495	37.7	278	1.84 -	41405
HoCP 09-804	12353	45.3	273	2.02 -	44468 +
HoCP 09-805	13339	54.5	246	2.89	37888
HoCP 09-808	10920	46.8	233 -	2.37	40497
HoCP 09-809	12054	50.0	241	2.34	43220
HoCP 09-810	14923 +	58.4 +	256	2.94	39817
HoCP 09-811	9992	39.9	251	1.86 -	43560
HoCP 09-813	12990	55.4	234 -	2.46	45035 +
HoCP 09-814	15849 +	63.1 +	250	2.87	44014 +
Ho 09-816	10977	44.2	250	2.48	35619
Ho 09-819	11054	45.1	242	2.08	43787
Ho 09-822	11179	46.2	242	2.42	38228
Ho 09-824	12792	49.8	257	2.57	38682
Ho 09-825	12491	49.7	253	2.19	45942 +
Ho 09-827	13117	56.0 +	233 -	2.36	48098 +
Ho 09-829	11020	53.5	205 -	2.84	37661
Ho 09-831	13751	51.2	270	3.31 +	31195
Ho 09-832	12971	52.8	247	2.47	42653
Ho 09-840	13158	49.6	265	2.00 -	49345 +
Ho 09-841	11263	45.9	245	2.30	39930
HoCP 09-846	13503	52.9	255	2.56	41291
Ho 09-847	11455	46.1	249	2.72	34031
Ho 09-848	10633	44.2	238 -	2.81	31763
Ho 09-850	11715	48.5	238 -	2.51	38796
Ho 09-853	13459	53.2	253	2.63	41064
Ho 09-854	12747	54.4	234 -	2.80	38682
Ho 09-856	13464	55.6	243	2.88	38569
Ho 09-9401	9802	42.6	230 -	2.26	37888
Ho 09-9619 <sup>4/</sup>	10699	48.8	218 -	2.67	36867
Ho 09-9620 <sup>4/</sup>	7976	38.3	211 -	2.05 -	37548
Ho 09-9621 <sup>4/</sup>	7285 -	33.6	215 -	2.32	28586
Ho 09-9622 <sup>4/</sup>	11175	53.3	210 -	2.54	41972
Ho 09-9623 <sup>4/</sup>	10602	45.0	236 -	2.18	41632

<sup>4/</sup> Varieties from the SRU’S Recurrent Selection for Borers (RSB) program.

## **2010 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS**

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The outfield variety trials are the final stage of testing experimental varieties for their potential commercial production in Louisiana. Results from these trials are used in both variety advancement and crossing decisions. The outfield variety trials are cooperatively conducted at 12 commercial locations throughout the Louisiana sugarcane belt by the LSU AgCenter, the USDA-ARS, and the American Sugar Cane League.

To be considered for release, an experimental variety must equal or exceed the performance of commercial varieties with regard to yield and harvestability across locations, crops, and years. Accurate varietal evaluation requires overall yield performance information in addition to performance under adverse harvest conditions. The objective of this report is to provide overall and specific location yield data by crop for the 2010 outfield tests. Included are multi-year yield analyses for appropriate test varieties.

The experimental design used at each outfield location was a randomized complete block design with three replications per location. Test plots were two rows wide and 50 feet long with a 5-foot alley between plots. All locations were harvested with a combine harvester and each plot was weighed with a weigh wagon fitted with load cells mounted on each axle and hitch. A 10-stalk, whole-stalk sample, not stripped of leaves, was taken from each plot and sent to the USDA-ARS sucrose laboratory. Samples were hand cut for all tests. The samples were weighed, milled, and the juice analyzed for Brix and pol. Pounds of theoretical recoverable sugar per ton of cane were reported.

Cane yield for each plot was estimated by plot weight, less 14% to adjust for leaf-trash weight 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 one year of yield data can be misleading because varieties may differ in relative performance from year to year. Across location means can likewise be misleading since a variety, experimental or commercial, may not perform consistently at all locations. Multi-year and multi-location testing solves these problems by averaging the inconsistent performances.

The most widely grown variety in Louisiana in 2010 was HoCP96-540, occupying 48% of the state's acreage. Accordingly for comparison, HoCP96-540 is used as the check variety in all comparisons and is highlighted in the tables. To adjust for missing data, the SAS analysis

calculated least square means (v 9.2, Proc Mixed). Mean separation used least square mean probability differences (P=0.05). Varieties that are significantly higher or lower than HoCP96-540 are denoted by a plus (+) or minus (-), respectively, next to the value for each trait.

Four experimental varieties representing the 2008 assignment series were introduced to outfield locations for seed increase in 2010 (Table 1). Four experimental and seven commercial varieties were planted at 12 outfield locations. Thirty-six tests were harvested in 2010 including eleven plantcane, ten first-stubble, eleven second-stubble, and four third-stubble crops (Table 2).

Variety yields are reported by crop and trait with overall means and individual location data in the same table and in summary tables by crop. A combined analysis of plantcane, first-stubble, second-stubble, and third-stubble crops averaged over several years is also provided.

Due to extremely wet harvesting conditions during the 2009 harvest and a subsequent cold winter and spring, HoCP96-540 was slow to start growth in early spring. L 99-226 appeared to better tolerate these conditions, which is reflected in the yield data. The Louisiana sugar industry was spared of tropical activity in 2010. Harvest conditions were favorable with dry weather experienced for most of the season in 2010. All tests were harvested by the second week of December 2010. On December 14, 2010, the industry experienced a severe freeze (25 F at Houma, LA). With the last mill completing its processing on January 3, 2011, the effect of the freeze was minimal.

HoCP04-838 was harvested in plantcane through second stubble crops in 2010 and will be considered for release in the spring of 2011. The experimental variety Ho05-961 was harvested in plant-cane and first stubble crops and was sent from the primary seed increase stations to secondary increase stations in 2010. This experimental variety could be released in 2012.

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Data were obtained through a cooperative effort of personnel from the LSU AgCenter, USDA-ARS, Sugarcane Research Laboratory, and the American Sugar Cane League in accordance to the provisions of the “Three-way Agreement of 2007.” Outfield testing would not be possible without the full cooperation of the growers at each outfield location.

Table 1. Commercial and experimental varieties planted in the outfield in 2010.

Commercial Varieties		Experimental Varieties		Experimental Varieties Introduced to the Outfield		
HoCP96-540	L01-283	HoCP04-838	L07-057	L08-057	Ho08-706	HoL08-723
L99-226	L01-299	HoCP05-961	HoCP07-613	L08-088	Ho08-709	HoCP08-726
L99-233	L03-371			L08-090	Ho08-711	
HoCP00-950				L08-092	Ho08-717	

Table 2. Harvest and planting dates for all outfield locations harvested in 2009.

Location	Parish	Plantcane			First-stubble		Second-stubble		Third-stubble	
		2010 Planting Date	2010 Harvest Date	2009 Planting Date	2010 Harvest Date	2008 Planting Date	2010 Harvest Date	2007 Planting Date	2010 Harvest Date	2006 Planting Date
A. Landry	Iberville	8/16	**	*	**	10/07	10/7	08/27	**	09/07
Allains	St. Mary	9/17	12/10	11/19	10/20	10/15	10/20	10/05	**	10/04
Alma	Pointe Coupee	9/13	11/10	08/31	11/10	09/29	10/4	10/22	10/4	09/21
Bon Secour	St. James	9/15	12/6	09/03	12/6	09/24	10/18	09/06	10/18	09/26
Brunswick	Pointe Coupee	9/2	11/9	08/27	11/9	09/22	10/6	09/15	**	*
F. Martin	St. Mary	9/10	12/1	09/04	10/14	10/13	10/14	09/28	**	*
Glenwood	Assumption	9/20	11/23	09/02	11/23	10/02	11/2	09/12	11/3	08/16
Lanaux	St. John	9/23	12/2	09/01	12/2	09/24	10/19	09/11	10/19	08/29
Levert-St. John	St. Martin	9/9	11/18	08/20	11/18	09/23	10/21	09/19	**	08/30
Magnolia	Terrebonne	9/16	11/16	09/03	11/16	10/17	9/30	09/07	**	10/10
Mary	Lafourche	9/24	11/15	10/21	**	10/09	**	09/20	**	*
R. Hebert	Iberia	9/1	12/16	09/22	11/4	10/13	10/22	09/27	**	09/12

\* No test planted at this location.

\*\* No test harvested at this location.

Table 3. Plantcane sugar per acre for six commercial and two experimental varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick		
HoCP96-540	7938	10512	9157	9576	9961	5488	7423	6921	9159	5642	9006	8253	
L99-226	7067	-----	9085	8277	8660	6477	9504	+ 9305	+ 9820	9022	+ 9311	8745	
L99-233	7590	8766	- 8322	8058	- 9616	7284	8817	+ 9555	+ 10413	+ 8084	+ 8486	8618	
HoCP00-950	5961	- 9860	8368	8844	9074	6776	9009	+ 9597	+ 8601	8034	+ 9867	8545	
L01-283	5730	- 9753	9585	6880	- 8617	5748	7603	8144	8073	6322	9416	7806	
L03-371	-----	9942	-----	8560	9833	7880	9363	+ 10403	+ 9918	6654	9360	9009	+
HoCP04-838	6203	- 8214	- 8892	6986	- 9340	6649	8478	7057	9798	7483	+ 9570	8061	
Ho05-961	7440	8377	- 8080	6094	- 7146	7314	8611	+ 9282	+ 8764	6959	8979	7913	

Table 4. Plantcane cane yield for six commercial and two experimental varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick		
HoCP96-540	24.3	35.4	32.8	34.0	35.2	25.4	28.4	27.9	32.1	21.4	34.7	30.1	
L99-226	22.0	-----	31.4	28.3	- 29.1	27.6	31.5	31.6	31.7	31.6	+ 32.7	30.0	
L99-233	24.8	30.9	30.3	28.6	- 33.1	35.2	+ 33.7	34.9	+ 37.1	+ 29.4	+ 34.5	32.0	
HoCP00-950	18.1	- 32.1	28.7	28.4	- 28.3	26.2	31.3	30.8	28.1	26.2	33.8	28.4	
L01-283	17.8	- 33.8	32.0	24.1	- 28.8	25.0	26.5	28.6	27.3	- 22.4	35.5	27.4	
L03-371	-----	33.1	-----	28.0	- 34.3	31.2	32.2	35.2	+ 32.7	23.7	34.0	31.0	-
HoCP04-838	20.2	- 31.6	31.6	25.8	- 32.1	31.6	31.6	26.1	35.7	27.0	36.2	30.0	
Ho05-961	23.6	29.2	27.0	22.2	- 24.3	32.1	+ 30.6	33.0	+ 29.9	26.2	30.8	28.1	

Table 5. Plantcane sugar per ton for six commercial and two experimental varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick		
HoCP96-540	326	297	280	281	283	216	262	249	285	263	259	273	
L99-226	320	-----	291	293	298	235	301 +	294 +	310 +	285 +	284 +	292 +	
L99-233	307	283	275	281	286	206	262	274 +	280	274	246	270	
HoCP00-950	329	307	292	311 +	320 +	257 +	288 +	312 +	306 +	307 +	291 +	302 +	
L01-283	322	289	299	286	299	230	287 +	285 +	296 +	284 +	265	286 +	
L03-371	-----	301	-----	306 +	286	253 +	291 +	296 +	304 +	281	276	293 +	
HoCP04-838	308	260 -	281	270	291	212	269	270 +	275 -	277	265	271	
Ho05-961	315	287	299	276	292	227	282 +	283 +	293	266	289 +	283	

Table 6. Plantcane stalk weight for six commercial and two experimental varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick		
HoCP96-540	2.05	3.09	2.89	2.90	2.67	2.59	2.86	2.63	4.10	2.49	3.07	2.85	
L99-226	2.30	-----	2.49	3.44	2.87	2.79	3.26	2.71	3.42 -	3.67 +	2.63	2.96	
L99-233	1.85	2.08 -	2.04 -	2.44	2.42	2.20	2.17 -	2.16	2.81 -	2.42	1.98 -	2.23 -	
HoCP00-950	1.67	2.29 -	2.08 -	2.28 -	1.99 -	2.49	2.30	2.76	2.95 -	2.63	2.58 -	2.37 -	
L01-283	1.77	2.29 -	2.16 -	2.28 -	2.19	2.40	2.53	2.17	3.07 -	2.26	2.28 -	2.31 -	
L03-371	-----	2.48 -	-----	2.52	2.83	2.36	2.70	2.69	3.26 -	2.49	2.56 -	2.58	
HoCP04-838	1.69	2.30 -	2.34 -	2.21 -	2.03 -	2.59	2.49	2.09	2.73 -	2.58	2.40 -	2.31 -	
Ho05-961	2.01	2.17 -	2.06 -	2.25 -	2.21	2.57	2.60	1.99 -	2.78 -	2.42	2.26 -	2.30 -	

Table 7. Plantcane stalk number for six commercial and two experimental varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick		
HoCP96-540	23852	23065	22670	23456	26519	19834	19893	21583	15680	17118	22648	21483	
L99-226	19219	-----	25376	16579	20392	19721	19622	23506	18603	17199	25080	20755	
L99-233	27046	29873	29582	23782	26955	31943	+ 31603	+ 32313	+ 26429	+ 24388	35228	+ 28983	
HoCP00-950	21653	28338	27555	25177	28469	21108	27558	+ 22698	19258	20286	26300	24400	
L01-283	20499	29505	29712	21087	26234	21075	21602	26476	18170	19983	31023	+ 24124	
L03-371	-----	27034	-----	22248	24958	26602	+ 24001	26654	20326	+ 19049	26632	24264	
HoCP04-838	24132	27419	27293	23645	31577	24901	26188	+ 25129	26178	+ 21136	31196	+ 26237	
Ho05-961	23989	26946	26255	21416	22344	25319	+ 23561	33272	+ 21632	+ 21876	28398	25001	

Table 8. First-stubble sugar per acre for two experimental and six commercial varieties at ten outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick			
HoCP96-540	5865	10726	9005	5412	5214	6089	8545	8491	7979	9747	7707		
L99-226	6837	11727	9413	6349	6941	+ 9345	+ 10246	+ 11830	+ 10748	+ 12352	9579		
L99-233	5664	8766	- 9008	5670	5685	9923	+ 9279	9667	9814	+ 9150	8263		
HoCP00-950	4913	10139	6971	6209	5830	8056	+ 9063	9786	8243	9901	7911		
L01-283	4888	11780	8996	6386	7295	+ 9146	+ 10771	+ 11232	+ 8628	10390	8951		
L03-371	6950	11217	-----	6434	+ 6598	+ 9961	+ 9661	10358	+ 9233	-----	9086		
HoCP04-838	4213	- 9698	9526	5161	6600	+ 7901	+ 10716	+ 10086	7474	10315	8169		
Ho05-961	4790	10411	9888	4670	6419	+ 7875	+ 11732	+ 10784	+ 9346	10006	8592		

Table 9. First-stubble cane yield for two experimental and six commercial varieties at ten outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick			
HoCP96-540	21.4	35.9	31.9	19.8	22.8	22.1	31.8	29.6	29.7	35.8	28.1		
L99-226	23.9	36.4	29.6	22.2	27.8	30.1	33.9	36.9	34.4	41.4	31.7		
L99-233	20.9	33.0	32.8	20.2	23.8	35.8	37.0	33.9	35.4	36.4	30.9		
HoCP00-950	15.6	33.9	23.3	20.0	19.8	26.2	30.9	30.8	26.6	33.3	26.0		
L01-283	16.5	38.5	30.2	21.3	27.6	30.0	38.0	36.7	29.3	35.5	30.4		
L03-371	24.5	35.4	-----	22.1	28.3	32.5	32.5	33.9	31.3	-----	31.1		
HoCP04-838	15.9	33.0	34.2	19.4	25.5	28.1	39.0	36.5	28.1	36.5	29.6		
Ho05-961	16.5	33.5	34.0	15.7	23.1	26.2	39.2	34.9	30.9	34.4	28.9		

Table 10. First-stubble sugar per ton for two experimental and six commercial varieties at ten outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick			
HoCP96-540	274	298	283	273	228	277	269	286	268	273	273		
L99-226	287	323	318	287	250	311	302	321	313	299	301		
L99-233	271	266	275	281	239	276	251	285	277	252	267		
HoCP00-950	314	300	298	309	296	307	293	318	310	297	304		
L01-283	295	306	300	300	265	305	283	306	296	292	295		
L03-371	283	317	-----	292	234	306	297	305	295	-----	291		
HoCP04-838	267	295	279	265	258	281	275	276	266	281	274		
Ho05-961	290	312	290	298	278	300	299	309	304	290	297		



Table 11. First-stubble stalk weight for two experimental and six commercial varieties at ten outfield locations in 2010.

Variety	Heavy						Light						Mean			
	Allains	Alma	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick						
HoCP96-540	1.64	2.87	3.03	2.23	2.14	1.89	2.55	2.51	1.92	2.42	2.32					
L99-226	2.08	2.87	3.00	2.94	+	2.25	2.67	2.84	3.13	+	2.32	2.85	+	2.69	+	
L99-233	1.41	1.90	-	2.18	-	1.89	1.75	1.98	1.87	-	2.10	1.85	1.94	-	1.89	-
HoCP00-950	1.42	2.06	-	2.24	-	2.10	1.80	1.95	2.06	-	2.29	1.90	2.07	1.99	-	
L01-283	1.38	2.42	-	2.16	-	2.26	1.74	1.96	2.21	2.46	1.95	2.19	2.07	-		
L03-371	1.70	2.28	-	-----	2.09	2.04	2.08	2.29	2.42	2.20	-----	2.19	-			
HoCP04-838	1.36	2.18	-	2.29	-	1.95	1.85	2.13	2.09	-	2.60	1.96	2.24	2.07	-	
Ho05-961	1.65	2.00	-	2.21	-	1.99	1.67	1.90	2.13	2.20	1.89	1.99	-	1.96	-	

Table 12. First-stubble stalk number for two experimental and six commercial varieties at ten outfield locations in 2010.

Variety	Heavy						Light						Mean			
	Allains	Alma	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick						
HoCP96-540	26124	25305	21134	18164	21405	23705	24852	23722	31121	29781	24531					
L99-226	23048	25570	19941	15195	25425	22683	24089	23583	29941	29275	23875					
L99-233	29792	34993	+	30331	+	21469	28027	36086	+	39703	+	33370	38593	37766	33013	+
HoCP00-950	22575	32881	+	21080	19123	22098	27012	30600	26930	29750	32138	26419				
L01-283	24706	31872	+	27707	+	18836	32372	31126	35131	+	30141	30033	32485	29441	+	
L03-371	29991	31143	+	-----	21347	28148	32947	+	28405	28196	28492	-----	28901	+		
HoCP04-838	24984	30315	+	29914	+	20208	27865	26418	37878	+	28364	29073	32530	28755	+	
Ho05-961	20108	33466	+	30848	+	16241	27781	28250	37560	+	31689	33204	34817	29396	+	

Table 13. Second-stubble sugar per acre for one experimental nine commercial varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	Landry	St. John	Magnolia	F. Martin	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick		
LCP85-384	4663	3428	7547	7612	4327	6718	6577	6455	6164	5356	5098	5813	
Ho950988	3451	- 4248	7455	9647	+ 4670	6799	7231	+ 6632	7779	+ 7258	5849	6456	
HoCP96-540	5471	3797	6046	7768	4527	6662	5897	6288	3625	6581	5332	5635	
L97-128	3986	- 4339	7837	8873	4848	5723	7936	+ 7973	7531	+ 6144	6659	6532	
L99-226	4961	6070	+ 8527	9203	5687	+ 8342	+ 7667	+ 8096	+ 7991	+ 7136	6286	7270	
L99-233	4402	- 4678	7372	8925	4422	6585	6765	+ 6576	7273	+ 5951	6375	6302	
HoCP00-950	4059	- 5342	7198	8441	3263	- 7414	7483	+ 6742	7071	+ 6815	6654	6407	
L01-283	5868	6855	+ 7428	-----	5206	6492	7834	+ 8684	+ 8059	+ 8096	+ 8345	+ 7509	
L03-371	6104	-----	7617	9708	+ 5451	7124	7211	+ 8907	+ 7147	+ 9127	+ 8224	+ 7511	
HoCP04-838	5368	6329	+ 7253	10327	+ 5562	7031	7638	+ 9080	+ 6697	+ 6580	5397	7024	

Table 14. Second-stubble cane yield for one experimental nine commercial varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	Landry	St. John	Magnolia	F. Martin	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick		
LCP85-384	17.4	- 14.8	32.1	28.2	16.4	22.1	26.2	30.2	23.8	+ 20.9	28.6	23.7	
Ho950988	14.1	- 18.7	33.2	34.8	+ 18.4	24.8	28.5	28.8	28.4	+ 26.6	28.8	25.9	
HoCP96-540	21.6	16.9	26.5	29.1	20.0	23.0	25.4	28.4	14.0	24.9	29.4	23.6	
L97-128	14.0	- 16.7	30.0	35.2	+ 17.1	18.4	- 27.5	34.2	25.7	+ 21.7	30.5	24.6	
L99-226	18.1	- 27.2	+ 34.1	30.2	21.6	26.1	26.6	32.7	26.4	+ 25.0	30.0	27.1	
L99-233	17.4	- 20.4	31.0	34.3	16.6	23.9	30.6	33.1	28.9	+ 24.9	34.7	+ 26.9	
HoCP00-950	13.8	- 20.0	26.8	29.0	11.3	- 22.9	26.6	28.0	22.7	+ 22.8	29.9	23.1	
L01-283	19.6	28.3	+ 33.0	-----	19.5	20.5	28.9	37.0	+ 26.8	+ 29.3	36.9	+ 28.6	
L03-371	22.0	-----	34.8	35.8	+ 19.7	22.4	28.5	40.1	+ 26.4	+ 32.9	+ 38.3	+ 29.6	
HoCP04-838	19.3	27.0	+ 31.3	33.7	20.5	24.2	28.3	36.2	+ 27.7	+ 22.7	25.5	- 26.9	

Table 15. Second-stubble sugar per ton for one experimental nine commercial varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	Landry	St. John	Magnolia	F. Martin	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick		
	(lbs/tons)												
LCP85-384	268	230	234	271	268	304	252 +	213	258	255	180	248	
Ho950988	245	226	224	277	253	273	253 +	228	274	274	203	248	
HoCP96-540	253	243	229	267	226	290	232	220	255	265	183	242	
L97-128	285 +	260	260	252	284	312 +	289 +	233	293 +	283	218	270 +	
L99-226	274	225	250	306 +	265	319 +	289 +	247 +	300 +	286	210	270 +	
L99-233	252	230	239	261	267	276	222	199	251	239 -	185	238	
HoCP00-950	294 +	268	269	291	295	324 +	281 +	242	311 +	299 +	222	281 +	
L01-283	300 +	243	223	-----	267	316 +	271 +	234	302 +	277	226	268 +	
L03-371	277 +	-----	222	271	277	317 +	253 +	221	271	278	215	258 +	
HoCP04-838	279 +	237	231	306 +	275	291	270 +	250 +	243	291 +	211	262 +	

Table 16. Second-stubble stalk weight for one experimental nine commercial varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean
	Allains	Alma	Landry	St. John	Magnolia	F. Martin	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick		
	(lbs/tons)												
LCP85-384	1.25 -	1.29	1.57	1.62	1.39	1.51 -	2.11	1.83	1.79	1.81	1.72	1.63 -	
Ho950988	1.68	1.51	1.47	2.31 +	1.31	1.61	2.24	1.79	2.14	1.85	1.91	1.80	
HoCP96-540	1.61	1.46	1.82	1.76	1.52	1.83	2.32	2.16	1.83	2.02	1.76	1.82	
L97-128	1.69	1.52	1.92	2.01	1.64	1.65	2.24	2.07	1.87	2.02	2.02	1.88	
L99-226	2.10 +	1.71	2.24	2.30 +	1.78	1.93	2.50	2.52	2.39 +	2.05	2.27	2.16 +	
L99-233	1.56	1.37	1.69	1.51	1.29	1.42 -	1.86 -	1.54 -	1.79	1.83	1.78	1.60 -	
HoCP00-950	1.31	1.43	1.39	1.89	1.33	1.57	1.98 -	1.86	1.79	1.98	1.84	1.67	
L01-283	1.55	1.40	1.29 -	-----	1.33	1.38 -	1.65 -	1.68 -	1.62	1.73	1.92	1.57 -	
L03-371	1.54	-----	1.71	1.73	1.42	1.25 -	1.73 -	1.72 -	1.42	1.66	1.83	1.57 -	
HoCP04-838	1.69	1.84 +	1.66	2.16	1.74	1.79	1.83 -	2.29	2.14	1.83	2.09	1.91	

Table 17. Second-stubble stalk number for one experimental nine commercial varieties at eleven outfield locations in 2010.

Variety	Heavy						Light						Mean						
	Allains	Alma	Landry	St. John	Magnolia	F. Martin	Bon Secour (lbs/tons)	Glenwood	Lanaux	R.Hebert	Brunswick								
LCP85-384	28597	22954	42170	35404	24394	29706	24970	32997	26788	+	23955	33587	29593						
Ho950988	17179	- 24742	45531	+	30753	28723	30736	25523	32204	26528	+	28862	30501	29208					
HoCP96-540	27216	22353	32131		33225	26189	25100	22086	27436	15608		26018	33390	26492					
L97-128	16477	- 21834	31419		35062	20943	22351	24655	33109	27826	+	21654	30221	25959					
L99-226	17588	- 31766	+	30984	27697	24230	27145	21563	26344	22236		25190	26916	25606					
L99-233	22289	30346	36598	45596	+	26084	33856	+	33095	+	43339	+	32556	+	27532	40372	33788	+	
HoCP00-950	21572	28210	38682	31374	17021	-	31297	27015	31206	25948	+	23180	32942	28041					
L01-283	25570	40304	+	52077	+	-----	29379	29756	35673	+	44512	+	33198	+	33852	38728	36779	+	
L03-371	29512	-----	41304	42195	27818	36061	+	33656	+	46948	+	38262	+	39791	+	44083	+	37803	+
HoCP04-838	23638	29252	38222	31475	23545	26946	30905	+	32005	26420	+	25263	24706	28398					

Table 18. Third-stubble sugar per acre for ten commercial varieties at four outfield locations in 2010.

Variety	Heavy		Light		Mean
	Alma	Bon Secour	Glenwood	Lanaux	
(tons/A)					
LCP85-384	4098	6806 +	3543 +	3799 -	4561
Ho95-988	5606 +	7632 +	3716 +	5974	5732 +
HoCP96-540	3564	4733	1453	5619	3842
L97-128	5236 +	8717 +	3829 +	5408	5798 +
L99-226	5529 +	7778 +	4101 +	6836 +	6061 +
L99-233	3994	6449 +	3728 +	5799	4992
HoCP00-950	5895 +	6337 +	5018 +	-----	5844 +
L01-283	6490 +	8062 +	5337 +	6705 +	6648 +
L01-299	6200 +	7235 +	6154 +	5924	6377 +
L03-371	5455 +	8074 +	3654 +	6500	5921 +

Table 19. Third-stubble cane yield for ten commercial varieties at four outfield locations in 2010.

Variety	Heavy		Light		Mean
	Alma	Bon Secour	Glenwood	Lanaux	
(tons/A)					
LCP85-384	19.1	29.1 +	16.3 +	15.6 -	20.0
Ho95-988	24.8	30.0 +	15.6 +	22.2	23.2 +
HoCP96-540	19.4	20.9	6.2	21.0	16.8
L97-128	21.0	30.9 +	15.3 +	20.8	22.0 +
L99-226	28.6 +	28.6 +	16.8 +	23.4	24.4 +
L99-233	18.8	29.3 +	16.9 +	23.3	22.1 +
HoCP00-950	23.1	22.5	18.1 +	-----	21.0
L01-283	25.3 +	30.1 +	22.1 +	23.5	25.2 +
L01-299	27.2 +	29.5 +	25.5 +	22.0	26.1 +
L03-371	26.4 +	30.9 +	14.7 +	24.2	24.0 +

Table 20. Third-stubble sugar per ton for ten commercial varieties at four outfield locations in 2010.

Variety	Heavy		Light		Mean
	Alma	Bon Secour	Glenwood	Lanaux	
(tons/A)					
LCP85-384	217	234	218	245	229
Ho95-988	227	253	236	268	246
HoCP96-540	187	226	235	267	228
L97-128	253 +	282 +	253	260	262 +
L99-226	194	272 +	243	292 +	250
L99-233	215	220	219	251	226
HoCP00-950	255 +	282 +	277 +	-----	278 +
L01-283	259 +	268 +	242	286	264 +
L01-299	229	247	239	269	247
L03-371	208	260 +	248	269	246

Table 21. Third-stubble stalk weight for ten commercial varieties at four outfield locations in 2010.

Variety	Heavy		Light		Mean
	Alma	Bon Secour	Glenwood	Lanaux	
(tons/A)					
LCP85-384	1.37	2.10	1.25	1.72	1.61
Ho95-988	1.79	1.91	1.37	1.88	1.74
HoCP96-540	1.71	2.02	1.45	1.94	1.78
L97-128	1.65	2.05	1.57	1.67	1.74
L99-226	1.94	2.55 -	1.93 +	2.27	2.17 +
L99-233	1.53	1.74	1.56	1.59 -	1.61
HoCP00-950	1.73	1.84	1.43	-----	1.96
L01-283	1.67	1.86	1.28	1.61	1.61
L01-299	1.75	1.78	1.20 -	1.42 -	1.54 -
L03-371	1.64	2.09	1.60	1.94	1.82

Table 22. Third-stubble stalk number for ten commercial varieties at four outfield locations in 2010.

Variety	Heavy		Light		Mean
	Alma	Bon Secour	Glenwood	Lanaux	
(tons/A)					
LCP85-384	28370	27752	26095 +	18182	25100 +
Ho95-988	27856	32087 +	22835 +	23577	26589 +
HoCP96-540	22841	21213	8692	21757	18626
L97-128	25479	30097 +	20211 +	25218	25251 +
L99-226	29456	22615	17455 +	20757	22571
L99-233	25824	33891 +	21613 +	29447 +	27694 +
HoCP00-950	26767	25189	26131 +	-----	25712 +
L01-283	30385	33566 +	35024 +	29549 +	32131 +
L01-299	31645	33261 +	45077 +	31352 +	35302 +
L03-371	33188	29551	18370 +	25372	26620 +

Table 23. Plantcane means from eleven outfield locations in 2010: Allains, Alma, Brunswick, Bon Secour, F. Martin, Glenwood, Lanaux, Magnolia, Mary, R. Hebert and St. John.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
(lbs/A)					
(tons/A)					
(lbs/ton)					
(lbs)					
(stalks/A)					
HoCP96-540	8253	30.1	273	2.85	21483
L99-226	8745	30.0	292 +	2.96	20755
L99-233	8618	32.0	270	2.23 -	28983 +
HoCP00-950	8545	28.4	302 +	2.37 -	24400 +
L01-283	7806	27.4 -	286 +	2.31 -	24124 +
L03-371	9009	30.9	293 +	2.58 -	24264 +
HoCP04-838	8059	29.9	271	2.31 -	26237 +
Ho05-961	7913	28.1	283 +	2.30 -	25001 +

Table 24. First-stubble means from ten outfield locations in 2010: Allains, Alma, Brunswick, Bon Secour, F. Martin, Glenwood, Lanoux, Magnolia, R. Hebert and St. John.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	7707	28.1	273	2.32	24531
L97-128	9579 +	31.7 +	301 +	2.69 +	23875
L99-226	8263	30.9 +	267	1.89 -	33013 +
L99-233	7911	26.0	304 +	1.99 -	26419
HoCP00-950	8951 +	30.4	295 +	2.07 -	29441 +
L01-283	9086 +	31.1 +	291 +	2.19	28901 +
L01-299	8169	29.6	274	2.07 -	28755 +
L03-371	8592 +	28.9	297 +	1.96 -	29396 +
HoCP04-838	7707	28.1	273	2.32	24531
Ho05-961	9579 +	31.7 +	301 +	2.69 +	23875

Table 25. Second-stubble means from eleven outfield locations in 2010: Allains, Alma, Landry, Brunswick, Bon Secour, F. Martin, Glenwood, Lanoux, Magnolia, R. Hebert and St. John.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	5813	23.7	248	1.63 -	29593
Ho95-988	6456 +	25.9	248	1.80	29208
HoCP96-540	5635	23.6	242	1.82	26492
L97-128	6532 +	24.6	270 +	1.88	25959
L99-226	7270 +	27.1 +	270 +	2.16 +	25606
L99-233	6302 +	26.9 +	238	1.60 -	33788 +
HoCP00-950	6407 +	23.1	281 +	1.67 -	28041
L01-283	7509 +	28.6 +	268 +	1.57 -	36779 +
L01-299	7511 +	29.6 +	258 +	1.57 -	37803 +
L03-371	7024 +	26.9 +	262 +	1.91	28398
HoCP04-838	6130	24.7	255 +	1.67 -	30038 +

Table 26. Third-stubble means from four outfield locations in 2010: Alma, Bon Secour, Glenwood, and Lanaux.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	4561	20.0	229	1.61	25100
Ho95-988	5732 +	23.2 +	246	1.74	26589 +
HoCP96-540	3842	16.8	229	1.78	18626
L97-128	5798 +	22.0 +	262 +	1.74	25251
L99-226	6061 +	24.4 +	250 +	2.17 +	22571
L99-233	4992 +	22.1 +	226	1.61	27694 +
HoCP00-950	5844 +	21.0	278 +	1.68	25712
L01-283	6648 +	25.2 +	264 +	1.61	32131 +
L01-299	6377 +	26.1 +	246	1.54 -	35302 +
L03-371	5921 +	24.0 +	246	1.82	26620 +

Table 27. Combined plantcane means across outfield locations from 2006 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	9492	34.7	274	2.65	27028
L99-226	9908 +	34.2	290 +	2.94 +	23791 -
L99-233	9855	36.7 +	268 -	2.09 -	36083 +
HoCP00-950	9970 +	33.6	297 +	2.31 -	29613 +
L01-283	9588	34.1	282 +	2.24 -	31178 +
L01-299	9304	33.4	278	2.30 -	30004 +
L03-371	10091 +	34.9	290 +	2.46 -	28880 +
HoCP04-838	9946 +	36.5 +	272	2.30 -	32192 +

Table 28. Combined first-stubble means across outfield locations from 2007 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	8428	30.8	274	2.24	28046
L99-226	9302 +	31.3	296 +	2.64 +	24228 -
L99-233	8537	31.4	272	1.83 -	34890 +
HoCP00-950	8659	28.5 -	304 +	1.96 -	29346
L01-283	9184 +	31.7	290 +	1.92 -	33636 +
L01-299	9565 +	35.0 +	275	1.93 -	36852 +
L03-371	8948 +	31.2	287 +	2.19	28683
HoCP04-838	8660	31.7	273	2.01 -	31954 +



Table 29. Combined second-stubble means across outfield locations from 2008 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	6451	26.0	252	1.84	29095
L99-226	7391 +	26.9	277 +	2.16 +	25438 -
L99-233	7149 +	28.6 +	253	1.64 -	35613 +
HoCP00-950	7034 +	25.0	286 +	1.68 -	29972
L01-283	7910 +	29.5 +	272 +	1.65 -	36379 +
L01-299	8148 +	31.6 +	264 +	1.65 -	38743 +
L03-371	7614 +	28.5 +	270 +	1.91	30280
HoCP04-838	6681	26.1	262 +	1.70 -	31198

Table 30. Combined third-stubble means across outfield locations from 2009 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	5326	21.2	249	1.98	21036
L99-226	6705 +	24.6	274 +	2.23 +	22175
L99-233	6220	25.3	244	1.62 -	31475 +
HoCP00-950	6924 +	24.3	285 +	1.68 -	29691 +
L01-283	7253 +	26.8 +	272 +	1.63 -	33538 +
L01-299	7807 +	29.3 +	267 +	1.72 -	35268 +
L03-371	6949 +	26.5 +	262	1.89	27684

Table 31. Combined plantcane means for HoCP04-838 across outfield locations from 2008 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	9019	32.7	275	2.73	24550
L97-128	8773	31.7	277	2.65	23966
L99-226	9437	32.3	292 +	2.97 +	22012 -
L99-233	9765 +	35.6 +	274	2.15 -	33762 +
HoCP00-950	9561 +	31.9	300 +	2.32 -	27876 +
L01-283	9153	32.1	286 +	2.27 -	28870 +
L01-299	9878 +	33.8	293 +	2.52 -	27109 +
L03-371	9612 +	35.0 +	275	2.34 -	30237 +
HoCP04-838	9019	32.7	275	2.73	24550

Table 32. Combined first-stubble means for HoCP04-838 across outfield locations from 2009 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	8059	30.6	264	2.29	27015
L97-128	8175	29.5	277 +	2.34	25012
L99-226	9186 +	31.5	291 +	2.60 +	24611 -
L99-233	8499	32.1	265	1.86 -	34758 +
HoCP00-950	8540	28.5 -	300 +	1.91 -	30006 +
L01-283	9218 +	32.2	286 +	1.94 -	33843 +
L01-299	9719 +	36.5 +	268	1.97 -	37680 +
L03-371	8886 +	31.7	281 +	2.20	29045 +
HoCP04-838	8569	32.0	267	2.02 -	32065 +

Table 33. Combined plantcane means for Ho05-961 across outfield locations from 2009 to 2010.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
HoCP96-540	8994	33.2	272	2.75	24715
L99-226	9512	32.7	291 +	3.02 +	21944 -
L99-233	10223 +	37.2 +	275	2.20 -	34427 +
HoCP00-950	9898 +	33.0	300 +	2.39 -	27977 +
L01-283	9284	32.7	285 +	2.27 -	29416 +
L03-371	10160 +	35.1 +	291 +	2.55 -	27971 +
HoCP04-838	9879 +	36.3 +	273	2.37 -	30931 +
Ho05-961	9573 +	33.7	285 +	2.43 -	28208 +

## SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION

Gert Hawkins, Michael Pontif and Collins Kimbeng  
Sugar Research Station

The Sugar Research Station sucrose laboratory processed 2091 samples during the 2010 harvest season (Table 1). Standard laboratory procedures were used to analyze 9 samples that were also processed through the Spectracane FT-NIR instrument. The juice was extracted via a Honiron sugarcane hydraulic press. Procedures included the use of Octapol® for clarification, with Brix being measured by refractometer and pol measured by saccharimeter (Autopol 880). Sucrose percent and theoretical recoverable sugar (lbs/ton of cane) was calculated based on the Brix and pol values. In addition 220 samples including 80 sweet sorghum samples and 140 energy cane samples were analyzed for brix only. The juice was extracted via a three-roller mill. The sucrose laboratory processed samples from August 2010 to December 2010

A total of 1,871 samples were analyzed using the Spectracane FT-NIR instrument. The sample was prepared using a Dedini shredder then fed into the Spectracane unit containing NIR technology to analyze the sample for Brix, pol, fiber, moisture, purity, and theoretical recoverable sugar. Samples that were spectral outliers were automatically sent into a bin and reanalyzed using wet chemistry procedures.

Table 1. Number of sugarcane samples processed at the Sugar Research Station sucrose laboratory during the 2010 harvest season.

Unit/Project Area	Leader	Number of Samples
School of Plant, Environmental, and Soil Sciences	Brenda Tubana	464
Iberia Research Station	Sonny Viator	49
Plant Pathology and Crop Physiology	Jeff Hoy	256
Biological and Agricultural Engineering Dept	Richard Bengston	6
LCES	Albert Orgeron	308
LCES (Energy Cane)	Kenneth Gravois	140
Sugar Research Station/Variety Development	Line Trials	347
	Increase	99
	Nursery	298
	Genetics	44
Rice Research Station (Sweet Sorghum)	Dustin Harrell	48
Dean Lee Research Station (Sweet Sorghum)	Sterling Blanche	32
<b>TOTAL</b>		<b>2091</b>

## LAES SUGARCANE TISSUE CULTURE LABORATORY

Q.J.Xie<sup>1</sup>, J.L.Flynn<sup>1</sup>, and K.A.Gravois<sup>2</sup>  
<sup>1</sup>Certis USA, LLC and <sup>2</sup>Sugar Research Station

During the 2010-2011 production season, about 37,000 sugarcane plantlets regenerated in the Louisiana Agricultural Experiment Station Sugarcane Tissue Culture Laboratory, were turned over to Certis USA, LLC, Kleentek Div., for transplanting into the greenhouse at Houma. The number of plantlets transplanted for each cultivar are listed in Table one.

Table 1. The number of tissue-culture-derived plantlets of different cultivars transplanted in the greenhouse.

Cultivar	Number of plantlets
L 99-233	2,088
HoCP 04-838	1,800
HoCP 96-540	4,680
L 03-371	3,384
CP 89-2143	572
HoCP 00-950	1,548
L 99-226	2,736
L 01-299	10,512
Ho 05-961	1,728
HoCP 72-114	6,516
Ho 01-07	1,764
<b>TOTAL</b>	<b>37,328</b>

## THE 2010 LOUISIANA SUGARCANE VARIETY SURVEY

Kenneth A. Gravois<sup>1</sup> and Benjamin L. Legendre<sup>2</sup>  
<sup>1</sup>Sugar Research Station, and <sup>2</sup>Audubon Sugar Institute

Each year a sugarcane variety survey is conducted by the county agents in the 23 sugarcane-growing parishes (counties) of Louisiana to determine the variety makeup and distribution across the state. There were no parish survey reports from Acadia, Cameron, Evangeline, or St. Landry Parishes. The information presented in this survey was summarized from the 19 individual parish reports that were submitted. According to USDA-FSA, there were 420,138 acres planted to sugarcane in Louisiana in 2010, in addition to 347 prevented acres and 1,191 failed acres. There were 410,328 acres included in this survey or 97.7 percent of the acres reported by USDA-FAS.

Agents in each sugarcane-producing parish collected acreage according to variety and crop. Eleven varieties, LCP 85-384, HoCP 85-845, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, L 99-233, HoCP 00-950, L 01-283, L 01-299, and L 03-371 were listed along with “Others” in the survey. The category of others included, but was not limited to, small acreages of CP 70-321, CP 89-2143, HoCP 91-555 and small increase acreages devoted to the experimental variety HoCP 04-838, which was released to growers on May 5, 2011. The crop was divided into four categories, which included plant-cane, first-stubble, second-stubble and third-stubble and older crops. Additional information regarding parish acreage was collected as needed from the local and state Farm Service Agency (FSA) offices.

**Total State and Regional Acreage.** Actual area planted to sugarcane included in this survey for each parish, region and the statewide total are shown in Table 1. Statewide, the area planted to sugarcane in 2010 was 420,138 acres according to state USDA-FSA records (Cooper, personal communications). A total of 410,328 acres comprised the sample for the 2010 variety survey. According to the LSU AgCenter’s Ag Summary, sugarcane was grown on approximately the same number of acres as in 2009 by 510 producers in 23 Louisiana parishes (counties). An estimated 392,829 acres were available for harvest for sugar, assuming 6.5% of the total acres were used for seed-cane.

The total sugarcane acreage was highest for the Bayou Teche region (179,918 acres); followed by the River-Bayou Lafourche region (163,944 acres); then the Northern region at 66,466 acres. It is interesting to note the increase in sugarcane acreage in Pointe Coupee parish. In 2000, the parish produced sugarcane on 25,479 acres, whereas in 2010 sugarcane was grown on 35,758 acres.

**Sugarcane Distribution by Variety and Crop.** The estimated statewide sugarcane acreage in percent by variety and crop is shown in Table 2. The leading variety for 2010 was HoCP 96-540, which occupied 48% of the Louisiana sugarcane acreage. This was two percentage points less than HoCP 96-540's acreage in 2009. L 99-226 was next in total acreage as it was planted on 17% of the state's acreage. The planted area was then followed by L 97-128, L 99-233, HoCP 00-950, L 01-283, and Ho 95-988 with 11%, 10%, 4%, 4%, and 2%, respectively. All other varieties in the survey had each 1% or less of the planted area for 2010. LCP 85-384, released to the industry in 1993, continued to decrease in acreage as it occupied only 1% of the Louisiana acreage in 2010. LCP 85-384 attained peak acreage in 2004 when it was grown on 91% of the state's acreage.

**Sugarcane Distribution by Region and Crop.** In 2010, 13.8% of the state's acreage was grown as third and older stubble crops, which was 3.0 percentage points higher than 2009 (Table 3). In 2010, many growers kept more acreage devoted to older stubble cane in an effort to take advantage of higher than normal sugar prices. In 2010, 29.1% of the state's acreage was in the plant-cane crop, with similar percentages in the first and second stubble crops, 29.0 and 28.0%, respectively. In the era of LCP 85-384, the acreage in second and older stubble was typically over 50% of the total acreage; now it is only 47%.

During the era when LCP 85-384 was the leading sugarcane variety grown in Louisiana, there was a trend to plant less cane each year and keep more acres in older stubble crops due to the superior stubbling ability of LCP 85-384 (Table 4). As HoCP 96-540 replaced acreage planted to LCP 85-384 that trend changed as growers kept less acreage devoted to third and older stubble crops.

For the current survey, the Bayou Teche region had the greatest percentage of third and older stubble crops, but the variation between regions was not great (Table 3). The percentage in plant cane increased from 27.8% in 2009 to 29.1% in 2010; in first stubble the percentage decreased from 31.9% to 29.0% from 2009 to 2010; second stubble area decreased from 29.5% in 2009 to 28.0% in 2010. Crop rotations in all areas of the state were similar. With the extremely wet harvest in 2009 and the subsequent cold winter/spring, less stubble cane was kept than anticipated.

**Sugarcane Distribution by Variety and Crop for the Three Regions.** HoCP 96-540 was the leading variety in all crops (plant-cane through third and older stubble crops) for all regions in 2010 (Tables 5-7). HoCP 96-540 lead the way in planted acreage with 39%, 41%, and 45% of the plant-cane crop in the Bayou Teche, River-Bayou Lafourche and Northern regions, respectively. The percentages for L 99-226 increased in the plant-cane crop for the three regions as it was planted at 27, 17, and 15%, respectively, in the three regions. The popularity of HoCP 91-555, Ho 95-988, and L 97-128 decreased as growers continued to lose favor for these older

varieties. It is interesting to note that there is some renewed interest in HoCP 85-845, more so in certain areas along the Mississippi River and Bayou Lafourche. L 99-233 was planted more widely by growers in the River/Bayou Lafourche region, mainly for its ability to stubble in heavy clay soils. Growers in the Northern region increased the planting of HoCP 00-950 more so than its expansion in the more southern areas. HoCP 00-950 is more suited to the better drained sandier soils in the northern region, plus growers like the early maturity of the variety.

**Variety Trends.** Since its peak acreage of 91% in 2004, the total acreage planted to LCP 85-384 decreased from the previous year (Table 8). The one year change for LCP 85-384 between 2009 and 2010 was 5 percentage points. This giant among sugarcane varieties has served the sugar industry well and is only planted on very limited acreages.

HoCP 96-540, released for commercial planting in 2003, now occupies 48% of the state's acreage, which is a decrease of 2 percentage points between 2009 and 2010. Undoubtedly, the slight decrease was attributed to the stubbling ability following the wet 2009 harvest and the subsequent cold winter and spring. Some other observations regarding HoCP 96-540 include an inability to tolerate low soil temperatures during spring emergence and damage due to low bottom blade cutting heights during harvest. The variety had lower sugar yields in the older stubble crops (Sexton et al., 2010), which was magnified due to poor harvesting conditions in 2009. HoCP 96-540 is classified as resistant to smut and mosaic, moderate in its reaction to rust and leaf scald and moderately susceptible to the sugarcane borer. However, more rust has been seen in HoCP 96-540 in recent years. HoCP 96-540 has pulled this industry through some tough times – let's hope we can get a few more years of production.

The acreage of Ho 95-988, released in 2004, continued to decrease (-3 percentage points). Ho 95-988 is an excellent stubbling variety. The variety's main weaknesses were top breakage, susceptibility to brown rust disease, and an inability to tolerate droughts.

L 97-128 decreased its acreage in Louisiana by 6 percentage points, down from peak acreage of 17% in both 2008 and 2009. The variety tended to have light cane yield to go along with its high recoverable sugar content. Smut would often flare in the variety and there are now better variety choices. Both L 97-128 and Ho 95-988 served their purpose by providing a transition between LCP 85-384 and the newer generation varieties. The acreage devoted to L 97-128 and Ho 95-988 served to keep the acreage of HoCP 96-540 under 50%, which may extend the life of HoCP 96-540.

L 99-226 and L 99-233 have increased in acreage by 6% and 4% percentage points, respectively. The ability of L 99-226 to withstand the tough harvesting conditions of 2009 and the cold winter/spring impressed many growers. Its field yields and sugar recoveries in the factories in 2010 were excellent. The acreage of L 99-226 will likely increase again for the 2011

crop. Many growers continued to plant L 99-233 in their heavy land because of excellent stubbling ability. For the 2010 harvest, field yields of L 99-233 were not as good as the plant growth indicated and the variety does not respond to ripeners as well as HoCP 96-540. L 99-226 is moderately susceptible to brown rust and can have low levels of smut; whereas L 99-233 is resistant to brown rust and a little more susceptible to smut than L 99-226. L 99-226 exhibits an added attribute of having some resistance to the sugarcane borer. Both varieties show rapid deterioration after subfreezing conditions and are classified as susceptible.

HoCP 00-950 was released for commercial planting in 2007 and is being expanded cautiously. During the development phase, HoCP 00-950 had the highest level of sugar per ton of cane and was considered as one of the earliest maturing varieties ever released for commercial planting in Louisiana. The height of HoCP 00-950 at planting worries many growers, but when harvest arrives, the field yields are good and factory sugar recoveries excellent, even in the absence of a ripener. Others have noted that the variety does not grow as well in poorly drained areas and seems better suited to the sandier soils in the sugar belt. Growers should be cautious with HoCP 00-950 because there were a large percentage of broken tops after Hurricane Gustav.

L 01-283 was released for commercial planting in 2008 with great expectations. It has good yield of tons cane per acre and sugar per ton of cane. L 01-283 is early maturing and is generally erect and well suited to both whole-stalk and combine harvesting systems. It is generally resistant to all major diseases affecting sugarcane with the exception of ratoon stunting disease and some brown rust. Naturally occurring, environmentally induced off-type have been increasing in L 01-283. To date, clean seed companies have been unsuccessful in using tissue culture to micro propagate L 01-283 because it exhibits an unacceptable high level of naturally occurring variants (off-types). Growers are cautioned to watch the variety closely before making too rapid of an expansion.

L 01-299 was released in 2009 after superior sugar yields were obtained in second and third stubble outfield tests. The variety had been dropped from active testing due to high levels of smut in the inoculated disease trials. Visual observation of L 01-299 in the field indicated lesser amounts of smut, and it was deemed a worthwhile risk to release the variety. The variety should be isolated from L 97-128 and L 99-233 in order to keep smut levels down. It is also wise to obtain healthy seed-cane of L 01-299 from one of the tissue culture seed-cane companies.

The latest variety release was L 03-371. Seed-cane was distributed by the American Sugar Cane League in the fall of 2010. Outfield testing indicated the variety to have excellent sugar and cane yields to accompany a good disease package. The new variety will be expanded more widely in 2011.

The dominance of a single variety can lead to disease and insect shifts as was the case



with brown rust and LCP 85-384 (Hoy, 2005). With the release of 10 new sugarcane varieties since 2003, growers are encouraged to plant a more balanced mix of varieties.

### **ACKNOWLEDGMENTS**

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

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Table 1. Total area planted to sugarcane in Louisiana by region and parish, 2010.<sup>12</sup>

<b>Bayou Teche region</b>		<b>River-Bayou Lafourche region</b>		<b>Northern region</b>	
<b>Parish</b>	<b>Acres</b>	<b>Parish</b>	<b>Acres</b>	<b>Parish</b>	<b>Acres</b>
Acadia	NAR	Ascension	18,149	Avoyelles	7,075
				Evangeline	NAR
Calcasieu	2,528	Assumption	39,551	Pointe Coupee	35,758
Cameron	NAR				
Iberia	58,822	Iberville	35,228	Rapides	9,745
Jeff Davis	4,375	Lafourche	27,971	St. Landry	NAR
Lafayette	12,498	St. Charles	1,365	West Baton Rouge	13,888
St. Martin	26,892	St. James	24,207		
St. Mary	44,073	St. John	8,051		
Vermilion	30,730	Terrebonne	9,422		
<b>Total</b>	<b>179,918</b>	<b>Total</b>	<b>163,944</b>	<b>Total</b>	<b>66,466</b>
<b>Total all regions: 410,328</b>					

<sup>1</sup> Acreage based on information obtained in variety surveys from 19 parishes by the county agents in 2010

<sup>2</sup> NAR = No acres reported for parish

Table 2. Estimated statewide sugarcane acreage percentage by variety and crop, all regions, 2010.<sup>1</sup>

Variety	Plant-cane	First-stubble	Second-stubble	Third-stubble and older	Total
	-----%-----				
LCP 85-384	<1	<1	1	6	1
HoCP 85-845	<1	<1	<1	2	1
Ho 95-988	1	1	4	6	2
HoCP 96-540	41	48	51	54	48
L 97-128	3	7	18	23	11
L 99-226	21	22	15	3	17
L 99-233	15	11	7	2	10
HoCP 00-950	7	6	2	<1	4
L 01-283	10	3	1	<1	4
L 01-299	2	<1	<1	<1	1
L 03-371	<1	<1	0	0	<1
Other	<1	1	1	4	1
Total acres	119,585	119,194	115,068	56,481	410,328
Percent of total crop	29.1	29.0	28.0	15.8	

<sup>1</sup> Based on information obtained in variety surveys from 19 parishes by county agents in 2010.

Table 3. Estimated sugarcane distribution by region and crop, 2010.<sup>1</sup>

<b>Crop</b>	<b>Bayou Teche</b>	<b>River-Bayou Lafourche</b>	<b>Northern</b>	<b>State Total</b>
Plant-cane Area (acres) Percent (%)	50,323 28.0	49,389 30.1	19,872 29.9	119,585 29.1
First-stubble Area (acres) Percent (%)	55,085 30.6	46,332 28.3	17,777 26.7	119,194 29.0
Second-stubble Area (acres) Percent (%)	48,358 26.9	47,117 28.7	19,594 29.5	115,068 28.0
Third-stubble and older Area (acres) Percent (%)	26,152 14.5	21,106 12.9	9,223 13.9	56,481 13.8
Total area (acres) Percent (%)	179,918 43.8	163,944 40.0	66,466 16.2	410,328

<sup>1</sup> Based on information obtained in variety surveys from 19 parishes by county agents in 2010.

Table 4. Percent of the Louisiana sugarcane crop in third-stubble and older crops from 2002 – 2010.

<b>Year</b>	<b>Third Stubble &amp; Older Crops (%)</b>	<b>LCP 85-384 (%)</b>	<b>HoCP 96-540 (%)</b>
2002	22.0	85	-
2003	26.9	88	-
2004	22.7	91	1
2005	20.0	89	3
2006	16.7	73	14
2007	11.1	46	31
2008	10.0	22	44
2009	10.8	6	50
2010	13.8	1	48

Table 5. Estimated area planted to sugarcane in percent by variety and crop for the Bayou Teche region, 2010.<sup>1</sup>

<b>Variety</b>	<b>Plant-cane crop (%)</b>	<b>First-stubble crop (%)</b>	<b>Second-stubble crop (%)</b>	<b>Third-stubble crop &amp; older (%)</b>	<b>Total (%)</b>
LCP 85-384	0	<1	0	3	<1
HoCP 85-845	1	<1	1	3	1
Ho 95-988	1	1	3	4	2
HoCP 96-540	39	50	53	55	48
L 97-128	3	7	17	28	12
L 99-226	27	24	16	3	19
L 99-233	9	8	5	1	7
HoCP 00-950	7	4	2	<1	4
L 01-283	11	3	1	<1	4
L 01-299	1	1	1	<1	1
L 03-371	<1	<1	0	0	<1
Others	1	2	1	3	2
Totals	100	100	100	100	100

<sup>1</sup> Based on information obtained in variety surveys from 7 parishes by county agents in 2010.

Table 6. Estimated area planted to sugarcane in percent by variety and crop for the River/Bayou Lafourche region, 2010.<sup>1</sup>

<b>Variety</b>	<b>Plant-cane crop (%)</b>	<b>First-stubble crop (%)</b>	<b>Second-stubble crop (%)</b>	<b>Third-stubble crop &amp; older (%)</b>	<b>Total (%)</b>
LCP 85-384	<1	<1	1	14	2
HoCP 85-845	<1	<1	<1	1	<1
Ho 95-988	1	1	5	7	3
HoCP 96-540	41	44	46	48	44
L 97-128	3	8	20	20	12
L 99-226	17	20	15	4	15
L 99-233	21	16	10	3	14
HoCP 00-950	4	7	1	1	4
L 01-283	10	3	1	<1	4
L 01-299	2	<1	<1	0	1
L 03-371	<1	<1	<1	0	<1
Others	1	1	1	2	1
Totals	100	100	100	100	100

<sup>1</sup> Based on information obtained in variety surveys from 8 parishes by county agents in 2010.

Table 7. Estimated area planted to sugarcane in percent by variety and crop for the Northern region, 2010<sup>1</sup>

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	0	0	1	3	1
HoCP 85-845	0	0	0	0	0
Ho 95-988	<1	<1	4	8	2
HoCP 96-540	45	56	58	66	55
L 97-128	1	2	19	18	9
L 99-226	15	20	12	3	14
L 99-233	11	10	4	2	7
HoCP 00-950	15	9	1	<1	7
L 01-283	11	3	<1	<1	4
L 01-299	2	<1	<1	0	1
L 03-371	<1	<1	0	0	<1
Others	<1	<1	1	<1	<1
Totals	100	100	100	100	100

<sup>1</sup> Based on information obtained in variety surveys from 4 parishes by county agents in 2010.

Table 8. Louisiana sugarcane variety trends, by variety and years, all regions, 2006- 2010<sup>1</sup>

Variety	Area planted to sugarcane by variety and years (%)					1 yr. Change
	2006	2007	2008	2009	2010	
LCP 85-384	73	46	22	6	1	-5
HoCP 85-845	1	2	1	<1	1	0
Ho 95-988	2	4	5	5	2	-3
HoCP 96-540	14	31	44	50	48	-2
L 97-128	4	12	17	17	11	-6
L 99-226	0	1	5	11	17	+6
L 99-233	0	<1	2	6	10	+4
HoCP 00-950	0	0	1	2	4	+2
L 01-283	0	0	0	<1	4	+4
L 01-299	0	0	0	<1	1	+1
L 03-371	0	0	0	0	<1	0
Others	<1	1	1	2	1	-1
Totals	100	100	100	100	100	

<sup>1</sup>Based on annual variety surveys from 19 parishes by county agents, 2006-2010.





## **THE EFFECT OF NATURALLY OCCURRING OFF-TYPES ON SUGAR YIELD AND YIELD COMPONENTS IN L 01-283**

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### ***Test I***

Prior to the release of L01-283 in 2008, several researchers noticed the occurrence of plants within the variety that had characteristics atypical of the normal plant population. These off-types occurred with varying frequencies but appeared to be stressed related. A yield trial was designed and conducted to determine the effect of off-types on the sugar yield of L 01-283. We also wanted to determine if off-type plants were reproducible through vegetative propagation.

A yield trial was planted on August 24, 2007 at the Sugar Research Station in St. Gabriel, Louisiana. Herman Waguespack collected seed-cane from the Palo Alto Primary Increase Station. Two sets of seed were collected: normal stalks and stalks with characteristics associated with off-types, such as twisted leaf sheaths and stunted growth. The trial was planted in a randomized complete block design (three replications). Plot dimensions were two rows (six foot) that were 25 feet long and separated by a five foot alley. Treatments were plots planted with normal stalks and plots planted with off-type stalks.

Standard cultural practices were followed during the 2008, 2009, and 2010 growing seasons. Millable stalk counts were made in early August and used to estimate stalk population (#/acre). The field trial was harvested on 12/12/2008 as a plant-cane crop and on 12/16/2009 as a first-stubble crop. Plots were combine-harvested and weighed to determine cane yield (tons/acre). A 15-stalk sample was hand-cut out of each plot and weighed to determine stalk weight (lbs). Afterwards, all 15 stalks were visually analyzed for the presence or absence of off-type characteristics. Seven stalks were measured with a caliper to determine stalk diameter (mm). Each sample was then sent to the laboratory to determine sucrose content and fiber content via NIR technology (SpectraCane). Sugar per acre was estimated as the product of sucrose content and cane yield.

Data were analyzed with SAS (v9) software. Replication was considered a random effect; stalk type was considered a fixed effect. To adjust for any missing or unbalanced data, least square means were estimated. Least square means were tested for statistical significance (P=0.05) with the PDIF option of PROC MIXED.

Table 1. Plant-cane data obtained from a field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2008†.

Stalk Type	Sugar Yield	Cane Yield	Sugar Content	Off-Types	Stalk Population	Stalk Weight	Diameter	Fiber
	lbs/ac	tons/ac	lbs/ac	%	#/acre	lbs	mm	%
Normal Stalks	9542	38.2	250	11.1	27661	2.79	22.1	10.2
Off-Types	7415 -	30.2 -	245	33.3 +	21272	2.85	23.5	10.2

† Plus (+) and minus (-) signs indicate values that are significantly greater or lower than normal stalks seed-cane sources.

Table 2. First-stubble data obtained from a field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2009†.

Stalk Type	Sugar Yield	Cane Yield	Sugar Content	Off-Types	Stalk Population	Stalk Weight	Diameter	Fiber
	lbs/ac	tons/ac	lbs/ac	%	#/acre	lbs	mm	%
Normal Stalks	8231	36.6	225	31.1	35449	2.10	20.7	10.1
Off-Types	7085	33.0	215	44.5	33525	1.99	19.7	10.7

† Plus (+) and minus (-) signs indicate values that are significantly greater or lower than normal stalks seed-cane sources.

Table 2. Second-stubble data obtained from a field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2010†.

Stalk Type	Sugar Yield	Cane Yield	Sugar Content	Off-Types	Stalk Population	Stalk Weight	Diameter	Fiber
	lbs/ac	tons/ac	lbs/ac	%	#/acre	lbs	mm	%
Normal Stalks	7163	27.0	265	62.2	18207	2.97	21.5	11.1
Off-Types	5336 -	20.7 -	258	84.4 +	14668 -	2.84	21.7	11.4

† Plus (+) and minus (-) signs indicate values that are significantly greater or lower than normal stalks seed-cane sources.

## ***Test II***

A second yield trial was planted on August 24, 2009 at the Sugar Research Station in St. Gabriel, Louisiana. Off-type seed-cane was collected from the farm of Jim and Ross Harper in Chaneyville, Louisiana. Normal stalks were collected from the Sugar Research Station. Three-stalk planting rates were used that ranged from all normal stalks to mixtures of stalk types, to all off-type stalks. For the fungicide treatments, stalks were dipped for 20 minutes in a solution that contained Stratego (trifloxystrobin & propiconazole) (20 oz./acre) and Quadris (azoxystrobin) (10 oz./acre). The trial was planted as a randomized complete block design (three replications). Plot dimensions were two rows (six foot) that were 25 feet long and separated by a five foot alley. Treatments were as follows:

<b>Treatment</b>	<b>Number of Normal Stalks:Off-Type Stalks</b>	<b>Fungicide</b>
1	3:0	NO
2	2:1	NO
3	1:2	NO
4	0:3	NO
5	0:3	YES
6	3:0	YES

Standard cultural practices were followed during the 2010 growing seasons. Millable stalk counts were made in early August and used to estimate stalk population (#/acre). The field trial was harvested on 12/14/2010 as a plant-cane crop. Plots were combine-harvested and weighed to determine cane yield (tons/acre). A 15-stalk sample was hand-cut out of each plot and weighed to determine stalk weight (lbs). Afterwards, all 15 stalks were visually analyzed for the presence or absence of off-type characteristics. Seven stalks were measured with a caliper to determine stalk diameter (mm). Each sample was then sent to the laboratory to determine sucrose content and fiber content via NIR technology (SpectraCane). Sugar per acre was estimated as the product of sucrose content and cane yield.

Data were analyzed with SAS (v9) software. Replication was considered a random effect; stalk type was considered a fixed effect. To adjust for any missing or unbalanced data, least square means were estimated. Least square means were tested for statistical significance (P=0.05) with the PDIF option of PROC MIXED.

Table 1. Plant-cane data obtained from a field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2010†.

Treatment (Stalks)	Sugar Yield		Cane Yield		Sugar Content		Off-Types		Stalk Population		Stalk Weight		Diameter		Fiber	
	lbs/ac		tons/ac		lbs/ac		%		#/acre		lbs		mm		%	
3 Normal: 0 Off-Type	11501	A	46.6	A	246	A	62.2	B	34652	B	2.69	A	21.8	A	10.7	A
2 Normal: 1 Off-Type	11415	A	47.7	A	239	A	57.8	B	37034	AB	2.59	A	20.5	ABC	11.2	A
1 Normal: 2 Off-Type	10546	A	44.8	A	235	A	84.5	A	40645	AB	2.21	B	20.1	BC	10.7	A
0 Normal: 3 Off-Type	11001	A	44.6	A	246	A	84.4	A	35572	AB	2.52	AB	21.2	AB	10.7	A
All OT – Fungicide	11682	A	47.7	A	244	A	86.7	A	39778	A	2.41	A	19.6	A	11.4	A
All OT – No Fungicide	10487	A	43.2	A	243	A	100	A	40059	B	2.16	A	19.8	A	10.5	B

† Means followed by the same letter are not significantly different from each other.

## **YIELD AND FIBER CONTENT OF HIGH FIBER SUGARCANE CLONES**

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In 2008, the LSU AgCenter partnered with Mississippi State University to evaluate high-fiber sugarcane clones (energy cane). Dr. Brian Baldwin of Mississippi State University is the coordinator of the Sun Grant proposal: “Regional Biomass Feedstock – Herbaceous Bioenergy Crop Field Trial”. These trials are located across the southeastern U.S. with one located at the LSU AgCenter’s Sugar Research Station.

A yield trial was planted on September 18, 2008 at the Sugar Research Station in St. Gabriel, Louisiana. Seed cane of five varieties was obtained at the USDA-ARS Sugarcane Research Unit’s Ardoyne Farm.

Standard cultural practices were followed during the 2009 and 2010 growing seasons. The field trial was harvested on December 16, 2009 for the plant-cane crop and December 2, 2010 for the first stubble crop. Plots were combine-harvested and weighed to determine cane yield (tons/acre). A 10-stalk sample was hand-cut out of each plot for a quality analysis. Each sample was then sent to the laboratory to determine Brix by refractometer and fiber content was determined by the pre-breaker press method.

Data were analyzed with SAS (v9.2) software. Replication was considered a random effect; variety was considered a fixed effect. Least square means were estimated and tested for statistical significance ( $P=0.05$ ) with the PDIFF option of PROC MIXED. Means followed by the same letter were not statistically different from each other.

Table 1. Plant-cane data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2009.

Variety	Cane Yield		Brix		Fiber Content		Dry Weight		Brix Weight	
	tons/ac		%		%		tons/ac		tons/ac	
Ho 02-144	30.5	B	12.5	A	20.6	B	6.27	C	3.86	AB
Ho 02-147	44.2	A	10.7	B	17.8	C	7.87	AB	4.72	A
Ho 06-9001	28.9	B	10.7	B	26.4	A	7.58	ABC	3.10	BC
Ho 06-9002	25.5	B	10.1	BC	25.3	A	6.44	BC	2.56	C
HoCP 72-114	42.8	A	9.2	C	20.7	B	8.84	A	3.96	AB

Table 2. First stubble data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2010.

Variety	Cane Yield		Brix		Fiber Content		Dry Weight		Moisture Content	
	tons/ac		%		%		tons/ac		%	
Ho 02-144	25.0	C	16.6	A	25.9	B	6.49	D	61.8	C
Ho 02-147	47.0	A	16.9	A	19.5	D	9.15	A	66.9	A
Ho 06-9001	26.0	C	14.1	C	29.7	A	7.70	BC	60.4	D
Ho 06-9002	24.4	C	14.5	BC	29.6	A	7.22	CD	60.2	D
HoCP 72-114	35.8	B	15.1	B	24.0	C	8.58	AB	64.5	B