AN OVERVIEW OF 2008 ACTIVITIES IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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The primary objective of the 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 in the LSU AgCenter is carried out by a team of scientists (Table 1). The LSU AgCenter sugarcane breeding team and the United States Department of Agriculture (USDA) sugarcane breeding team work independently yet 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 locations. Outfield testing is conducted by personnel of the LSU AgCenter, the USDA, and the American Sugar Cane League. Seed increase is carried out by the American Sugar Cane League and begins when varieties are introduced to the outfield testing stage. The cooperative efforts of sugarcane breeding are done in accordance with the provisions of the "Three-Way Agreement of 2007." After yield data for one crop cycle (plant-cane, first stubble, and second stubble) are collected in the outfield testing stage, those varieties that show promise are released for commercial production.

Table 1. Members of the LSU AgCenter Sugarcane Variety Development Team in 2008.

Team Member	Budgetary Unit	Responsibility
Kenneth Gravois	Sugar Research Station	Program Leader
Keith Bischoff	Sugar Research Station	Selection
Collins Kimbeng	School of Plant, Soil and Environmental Sciences	Molecular Breeding
Gene Reagan	Entomology	Insect Resistance
Jeff Hoy	Plant Pathology & Crop Physiology	Disease Resistance
Jim Griffin	School of Plant, Soil and Environmental Sciences	Herbicide Tolerance
Sonny Viator	Iberia Research Station	Variety Testing
Michael Pontif	Sugar Research Station	Variety Testing
Gert Hawkins	Sugar Research Station	Sucrose Laboratory
Dexter Fontenot	Sugar Research Station	Photoperiod and Crossing
David Sexton	Sugar Research Station	Outfield Testing
Joel Hebert	Sugar Research Station	Farm Manager

Photoperiod treatments to induce flowering began on May 31 and continued until August 31st just prior to the land fall of Hurricane Gustav. The hurricane produced maximum winds of 95 mph at the Sugar Research Station, which destroyed the crossing house. During the

hurricane, breeding canes were placed inside the photoperiod house, which suffered no damage from the hurricane. Without the use of the crossing house, crossing lanterns were obtained from the USDA-ARS station in Houma. Also, many flowers from the LSU program were shared with the USDA breeders. All crosses in 2008 were derived from polycrosses, with 260 crosses being made. Low germination of seed was experienced in the latter crosses as ambient relative humidity dropped with the passage of several cold fronts. Weather conditions to induce flowering in 2008 were excellent because of relatively mild summer temperatures. Germination tests were conducted in November. Seed production for 2008 was sparce. Based on germination test results, 48,662 true seed produced. Seed produced in previous years made up for the shortfall.

A total of 81,474 seedlings from 132 crosses of the 2007 crossing series were planted in the field in the April of 2008. A total of 78,598 seedlings survived transplanting. In addition, seedlings were also planted in a cross appraisal trial. Selection will be carried out in 2009 when these seedlings are in the first stubble crop.

In the fall of 2008, individual selection was practiced on 51,867 first-stubble seedlings that represented the 2006 crossing series. Family selection (top 54.3% of the population representing 79 crosses in 2008) was utilized based on information from the cross appraisal study and assessment of the heavily lodged seedling populations following Hurricane Gustav. Seedling selection was delayed until harvest (early October) so that the combine harvester could peel the rows away to allow for easier access. A total of 2,645 clones (9.4% selection rate) were selected and planted to establish the first-line trials. These single stool selections were not evaluated for Brix.

Established procedures were used to advance superior clones of the 2005 crossing series from first-line trials to second-line trials (340 clones) and of the 2004 crossing series from second-line trials to increase trials (170 clones). Preliminary 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, presence of disease, presence of pith/tube, and Brix/sugar per ton. Lodging and broken tops in 2008 were extensive due to Hurricane Gustav. Pith levels were relatively low; smut and leaf scald levels were relatively high.

The best 22 experimental varieties from the 2003 crossing series were assigned permanent variety designations in the fall of 2008 (Table 2). The low number of assignments corresponds to seedling selection that was done following Hurricanes Katrina and Rita. Seedling selection following a hurricane is not very effective. Newly assigned varieties were entered in replicated nursery trials at three locations (Sugar Research Station, USDA-ARS Ardoyne Farm, and Iberia Research Station). “L”, “HoCP”, “Ho”, or “HoL” varieties of the 2008 assignment series were exchanged in the fall of 2008 to plant cooperative infield and nursery tests the following year.

Experimental varieties were replanted in infield and nursery tests (10 varieties of the 2007 assignment series), introduced to the outfield tests (three varieties of the 2006 assignment series), and planted in outfield tests (one variety of the 2003 assignment series). Breeding personnel assisted Dr. Jeff Hoy and Dr. Gene Reagan to enter experimental varieties in the sugarcane smut and sugarcane borer resistance trials, respectively.

On April 6, 2008, the Variety Release Committee met at the offices of the American Sugar Cane League. L 01-283 was released to growers. Abudant seed was made available to growers from the Leagues' secondary increase stations.

The decision regarding the further testing and seed increase of candidate varieties was determined at the Variety Advancement Committee meeting. The 2008 meeting was held on August 10, 2008 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.

Table 1. Number of "L" varieties by assignment series for each stage of testing in 2008.

Assignment Series	Stage of Testing	Number of experimental varieties
L 2002	Outfield – Replanted and harvested as plantcane, first stubble, and second stubble	0
L 2003	Outfield – Replanted and harvested as plantcane and first stubble Off-station nurseries and infield – 3rd stubble harvested	1
L 2004	Outfield – Replanted and harvested as plantcane On-station nurseries - 3rd stubble harvested Off-station nurseries and infield – 2nd stubble harvested.	0
L 2005	Outfield – Planted On-station nurseries - 2nd stubble harvested Off-station nurseries and infield - 1st stubble harvested	0
L 2006	Outfield - Introduced On-station nurseries - 1st stubble harvested Off-station nurseries and infield - plantcane harvested.	3
L 2007	On-station nurseries - plantcane harvested Off-station nurseries and infield planted	10
L 2008	Assignment On-station nurseries planted	22

In 2008, rust continued to be seen in high levels in LCP85-384 and Ho 95-988 throughout the growing season, especially in the plant-cane crop. Smut and leaf scald was prevalent in 2008. Pith in experimental varieties was somewhat below average compared to other years. Sugarcane borer infestations were extremely light at the Sugar Research Station. In fact no

insecticide applications were made at the Sugar Research Station in 2008, and bored internodes were few. The growing conditions in 2008 were only fair. Rainfall was much below average and the lodging due to Hurricane Gustav was evident in crop yields at the Sugar Research Station.

2008 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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Sugar Research Station

Photoperiod and crossing are the first stages in the LSU AgCenter's Sugarcane Variety Development Program. For the development of new varieties, success must first be achieved at photoperiod and crossing. Proper photoperiod induction in addition to proper hybridization techniques are key factors for the production of viable seed belonging to viable crosses. Viable crosses are the optimum and most desirable combinations that will be advanced to the seedling stage of the Sugarcane Variety Development Program. In order to accomplish successful crosses, the seed 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.

Stalk cuttings of potential parent varieties used for the 2008 crossing season were planted in the fall of 2007. After establishing the plants from the cuttings, the plants were fertilized bi-weekly with a 200 ppm solution of Peter's 20-20-20. In late January 2008, the cuttings were then transferred to can culture (37 gal). In early 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. Three additional applications of dry granular fertilizer (8-24-24, one Tbs/can) were applied to the cans during July, August, and September. A reduced nitrogen ratio makes a higher C:N ratio, which is more desirable for the ease of flowering.

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 36 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. 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 parental varieties from wind damage. The doors were partially opened to allow natural light to enter the chambers.

All photoperiod treatments were discontinued on August 31, 2008 when Hurricane Gustav slammed into the Louisiana coast. All breeding clones safely withstood the effects of the hurricane as they were placed within the photoperiod houses. However, the crossing house was destroyed. Crossing lanterns were obtained from breeders at the USDA-ARS facility in Houma. Minimal crossing was done in a tractor shed with some success.

Flowering percentage of total stalks was average on the photoperiod carts in 2008 (Tables 1-2). Total flowering percentage for the six bays was 47%, which was comprised from 1,499 stalks. Successful seed production was comprimised by a multitude of factors. Seed production did not meet program needs. However, sufficient seed was available from previous crossing years.

Crossing in 2008 began during the second week of September. Crossing began on September 10 and ended on October 21, 2008. A total of 707 tassels of 95 varieties were used to produce 264 crosses producing 48,663 viable seed, all produced from polycrosses (Table 3). The inability to control temperature and humidity were the main causes of poor viable seed production.

Table 1. Summary of the 2008 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	16-Jun	44	30-Jul	72	87	283±2	83	58
1	B	16-Jun	44	30-Jul	72	87	284±2	86	42
1	C	16-Jun	44	30-Jul	72	87	282±3	86	21
2	A	16-Jun	44	30-Jul	72	87	287±1	91	54
2	B	16-Jun	44	30-Jul	72	87	281±2	82	37
2	C	16-Jun	44	30-Jul	72	87	290±2	81	28
3	A	30-May	37	6-Jul	87	102	264±2	96	61
3	B	30-May	37	6-Jul	87	102	259±2	89	56
3	C	30-May	37	6-Jul	87	102	261±2	91	43
4	A	30-May	37	6-Jul	87	102	261±2	84	43
4	B	30-May	37	6-Jul	87	102	265±2	74	61
4	C	30-May	37	6-Jul	87	102	263±2	81	46
5	A	30-May	36	10-Jul	82	97	261±2	74	59
5	B	30-May	36	10-Jul	82	97	257±2	86	40
5	C	30-May	36	10-Jul	82	97	264±2	73	40
6	A	30-May	41	10-Jul	82	97	261±2	77	64
6	B	30-May	41	10-Jul	82	97	258±1	87	52
6	C	30-May	41	10-Jul	82	97	258±1	78	46

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----------								
95	323	231	1499	707	4.64±1.13	3.06±1.51	------	72.62±12.20

† Based upon cans with tassels.
‡ No pollen ratings were done in 2008 as all crosses were done as polycrosses.
§ Days from decline date to flowering.

Table 3. Summary of 2008 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----------					
Polycross	264	48,663	187±434	187±434	13±28

Polycrosses were made due to limited space for crossing as a result of the hurricane

Table 4. Varietal flowering summary in 2008 in the photoperiod bays.

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Total Stalk Number	Total Flowers	Percent Flowering Stalks
CP65-357	40±1	263	76	8	1	13
CP83-644	38	.	.	23	.	0
HO01-564	40	253	69±2	16	10	63
HO05-961	39±1	263	88±8	12	3	25
HO06-523	41	269	91±7	8	3	38
HO06-530	36	277	90	5	1	20
HO06-536	43	.	.	5	.	0
HO06-537	40	253	73±5	9	5	56
HO06-562	43	289	84±3	7	7	100
HO06-563	43	.	.	5	.	0
HO89-889	40	.	.	8	.	0
HO95-988	39	252	75±2	44	27	61
HOCP00-930	41±1	253	78±8	16	7	44
HOCP00-950	40	253	68±1	52	37	71
HOCP01-517	38±1	263	89±9	12	3	25
HOCP01-523	38±1	253	79±5	22	9	41
HOCP02-610	40±1	253	74±3	22	19	86
HOCP02-618	40±1	253	84±11	14	4	29
HOCP02-623	37	253	76±3	17	16	94
HOCP04-838	39	252	63±1	25	24	96
HOCP04-847	39±1	259	75±2	19	10	53
HOCP05-902	40±1	.	.	7	.	0
HOCP05-903	38±1	.	.	10	.	0
HOCP05-904	38±1	263	72	10	1	10
HOCP05-918	42	269	80±2	10	2	20
HOCP05-923	40±1	263	78±4	9	9	100
HOCP05-931	39±1	253	78±5	12	9	75
HOCP06-502	36	253	66	5	5	100
HOCP06-512	36	.	.	3	.	0
HOCP06-513	43	289	78	6	2	33
HOCP85-845	40±1	253	67±2	30	17	57
HOCP89-846	41±1	253	74±1	23	21	91
HOCP91-552	40±1	252	64±1	18	8	44
HOCP92-618	38±1	263	85±4	21	5	24
HOCP92-624	40±1	252	66±2	28	21	75
HOCP92-648	38±1	252	70±1	18	18	100
HOCP95-951	39±1	253	64±1	8	6	75
HOCP96-509	39±1	.	.	10	.	0
HOCP96-540	39	253	73±2	49	30	61
HOCP96-561	39±1	255	87±5	15	12	80
HOCP97-606	42±1	273	82	8	2	25
HOCP97-609	39±1	253	68±1	13	4	31
L00-266	39	263	89±9	18	3	17
L01-283	40±1	263	86±3	33	8	24
L01-299	40	252	67±1	38	29	76
L01-315	41	253	62	13	4	31
L02-316	37±1	259	75±2	9	7	78
L02-325	40	284	93	10	1	10

Table 4. Continue.

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L03-371	39±1	.	.	14	.	0
L05-448	43	266	62±2	10	10	100
L05-457	40±1	252	66±2	32	23	72
L06-001	38±1	253	63±1	8	5	63
L06-010	39±1	259	76±2	10	6	60
L06-011	39±1	277	94±4	12	3	25
L06-016	40±1	253	66	10	2	20
L06-023	38±1	266	83±8	10	3	30
L06-027	38±1	.	.	9	.	0
L06-038	43	277	74±3	12	6	50
L06-040	43	273	79±8	17	4	24
L07-041	40	.	.	5	.	0
L07-043	40	.	.	4	.	0
L07-044	40	.	.	4	.	0
L07-047	40	253	62	5	2	40
L07-048	40	.	.	5	.	0
L07-050	43	.	.	4	.	0
L07-051	43	289	78	5	1	20
L07-052	40	269	78	4	1	25
L07-057	43	266	56±1	4	3	75
L07-059	43	273	77±7	5	5	100
L07-064	43	273	67±3	6	5	83
L07-065	43	.	.	2	.	0
L07-067	43	.	.	5	.	0
L07-068	43	.	.	6	.	0
L07-070	43	273	69±3	4	4	100
L07-073	43	284	79±4	5	5	100
L94-424	39	.	.	15	.	0
L94-426	40±1	253	81±6	20	5	25
L94-428	38	253	82±7	17	12	71
L94-432	37	284	103±10	15	2	13
L94-433	39±1	269	95±7	16	6	38
L97-128	40±1	252	65±1	37	28	76
L98-197	40±1	269	83±3	16	5	31
L98-207	39	252	70±3	46	15	33
L98-209	41±1	259	86±7	14	3	21
L99-226	40	253	70±2	67	24	36
L99-233	40	252	66±2	66	19	29
LCP81-010	40±1	252	74±3	24	18	75
LCP85-384	39	252	74±3	55	28	51
LCP86-454	38±1	252	62±1	12	7	58
N27	37	253	77±5	16	10	63
TUCCP77-042	39±1	263	87±4	13	5	38
US01-040	41±1	253	89±8	6	4	67
US79-010	43	284	81±6	9	3	33
US80-004	38±1	.	.	8	.	0
XL06-114	39	253	71±2	27	15	56

Table 5. Crosses and seed made in 2008 sorted by cross number.

Cross	Female	Male	Seed
XL08-001	LCP85-384	08P1	151
XL08-002	L99-226	08P1	172
XL08-003	L01-299	08P1	1882
XL08-004	L98-207	08P1	578
XL08-005	HOCP00-950	08P1	174
XL08-006	LCP81-010	08P1	1061
XL08-007	HOCP96-540	08P1	1050
XL08-008	LCP85-384	08P2	276
XL08-009	L99-226	08P2	815
XL08-010	L01-299	08P2	183
XL08-011	L98-207	08P2	0
XL08-012	HOCP00-950	08P2	1406
XL08-013	LCP81-010	08P2	0
XL08-014	HOCP96-540	08P2	0
XL08-015	LCP85-384	08P3	234
XL08-016	L99-226	08P3	0
XL08-017	L01-299	08P3	0
XL08-018	L98-207	08P3	0
XL08-019	HOCP00-950	08P3	0
XL08-020	LCP81-010	08P3	0
XL08-021	HOCP96-540	08P3	0
XL08-022	LCP85-384	08P4	0
XL08-023	L99-226	08P4	0
XL08-024	L01-299	08P4	45
XL08-025	L98-207	08P4	840
XL08-026	HOCP00-950	08P4	530
XL08-027	LCP81-010	08P4	323
XL08-028	HOCP96-540	08P4	2755
XL08-029	LCP85-384	08P5	1027
XL08-030	L99-226	08P5	0
XL08-031	L01-299	08P5	107
XL08-032	L98-207	08P5	333
XL08-033	HOCP00-950	08P5	0
XL08-034	LCP81-010	08P5	0
XL08-035	HOCP96-540	08P5	63
XL08-036	LCP85-384	08P6	0
XL08-037	L99-226	08P6	175
XL08-038	L01-299	08P6	829
XL08-039	L98-207	08P6	324
XL08-040	HOCP00-950	08P6	1336
XL08-041	LCP81-010	08P6	787
XL08-042	HOCP96-540	08P6	2035
XL08-043	L94-428	08P7	0
XL08-044	HOCP92-624	08P7	84
XL08-045	HOCP85-845	08P7	575
XL08-046	HOCP00-950	08P7	0
XL08-047	HOCP96-540	08P7	0
XL08-048	L99-233	08P8	0
XL08-049	HOCP00-950	08P8	0
XL08-050	LCP86-454	08P8	631
XL08-051	HOCP95-951	08P8	1042
XL08-052	LCP94-426	08P8	0
XL08-053	L97-128	08P8	1362
XL08-054	HOCP92-624	08P8	2348
XL08-055	L01-299	08P8	567
XL08-056	HOCP00-950	08P9	0
XL08-057	L94-428	08P9	0
XL08-058	HOCP95-951	08P9	0
XL08-059	L97-128	08P9	1617
XL08-060	HOCP85-845	08P9	249
XL08-061	HOCP96-540	08P9	0
XL08-062	HOCP92-624	08P9	781
XL08-063	HOCP85-845	08P10	350
XL08-064	L94-428	08P10	0
XL08-065	L97-128	08P10	0
XL08-066	LCP86-454	08P10	33
XL08-067	LCP81-010	08P10	0
XL08-068	HOCP92-624	08P10	8
XL08-069	HOCP96-540	08P10	46
XL08-070	HOCP95-951	08P10	0
XL08-071	L06-114	08P11	0
XL08-072	HOCP01-523	08P12	0
XL08-073	L07-047	08P12	0
XL08-074	HOCP92-648	08P12	0
XL08-075	HOCP02-610	08P12	0
XL08-076	HOCP02-623	08P12	0
XL08-077	L01-315	08P12	0
XL08-078	HOCP85-845	08P12	0
XL08-079	HOCP02-618	08P12	79
XL08-080	L99-226	08P13	0
XL08-081	HOCP01-564	08P13	0
XL08-082	HOCP02-610	08P13	854
XL08-083	HOCP02-623	08P13	251
XL08-084	L01-315	08P13	429
XL08-085	L07-047	08P13	35
XL08-086	HOCP96-561	08P13	211
XL08-087	HOCP85-845	08P13	656
XL08-088	HOCP01-523	08P13	0
XL08-089	L99-226	08P14	0
XL08-090	HOCP92-648	08P14	0
XL08-091	HOCP02-623	08P14	21
XL08-092	HOCP89-846	08P14	1216

Table 5. Continue

Cross	Female	Male	Seed
XL08-093	HOCP02-610	08P14	2672
XL08-094	HOCP95-951	08P14	606
XL08-095	L05-457	08P14	20
XL08-096	HOCP01-564	08P14	0
XL08-097	HOCP95-951	08P15	0
XL08-098	HOCP01-564	08P15	0
XL08-099	HOCP02-610	08P15	276
XL08-100	HOCP02-623	08P15	0
XL08-101	HOCP92-648	08P15	132
XL08-102	HOCP89-846	08P15	363
XL08-103	HOCP96-540	08P16	230
XL08-104	HOCP05-931	08P16	21
XL08-105	HOCP85-845	08P16	79
XL08-106	LCP85-384	08P16	11
XL08-107	L98-207	08P16	64
XL08-108	L94-426	08P16	0
XL08-109	HOCP01-564	08P16	0
XL08-110	L02-316	08P16	0
XL08-111	L98-209	08P16	7
XL08-112	L06-010	08P17	17
XL08-113	HOCP05-931	08P17	0
XL08-114	L94-428	08P17	0
XL08-115	L02-316	08P17	0
XL08-116	HOCP04-847	08P17	0
XL08-117	HOCP02-623	08P17	0
XL08-118	L01-299	08P17	0
XL08-119	HOCP02-610	08P17	0
XL08-120	HOCP06-537	08P17	0
XL08-121	L06-010	08P18	0
XL08-122	HOCP04-847	08P18	0
XL08-123	L98-207	08P18	0
XL08-124	L02-316	08P18	0
XL08-125	LCP85-384	08P18	0
XL08-126	HOCP96-540	08P18	0
XL08-127	HOCP89-846	08P19	0
XL08-128	L94-426	08P19	17
XL08-129	HOCP04-838	08P19	0
XL08-130	HOCP01-523	08P19	0
XL08-131	HOCP02-623	08P19	0
XL08-132	L98-209	08P19	10
XL08-133	L98-207	08P19	919
XL08-134	L02-316	08P20	340
XL08-135	L99-226	08P20	17
XL08-136	L07-057	08P20	0
XL08-137	L05-457	08P20	0
XL08-138	HOCP85-845	08P20	1257
XL08-139	L06-010	08P20	32
XL08-140	L05-457	08P21	76
XL08-141	L07-057	08P21	0
XL08-142	L99-226	08P21	0
XL08-143	L02-316	08P21	81
XL08-144	L05-448	08P21	0
XL08-145	L06-023	08P21	0
XL08-146	L97-128	08P22	0
XL08-147	L01-299	08P22	32
XL08-148	L99-233	08P22	0
XL08-149	LCP85-384	08P22	819
XL08-150	L01-283	08P22	1311
XL08-151	L07-052	08P23	0
XL08-152	HOCP92-618	08P23	0
XL08-153	L05-457	08P22	0
XL08-154	HOCP04-838	08P22	0
XL08-155	LCP85-384	08P23	0
XL08-156	L94-433	08P22	15
XL08-157	L02-316	08P22	295
XL08-158	L06-010	08P23	947
XL08-159	HOCP92-618	08P23	0
XL08-160	L01-299	08P23	30
XL08-161	L94-426	08P23	340
XL08-162	L07-057	08P22	384
XL08-163	HOCP04-838	08P23	30
XL08-164	L05-448	08P23	259
XL08-165	L05-448	08P24	104
XL08-166	L05-457	08P24	0
XL08-167	L94-433	08P24	0
XL08-168	HOCP02-618	08P24	73
XL08-169	L06-010	08P24	465
XL08-170	L98-197	08P24	662
XL08-171	HOCP06-523	08P24	13
XL08-172	L99-226	08P25	6
XL08-173	L01-283	08P25	386
XL08-174	L99-233	08P25	0
XL08-175	L07-064	08P25	0
XL08-176	L07-059	08P25	0
XL08-177	L01-299	08P25	0
XL08-178	L98-197	08P25	0
XL08-179	L06-040	08P25	0
XL08-180	HOCP01-523	08P26	0
XL08-181	HO01-564	08P26	10
XL08-182	HOCP05-918	08P26	0
XL08-183	HOCP96-540	08P26	0
XL08-184	HOCP02-623	08P26	0

Table 5. Continue.

Cross	Female	Male	Seed
XL08-185	HOCP89-846	08P26	0
XL08-186	HOCP04-838	08P26	0
XL08-187	HOCP92-624	08P26	11
XL08-188	HOCP97-606	08P26	0
XL08-189	L99-233	08P26	0
XL08-190	HOCP02-610	08P27	0
XL08-191	L01-299	08P27	0
XL08-192	HOCP01-523	08P27	0
XL08-193	L01-283	08P27	0
XL08-194	L05-448	08P27	0
XL08-195	L07-064	08P27	0
XL08-196	HOCP92-624	08P27	0
XL08-197	HOCP04-838	08P27	0
XL08-198	HOCP02-623	08P27	0
XL08-199	HO06-537	08P28	0
XL08-200	L01-283	08P28	276
XL08-201	HOCP04-847	08P28	47
XL08-202	L94-426	08P28	0
XL08-203	HOCP02-623	08P28	290
XL08-204	HOCP05-923	08P28	76
XL08-205	L05-448	08P28	0
XL08-206	L97-128	08P28	47
XL08-207	L07-059	08P28	595
XL08-208	LCP81-010	08P28	143
XL08-209	L01-299	08P29	491
XL08-210	HO06-537	08P29	7
XL08-211	HOCP96-540	08P29	0
XL08-212	L99-233	08P29	0
XL08-213	L07-064	08P29	0
XL08-214	HOCP92-624	08P29	29
XL08-215	HOCP02-623	08P29	134
XL08-216	L06-038	08P29	0
XL08-217	HOCP05-923	08P29	0
XL08-218	L98-207	08P30	0
XL08-219	HO06-530	08P30	0
XL08-220	HOCP05-923	08P30	7
XL08-221	L06-038	08P30	0
XL08-222	LCP85-384	08P30	0
XL08-223	L05-448	08P30	0
XL08-224	L06-040	08P30	0
XL08-225	L07-064	08P30	0
XL08-226	L07-070	08P30	0
XL08-227	HOCP02-623	08P30	0
XL08-228	HOCP96-540	08P31	0
XL08-229	HOCP89-846	08P31	0
XL08-230	L05-457	08P31	0
XL08-231	L07-059	08P31	0
XL08-232	L07-073	08P31	0
XL08-233	L07-070	08P31	0
XL08-234	L99-233	08P31	0
XL08-235	HOCP92-648	08P31	0
XL08-236	L94-432	08P32	0
XL08-237	L98-207	08P32	0
XL08-238	L94-426	08P32	0
XL08-239	LCP81-010	08P32	72
XL08-240	L01-299	08P32	19
XL08-241	HOCP05-931	08P32	0
XL08-242	L07-073	08P32	0
XL08-243	L07-070	08P32	0
XL08-244	HOCP92-624	08P32	0
XL08-245	HOCP01-523	08P32	0
XL08-246	HO05-961	08P33	0
XL08-247	L02-325	08P33	0
XL08-248	LCP85-384	08P33	0
XL08-249	L01-283	08P33	0
XL08-250	L94-433	08P33	0
XL08-251	HOCP05-923	08P33	0
XL08-252	HOCP89-846	08P33	0
XL08-253	HOCP96-561	08P33	0
XL08-254	L99-233	08P33	0
XL08-255	HOCP02-610	08P34	0
XL08-256	US79-010	08P34	0
XL08-257	HOCP05-923	08P34	0
XL08-258	L05-448	08P34	0
XL08-259	L99-233	08P34	0
XL08-260	L05-457	08P34	0

SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER'S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2008

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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 81,474 seedlings from 132 crosses were planted in the field in the spring of 2008. The majority of these seedlings are progeny of crosses among commercial and elite experimental varieties. In the fall of 2008, family selection was practiced on the 51,867 stubble seedlings surviving the winter. This selection resulted in the planting of 2,623 first-line trial plots. At the same time, superior clones were also selected and advanced through subsequent stages (334 to second line trials, 164 to the increase stage). Assignments of permanent "L08" numbers were given to the 21 best clones of the 2003 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 81,474 seedlings from 132 crosses of the 2007 crossing series were planted to the field in the spring of 2008 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2008, individual selection was practiced on the 51,867 stubble single stools of the 2006 crossing series that survived the winter. The 2,623 clones selected and advanced from the single stools were planted in 8-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 2,000 first-line trial plots of the 2005 crossing series were rated for cane yield and pest resistance in August of 2008 (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 334 clones in single row 16-foot second line trials plots.

Stalk counts were made on the 458 plant-cane second line trial plots of the 2004 crossing series in August 2008. Based on these counts and sucrose lab data collected in 2007, 164 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 2009. Of the 127 candidates from the first stubble crop of the second line trial plots, the best 21 clones from the 2003 crossing series were assigned permanent AL08" numbers (Table 5). These newly assigned AL08" 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 2003 through 2007 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. The results of the 2006 crossing series cross appraisal in 2008 are presented in Table 7.

Table 1. Summary of selections, advancements and assignments made during 2008 by the Louisiana, "L," Sugarcane Variety Development Program's personnel.

	Crosses				Advanced to			
Crossing series	Progeny test	Selection program	Plants transplanted	Over-wintered plants	1st line	2nd line	Increase	On-station Nurseries (L08 Assignments)
			---------- number of clones ----------					
X03	134	211	92598	70910	1548	248	127	21
X04	67	194	93490	76377	2334	458	164	
X05	60	128	79395	50655	2000	334		
X06	120	178	84307	51867	2623			
X07	70	132	81474					

Table 2. Dates of seedling and line trials planted or harvested in 2008.

Crossing Series	Test	Crop	Date Planted	Date Harvested
X07	Seedlings	Planted	4/15 - 4/15/08	
X07	Progeny Test	Planted	4/21/08	
X06	Seedlings	First Stubble	4/12 - 4/16/07	
X06	Progeny Test	First Stubble	4/16/07	12/05/08
X06	First Line Trials	Planted	10/09- 10/15/08	
X05	First Line Trials	Plant-cane	9/07 - 9/17/07	
X04	First Line Trials	First Stubble	9/08 - 9/22/06	12/01/08
X05	Second Line Trials	Planted	10/21/08	
X04	Second Line Trials	Plant-cane	9/20/07	10/01/08
X03	Second Line Trials	First Stubble	9/26/06	10/06/08
X02	Second Line Trials	Second Stubble	10/10/05	10/07/08
X04	Light Soil Increase	Planted	10/02/08	
X03	Light Soil Increase	Plant-cane	9/21/07	11/21/08
X02	Light Soil Increase	First Stubble	10/03/06	10/29/08
X01	Light Soil Increase	Second Stubble	10/19/05	10/07/08
X04	Heavy Soil Increase	Planted	10/02/08	
X03	Heavy Soil Increase	Plant-cane	9/21/07	11/21/08
X02	Heavy Soil Increase	First Stubble	10/03/06	10/29/08
X01	Heavy Soil Increase	Second Stubble	10/19/05	10/07/08

Table 3. Numbers of experimental clones dropped for identified faults in the 2005 crossing series first-line trials.

	Fault	
Trait	Frequency	Percent
---------- 2000 clones enter first round of evaluation ----------		
Initial Selection (Rating)	605	30.2
---------- 1395 clones enter second round of evaluation ----------		
Lodged	6	0.3
Pith / Tube	64	3.2
Broken Tops	110	5.5
Smut	44	2.2
Borers	1	0.1
---------- 225 clones dropped ----------		
----------1170 clones enter third round of evaluation ----------		
Brix	836	41.8
Clones advanced	334	16.7

Table 4. Number of experimental clones dropped for identified faults in the 2004 crossing series of the plant-cane second line trial prior to advancement to the increase stage.

	Fault	
Trait	Frequency	Percent
---------- 458 clones enter first round of evaluation ----------		
Stalk count <75 per plot & observations	238	51.9
Lodged	2.0	0.5
Pith / Tube	9.0	1.9
Broken Tops	15.0	3.2
Smut	29.0	6.3
Rust	1.0	0.4
---------- 294 clones dropped ----------		
Clones advanced to Increase stage	164	35.8

Table 5. Yield data of the 2008 “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
			Lbs/A	Tons/A	Lbs/Ton	Lbs	Stalks/A
LCP85-384	CP77-310	CP77-407	4357	28.4	156	1.23	45829
HOCP96-540	LCP86-454	LCP85-384	5531	33.2	167	1.49	44468
L97-128	LCP81-010	LCP85-384	6185	34.1	181	1.70	40157
L99-226	CP89-846	LCP81-030	6653	36.9	176	2.00	36527
L08-074	N27	03P22	6440	38.6	167	1.51	51274
L08-075	HOCP85-845	L98-207	8077	40.4	200	1.46	55358
L08-076	HOCP92-648	L99-233	5434	30.2	180	1.20	50366
L08-077	L01-283	HOCP91-552	7324	40.2	182	1.52	53089
L08-078	HOCP01-561	03P12	5186	26.9	193	1.14	47190
L08-079	HOCP00-905	L94-432	7313	38.7	189	1.25	62164
L08-080	HOCP00-905	L94-432	6101	41.2	148	1.65	49913
L08-081	N27	03P22	5620	29.3	192	1.11	53089
L08-082	HOCP01-561	03P12	7001	41.3	170	1.67	49459
L08-083	HOCP00-930	HOCP91-552	5862	30.7	191	1.22	50366
L08-084	HOCP92-624	L02-323	7073	36.5	194	1.64	44468
L08-085	HOCP91-552	L99-226	5811	35.3	165	1.61	44014
L08-086	HOCP00-950	HOCP96-540	6985	33.7	208	1.55	43560
L08-087	L02-341	HOCP91-552	8703	47.2	184	1.41	67155
L08-088	N27	03P22	5718	31.4	182	1.37	45829
L08-089	L97-128	L98-209	5980	38.5	156	1.56	49459
L08-090	HOCP91-552	L99-226	5857	37.1	158	1.39	53543
L08-091	L94-433	LCP85-384	5304	25.9	205	1.30	39930
L08-092	N27	HO95-988	7890	43.4	182	1.56	55811
L08-093	N27	03P22	5285	29.9	176	1.38	43560
L08-094	HOCP91-552	L99-226	5511	25.9	213	1.14	45375
L08-095	HOCP92-648	L99-233	5352	27.8	193	1.29	43106

Table 6. Advancement summary of crosses in the 2002 through 2006 crossing series.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
2003 Crossing Series										
CP65-357	HO95-988	238	0	38	0	39	0	41	0	46
CP65-357	LCP85-384	1235	0	38	0	39	0	41	0	46
CP65-357	LCP85-384	964	0	38	0	39	0	41	0	46
CP73-351	HOCP96-540	457	0	38	0	39	0	41	0	46
CP77-310	HOCP91-552	231	0	38	0	39	0	41	0	46
CP83-644	HOCP97-606	244	0	38	0	39	0	41	0	46
HO01-564	L99-226	425	29	84	5	87	3	90	0	46
HO01-564	LCP85-384	238	0	38	0	39	0	41	0	46
HO89-889	L98-209	209	0	38	0	39	0	41	0	46
HO95-988	L99-226	182	0	38	0	39	0	41	0	46
HO95-988	L99-233	274	0	38	0	39	0	41	0	46
HO95-988	LCP85-384	243	27	91	3	87	1	86	0	46
HOCP00-905	HOCP00-930	154	28	99	11	99	8	99	0	46
HOCP00-905	HOCP92-618	175	0	38	0	39	0	41	0	46
HOCP00-905	HOCP96-540	222	0	38	0	39	0	41	0	46
HOCP00-905	HOCP97-609	248	0	38	0	39	0	41	0	46
HOCP00-905	L91-281	500	0	38	0	39	0	41	0	46
HOCP00-905	L94-432	377	56	97	18	98	11	98	2	98
HOCP00-905	LCP85-384	251	0	38	0	39	0	41	0	46
HOCP00-905	LCP85-384	452	0	38	0	39	0	41	0	46
HOCP00-930	HOCP91-552	478	36	86	10	94	7	95	1	94
HOCP00-930	HOCP96-540	490	0	38	0	39	0	41	0	46
HOCP00-942	L00-266	242	0	38	0	39	0	41	0	46
HOCP00-946	LCP85-384	236	0	38	0	39	0	41	0	46
HOCP00-950	HOCP01-506	212	24	92	6	96	1	89	0	46
HOCP00-950	HOCP01-506	228	0	38	0	39	0	41	0	46
HOCP00-950	HOCP91-552	668	6	77	1	78	0	41	0	46
HOCP00-950	HOCP91-552	446	0	38	0	39	0	41	0	46
HOCP00-950	HOCP96-540	934	71	87	12	89	5	89	1	93
HOCP00-950	L00-266	249	0	38	0	39	0	41	0	46
HOCP00-950	L99-226	240	23	89	2	85	0	41	0	46
HOCP01-523	HO91-572	240	0	38	0	39	0	41	0	46
HOCP01-523	LCP85-384	234	0	38	0	39	0	41	0	46
HOCP01-523	LCP85-384	243	16	84	2	84	1	86	0	46
HOCP01-525	03P12	235	0	38	0	39	0	41	0	46
HOCP01-525	HOCP01-506	244	26	90	4	91	2	91	0	46
HOCP01-525	LCP85-384	213	31	96	5	95	3	95	0	46
HOCP01-528	03P15	175	0	38	0	39	0	41	0	46
HOCP01-541	HOCP96-540	153	0	38	0	39	0	41	0	46
HOCP01-544	L98-197	244	0	38	0	39	0	41	0	46
HOCP01-558	HOCP00-905	241	0	38	0	39	0	41	0	46
HOCP01-561	03P12	490	64	94	10	93	6	94	2	96
HOCP01-561	03P13	256	0	38	0	39	0	41	0	46
HOCP01-561	LCP85-384	172	0	38	0	39	0	41	0	46

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP85-845	03P22	232	32	94	4	93	2	92	0	46
HOCP85-845	HOCP01-506	483	0	38	0	39	0	41	0	46
HOCP85-845	L02-328	247	25	89	7	96	3	93	0	46
HOCP85-845	L98-207	727	68	88	9	88	4	90	1	94
HOCP85-845	L98-209	741	0	38	0	39	0	41	0	46
HOCP85-845	LCP85-384	467	0	38	0	39	0	41	0	46
HOCP88-739	LCP85-384	683	0	38	0	39	0	41	0	46
HOCP89-831	03P12	489	0	38	0	39	0	41	0	46
HOCP89-831	LCP85-384	491	0	38	0	39	0	41	0	46
HOCP89-846	HOCP96-540	796	0	38	0	39	0	41	0	46
HOCP89-846	HOCP96-540	245	0	38	0	39	0	41	0	46
HOCP89-846	L02-328	241	0	38	0	39	0	41	0	46
HOCP89-846	L98-209	442	0	38	0	39	0	41	0	46
HOCP89-846	LCP85-384	244	0	38	0	39	0	41	0	46
HOCP91-552	03P16	183	0	38	0	39	0	41	0	46
HOCP91-552	L99-226	393	44	91	19	99	12	99	3	99
HOCP92-618	L02-333	231	0	38	0	39	0	41	0	46
HOCP92-624	03P1	641	0	38	0	39	0	41	0	46
HOCP92-624	03P2	247	0	38	0	39	0	41	0	46
HOCP92-624	HOCP00-905	235	0	38	0	39	0	41	0	46
HOCP92-624	HOCP85-845	239	0	38	0	39	0	41	0	46
HOCP92-624	HOCP91-552	355	0	38	0	39	0	41	0	46
HOCP92-624	HOCP91-552	228	33	95	3	89	2	92	0	46
HOCP92-624	HOCP96-540	497	0	38	0	39	0	41	0	46
HOCP92-624	L02-320	234	0	38	0	39	0	41	0	46
HOCP92-624	L02-323	208	31	97	6	97	5	97	1	97
HOCP92-624	L91-281	502	0	38	0	39	0	41	0	46
HOCP92-624	L96-092	494	0	38	0	39	0	41	0	46
HOCP92-624	L98-209	1114	0	38	0	39	0	41	0	46
HOCP92-624	L98-209	501	0	38	0	39	0	41	0	46
HOCP92-624	L99-226	250	0	38	0	39	0	41	0	46
HOCP92-624	LCP85-384	222	0	38	0	39	0	41	0	46
HOCP92-624	LCP85-384	473	0	38	0	39	0	41	0	46
HOCP92-624	LCP85-384	498	26	82	2	80	1	84	0	46
HOCP92-624	LCP85-384	315	0	38	0	39	0	41	0	46
HOCP92-648	HOCP96-540	215	0	38	0	39	0	41	0	46
HOCP92-648	L98-209	482	0	38	0	39	0	41	0	46
HOCP92-648	L98-209	487	0	38	0	39	0	41	0	46
HOCP92-648	L99-233	437	49	91	10	94	8	96	2	97
HOCP92-648	LCP85-384	1199	0	38	0	39	0	41	0	46
HOCP92-648	LCP85-384	256	0	38	0	39	0	41	0	46
HOCP92-648	LCP85-384	247	0	38	0	39	0	41	0	46
HOCP93-746	HOCP85-845	438	0	38	0	39	0	41	0	46
HOCP93-746	LCP85-384	437	0	38	0	39	0	41	0	46
HOCP93-749	L99-226	246	0	38	0	39	0	41	0	46
HOCP95-951	03P1	254	21	87	2	83	0	41	0	46
HOCP96-540	03P11	1587	0	38	0	39	0	41	0	46

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP96-540	03P12	474	0	38	0	39	0	41	0	46
HOCP96-540	03P18	195	0	38	0	39	0	41	0	46
HOCP96-540	03P19	200	0	38	0	39	0	41	0	46
HOCP96-540	03P6	251	0	38	0	39	0	41	0	46
HOCP96-540	03P8	249	0	38	0	39	0	41	0	46
HOCP96-540	03P9	1376	0	38	0	39	0	41	0	46
HOCP96-540	HOCP01-506	674	0	38	0	39	0	41	0	46
HOCP96-540	L02-316	1218	0	38	0	39	0	41	0	46
HOCP96-540	L98-209	435	0	38	0	39	0	41	0	46
HOCP96-540	L99-226	1435	0	38	0	39	0	41	0	46
HOCP96-561	03P19	247	43	98	4	91	2	91	0	46
HOCP96-561	L02-341	306	0	38	0	39	0	41	0	46
HOCP97-606	HOCP96-540	592	0	38	0	39	0	41	0	46
HOCP97-606	L98-209	239	0	38	0	39	0	41	0	46
HOCP97-609	03P13	365	0	38	0	39	0	41	0	46
HOCP97-609	03P15	247	0	38	0	39	0	41	0	46
HOCP97-609	HOCP96-540	805	0	38	0	39	0	41	0	46
HOCP98-741	L02-320	383	0	38	0	39	0	41	0	46
HOCP98-781	03P9	438	0	38	0	39	0	41	0	46
HOCP98-781	L98-207	481	0	38	0	39	0	41	0	46
HOCP98-781	LCP85-384	208	0	38	0	39	0	41	0	46
L01-281	03P9	428	0	38	0	39	0	41	0	46
L01-283	HOCP91-552	476	15	79	3	82	2	87	1	95
L01-283	LCP85-384	160	0	38	0	39	0	41	0	46
L01-299	LCP85-384	646	0	38	0	39	0	41	0	46
L01-299	LCP85-384	677	0	38	0	39	0	41	0	46
L02-233	L96-092	241	23	88	3	88	0	41	0	46
L02-319	HOCP96-540	407	0	38	0	39	0	41	0	46
L02-320	HOCP85-845	229	0	38	0	39	0	41	0	46
L02-320	HOCP96-540	487	0	38	0	39	0	41	0	46
L02-320	L99-226	243	12	81	4	92	1	86	0	46
L02-322	HOCP85-845	240	0	38	0	39	0	41	0	46
L02-322	HOCP96-540	132	0	38	0	39	0	41	0	46
L02-322	L99-226	211	0	38	0	39	0	41	0	46
L02-328	HO91-572	223	0	38	0	39	0	41	0	46
L02-328	HOCP91-552	224	0	38	0	39	0	41	0	46
L02-328	HOCP91-552	204	0	38	0	39	0	41	0	46
L02-328	L99-226	896	53	83	8	86	3	85	0	46
L02-328	L99-233	711	0	38	0	39	0	41	0	46
L02-333	HOCP96-540	748	0	38	0	39	0	41	0	46
L02-336	POLY	227	0	38	0	39	0	41	0	46
L02-341	HOCP91-552	381	42	90	12	97	7	96	1	95
L02-341	HOCP91-552	208	10	80	3	90	2	93	0	46
L02-341	HOCP96-540	428	0	38	0	39	0	41	0	46
L02-351	LCP85-384	242	0	38	0	39	0	41	0	46
L91-255	HOCP96-540	471	0	38	0	39	0	41	0	46
L91-255	L00-266	437	0	38	0	39	0	41	0	46

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L91-255	LCP85-384	245	0	38	0	39	0	41	0	46
L94-426	HOCP91-552	356	0	38	0	39	0	41	0	46
L94-428	HOCP96-540	246	0	38	0	39	0	41	0	46
L94-432	03P24	458	0	38	0	39	0	41	0	46
L94-432	LCP85-384	419	0	38	0	39	0	41	0	46
L94-433	HO91-572	460	0	38	0	39	0	41	0	46
L94-433	LCP85-384	1087	54	81	6	82	1	83	1	93
L96-040	HOCP00-905	241	0	38	0	39	0	41	0	46
L96-040	L94-432	477	0	38	0	39	0	41	0	46
L96-040	L99-226	1105	0	38	0	39	0	41	0	46
L96-040	LCP85-384	212	0	38	0	39	0	41	0	46
L97-128	HO91-572	186	0	38	0	39	0	41	0	46
L97-128	HOCP91-552	207	0	38	0	39	0	41	0	46
L97-128	HOCP91-552	166	0	38	0	39	0	41	0	46
L97-128	L98-197	166	0	38	0	39	0	41	0	46
L97-128	L98-207	435	31	85	7	90	2	88	0	46
L97-128	L98-209	153	23	97	5	98	4	98	1	98
L97-128	L99-226	74	0	38	0	39	0	41	0	46
L97-128	LCP85-384	188	0	38	0	39	0	41	0	46
L97-128	POLY	371	0	38	0	39	0	41	0	46
L97-137	L94-432	440	0	38	0	39	0	41	0	46
L97-137	L96-092	486	0	38	0	39	0	41	0	46
L98-207	HOCP01-553	721	0	38	0	39	0	41	0	46
L98-209	HOCP91-552	362	0	38	0	39	0	41	0	46
L98-209	HOCP96-540	229	0	38	0	39	0	41	0	46
L98-209	L98-207	1190	0	38	0	39	0	41	0	46
L99-226	03P10	233	0	38	0	39	0	41	0	46
L99-226	03P13	238	0	38	0	39	0	41	0	46
L99-226	HOCP92-618	850	44	82	7	84	1	83	0	46
L99-226	HOCP96-540	764	64	88	8	86	2	85	0	46
L99-226	L98-197	1172	0	38	0	39	0	41	0	46
L99-226	L99-233	920	0	38	0	39	0	41	0	46
L99-233	L96-092	396	0	38	0	39	0	41	0	46
LCP02-337	03P14	243	0	38	0	39	0	41	0	46
LCP02-337	03P18	342	0	38	0	39	0	41	0	46
LCP02-337	HOCP96-540	440	0	38	0	39	0	41	0	46
LCP02-337	L99-226	1160	0	38	0	39	0	41	0	46
LCP02-344	HOCP96-540	395	0	38	0	39	0	41	0	46
LCP02-345	HOCP96-540	450	0	38	0	39	0	41	0	46
LCP02-345	L99-226	190	0	38	0	39	0	41	0	46
LCP81-010	03P15	1323	0	38	0	39	0	41	0	46
LCP81-010	HO91-572	487	0	38	0	39	0	41	0	46
LCP81-010	HOCP91-552	242	13	83	1	80	1	87	0	46
LCP81-010	L02-320	226	0	38	0	39	0	41	0	46
LCP81-010	L98-197	786	0	38	0	39	0	41	0	46
LCP81-010	L98-207	238	0	38	0	39	0	41	0	46
LCP81-010	L98-207	694	0	38	0	39	0	41	0	46

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
LCP81-010	L98-207	1152	83	85	4	79	2	84	0	46
LCP81-010	LCP85-384	908	0	38	0	39	0	41	0	46
LCP81-010	LCP85-384	956	0	38	0	39	0	41	0	46
LCP82-089	LCP85-384	708	0	38	0	39	0	41	0	46
LCP85-384	03P10	866	37	80	1	78	0	41	0	46
LCP85-384	03P22	95	0	38	0	39	0	41	0	46
LCP85-384	03P24	248	0	38	0	39	0	41	0	46
LCP85-384	03P8	666	0	38	0	39	0	41	0	46
LCP86-454	03P8	246	0	38	0	39	0	41	0	46
MISC	MISC	489	0	38	0	39	0	41	0	46
N-27	HO95-988	233	30	94	1	81	1	88	1	96
N27	03P22	466	66	95	12	95	6	94	4	99
TUCCP77-042	POLY	245	0	38	0	39	0	41	0	46
US01-039	HO91-572	481	0	38	0	39	0	41	0	46
US01-039	HOCP96-540	444	0	38	0	39	0	41	0	46
US01-039	LCP85-384	489	58	93	1	79	0	41	0	46
US01-039	LCP85-384	150	11	86	0	39	0	41	0	46
US01-040	HO91-572	172	0	38	0	39	0	41	0	46
US02-096	HOCP01-553	230	42	99	2	85	0	41	0	46
US02-096	LCP85-384	210	0	38	0	39	0	41	0	46
US99-002	LCP85-384	242	28	93	5	94	5	97	0	46
US99-004	LCP85-384	222	0	38	0	39	0	41	0	46
2004 Crossing Series										
CP65-357	HO95-988	238	8	69	0	27	0	33	.	.
CP65-357	L02-316	488	29	87	9	95	2	84	.	.
CP65-357	L98-207	693	0	21	0	27	0	33	.	.
CP65-357	L99-233	684	18	60	10	91	2	81	.	.
CP73-351	L98-207	956	0	21	0	27	0	33	.	.
CP79-318	L02-316	247	0	21	0	27	0	33	.	.
CP79-318	LCP85-384	724	16	54	3	63	1	72	.	.
HO01-564	HOCP91-552	238	11	80	0	27	0	33	.	.
HO01-564	L99-226	444	0	21	0	27	0	33	.	.
HO01-564	TUCCP77-042	743	47	89	6	77	1	70	.	.
HO91-572	04P1	234	0	21	0	27	0	33	.	.
HO95-988	HOCP89-846	251	6	57	2	76	0	33	.	.
HO95-988	HOCP91-552	941	17	51	4	65	0	33	.	.
HO95-988	HOCP91-552	498	0	21	0	27	0	33	.	.
HO95-988	L98-207	1126	27	57	8	74	3	81	.	.
HO95-988	LCP85-384	732	0	21	0	27	0	33	.	.
HOCP00-930	HO95-988	480	2	42	0	27	0	33	.	.
HOCP00-930	HOCP89-846	706	0	21	0	27	0	33	.	.
HOCP00-930	HOCP91-552	243	0	21	0	27	0	33	.	.
HOCP00-930	HOCP91-552	455	16	71	5	82	1	76	.	.
HOCP00-930	L00-266	496	46	97	14	98	7	97	.	.
HOCP00-930	L02-353	450	13	63	5	83	1	76	.	.
HOCP00-930	L99-233	834	85	98	32	99	21	99	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP00-930	TUCCP77-042	188	15	96	3	93	0	33	.	.
HOCP00-950	HOCP89-846	249	0	21	0	27	0	33	.	.
HOCP00-950	L98-209	244	0	21	0	27	0	33	.	.
HOCP00-950	LCP85-384	360	0	21	0	27	0	33	.	.
HOCP01-517	L98-207	985	43	79	8	77	4	84	.	.
HOCP01-523	L02-316	248	17	93	3	85	2	94	.	.
HOCP01-523	L98-209	491	0	21	0	27	0	33	.	.
HOCP01-523	LCP85-384	470	43	97	7	92	2	87	.	.
HOCP01-529	L99-226	243	0	21	0	27	0	33	.	.
HOCP01-541	HOCP92-618	239	0	21	0	27	0	33	.	.
HOCP01-544	L99-233	202	0	21	0	27	0	33	.	.
HOCP01-553	L99-233	825	41	84	14	94	6	94	.	.
HOCP01-558	HOCP92-618	152	0	21	0	27	0	33	.	.
HOCP01-558	HOCP97-609	252	0	21	0	27	0	33	.	.
HOCP01-558	LCP82-089	225	5	54	1	67	0	33	.	.
HOCP01-561	L97-137	248	10	75	1	61	0	33	.	.
HOCP01-561	L99-226	738	15	52	4	71	1	71	.	.
HOCP01-588	TUCCP77-042	244	0	21	0	27	0	33	.	.
HOCP85-384	HO95-988	221	6	61	0	27	0	33	.	.
HOCP85-845	HO95-988	479	16	67	0	27	0	33	.	.
HOCP85-845	HOCP89-846	239	0	21	0	27	0	33	.	.
HOCP85-845	HOCP92-618	251	0	21	0	27	0	33	.	.
HOCP85-845	LCP82-089	423	18	78	0	27	0	33	.	.
HOCP85-845	LCP85-384	1383	35	59	4	59	1	67	.	.
HOCP89-831	LCP85-384	464	53	99	13	98	7	98	.	.
HOCP89-846	HO95-988	462	0	21	0	27	0	33	.	.
HOCP89-846	HO95-988	233	4	49	0	27	0	33	.	.
HOCP89-846	HOCP85-845	247	0	21	0	27	0	33	.	.
HOCP89-846	HOCP85-845	250	0	21	0	27	0	33	.	.
HOCP89-846	HOCP97-609	252	0	21	0	27	0	33	.	.
HOCP89-846	L02-316	428	4	44	1	56	1	77	.	.
HOCP89-846	LCP81-010	482	18	72	0	27	0	33	.	.
HOCP91-552	04P2	240	0	21	0	27	0	33	.	.
HOCP91-555	L98-209	245	0	21	0	27	0	33	.	.
HOCP91-555	LCP85-384	487	0	21	0	27	0	33	.	.
HOCP92-618	HO95-988	1455	0	21	0	27	0	33	.	.
HOCP92-618	HOCP89-846	122	2	48	0	27	0	33	.	.
HOCP92-618	HOCP97-609	502	0	21	0	27	0	33	.	.
HOCP92-618	LCP85-384	500	0	21	0	27	0	33	.	.
HOCP92-618	LCP85-384	252	0	21	0	27	0	33	.	.
HOCP92-624	04P16	247	10	75	1	61	0	33	.	.
HOCP92-624	HOCP85-845	502	10	52	0	27	0	33	.	.
HOCP92-624	HOCP89-846	126	1	43	1	76	0	33	.	.
HOCP92-624	HOCP91-552	473	18	74	10	97	6	96	.	.
HOCP92-624	HOCP91-552	205	5	57	0	27	0	33	.	.
HOCP92-624	HOCP96-540	1119	30	61	3	58	0	33	.	.
HOCP92-624	HOCP96-561	498	17	69	7	90	2	83	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP92-624	L00-266	479	0	21	0	27	0	33	.	.
HOCP92-624	L02-316	905	0	21	0	27	0	33	.	.
HOCP92-624	L02-353	253	8	66	0	27	0	33	.	.
HOCP92-624	L92-312	501	12	57	1	55	0	33	.	.
HOCP92-624	L94-428	496	8	48	0	27	0	33	.	.
HOCP92-624	L97-128	218	0	21	0	27	0	33	.	.
HOCP92-624	L98-207	1462	70	82	7	69	2	71	.	.
HOCP92-624	L98-209	842	43	85	4	69	2	77	.	.
HOCP92-624	L99-226	1184	67	87	17	90	8	93	.	.
HOCP92-624	L99-226	482	18	72	5	81	1	73	.	.
HOCP92-624	L99-233	1206	38	66	18	92	2	72	.	.
HOCP92-624	L99-233	1196	57	82	12	81	8	93	.	.
HOCP92-624	LCP82-089	876	20	55	6	74	1	69	.	.
HOCP92-624	LCP85-384	1294	98	95	16	86	4	82	.	.
HOCP92-648	HOCP89-846	447	0	21	0	27	0	33	.	.
HOCP92-648	HOCP91-552	243	7	63	1	63	0	33	.	.
HOCP92-648	L00-266	480	31	90	1	55	0	33	.	.
HOCP92-648	L02-316	503	8	48	0	27	0	33	.	.
HOCP92-648	L97-137	117	0	21	0	27	0	33	.	.
HOCP92-648	L99-233	457	13	62	0	27	0	33	.	.
HOCP92-648	LCP85-384	174	7	75	2	84	0	33	.	.
HOCP92-648	LCP85-384	256	19	94	2	75	1	83	.	.
HOCP95-951	L02-325	463	11	57	4	79	1	75	.	.
HOCP95-951	L99-233	433	0	21	0	27	0	33	.	.
HOCP96-509	CP77-310	244	3	46	0	27	0	33	.	.
HOCP96-509	L00-266	229	15	91	1	67	0	33	.	.
HOCP96-509	L02-316	245	0	21	0	27	0	33	.	.
HOCP96-509	LCP85-384	471	0	21	0	27	0	33	.	.
HOCP96-540	04P3	679	7	45	0	27	0	33	.	.
HOCP96-540	04P5	966	0	21	0	27	0	33	.	.
HOCP96-540	04P7	1078	0	21	0	27	0	33	.	.
HOCP96-540	HOCP91-552	224	0	21	0	27	0	33	.	.
HOCP96-540	L02-325	471	0	21	0	27	0	33	.	.
HOCP96-540	L99-233	469	0	21	0	27	0	33	.	.
HOCP96-549	HOCP01-517	232	0	21	0	27	0	33	.	.
HOCP96-561	L99-226	242	0	21	0	27	0	33	.	.
HOCP97-609	HO95-988	206	0	21	0	27	0	33	.	.
HOCP97-609	HOCP91-552	343	10	63	1	59	0	33	.	.
HOCP97-609	HOCP92-618	241	6	59	1	63	1	86	.	.
HOCP97-609	LCP85-384	239	0	21	0	27	0	33	.	.
HoCP85-845	HOCP91-552	254	0	21	0	27	0	33	.	.
HoCP96-540	OP13	221	0	21	0	27	0	33	.	.
L01-281	04P3	484	20	77	3	72	0	33	.	.
L01-283	LCP81-010	415	8	51	1	57	1	78	.	.
L01-299	04P3	233	17	94	3	88	1	89	.	.
L01-299	HOCP91-552	247	11	79	6	97	3	96	.	.
L01-299	L97-128	227	8	71	1	67	0	33	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L01-299	LCP85-384	248	0	21	0	27	0	33	.	.
L02-316	HO95-988	465	0	21	0	27	0	33	.	.
L02-316	HOCP91-552	243	5	53	0	27	0	33	.	.
L02-320	LCP85-384	370	0	21	0	27	0	33	.	.
L02-325	HO95-988	689	0	21	0	27	0	33	.	.
L02-325	HOCP91-552	804	0	21	0	27	0	33	.	.
L02-325	HOCP92-618	468	0	21	0	27	0	33	.	.
L02-325	LCP81-010	221	0	21	0	27	0	33	.	.
L02-336	TUCCP77-042	241	26	98	5	96	4	98	.	.
L02-342	HO95-988	234	12	85	2	78	2	95	.	.
L02-342	HOCP92-618	252	0	21	0	27	0	33	.	.
L02-342	L98-209	237	0	21	0	27	0	33	.	.
L02-353	HOCP91-552	233	16	93	4	94	3	97	.	.
L02-353	HOCP92-618	244	0	21	0	27	0	33	.	.
L02-353	L98-209	236	15	89	1	64	1	87	.	.
L02-353	LCP85-384	195	13	91	4	96	1	91	.	.
L89-113	LCP85-384	249	0	21	0	27	0	33	.	.
L91-281	HOCP85-845	499	0	21	0	27	0	33	.	.
L91-281	L02-325	495	35	93	6	85	1	73	.	.
L91-281	L99-226	404	9	54	2	70	1	79	.	.
L94-426	HOCP89-846	243	10	77	1	63	1	85	.	.
L94-426	L99-233	453	8	51	3	73	0	33	.	.
L94-426	LCP85-384	233	8	69	1	65	0	33	.	.
L94-428	HOCP89-846	464	0	21	0	27	0	33	.	.
L94-428	LCP85-384	249	0	21	0	27	0	33	.	.
L94-432	04P16	225	0	21	0	27	0	33	.	.
L94-432	L02-316	246	9	72	2	77	0	33	.	.
L94-433	TUCCP77-042	474	40	96	7	91	1	74	.	.
L97-128	04P10	466	24	86	6	88	2	89	.	.
L97-128	HOCP85-845	228	2	44	0	27	0	33	.	.
L97-128	HOCP89-846	443	22	84	4	80	0	33	.	.
L97-128	L01-299	242	0	21	0	27	0	33	.	.
L97-128	L91-255	236	0	21	0	27	0	33	.	.
L97-128	L98-209	475	30	89	8	93	2	86	.	.
L97-128	L99-226	231	14	88	3	89	1	90	.	.
L97-128	L99-226	927	34	72	5	71	2	75	.	.
L97-128	L99-233	1356	46	69	17	87	7	91	.	.
L97-128	LCP81-010	453	12	60	0	27	0	33	.	.
L97-128	LCP85-384	941	45	82	6	73	2	74	.	.
L97-128	LCP85-384	367	24	90	4	82	0	33	.	.
L97-137	L99-233	485	24	83	3	72	2	85	.	.
L98-197	L99-226	957	0	21	0	27	0	33	.	.
L98-207	HOCP85-845	246	0	21	0	27	0	33	.	.
L98-209	HO95-988	242	0	21	0	27	0	33	.	.
L98-209	HOCP89-846	242	0	21	0	27	0	33	.	.
L99-226	04P3	223	3	46	1	69	0	33	.	.
L99-226	HOCP85-845	453	18	75	1	56	0	33	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L99-226	HOCP89-846	495	0	21	0	27	0	33	.	.
L99-226	LCP85-384	435	0	21	0	27	0	33	.	.
L99-226	LCP85-384	676	21	65	2	59	0	33	.	.
L99-226	LCP85-384	234	16	92	3	87	1	88	.	.
L99-233	HOCP85-845	468	22	81	4	78	3	92	.	.
L99-233	HOCP91-552	417	14	69	3	75	1	78	.	.
L99-233	LCP85-384	226	5	54	1	67	1	90	.	.
LCP81-010	HO95-988	1206	21	49	4	60	3	80	.	.
LCP81-010	HO95-988	241	0	21	0	27	0	33	.	.
LCP81-010	HOCP89-846	760	30	74	3	60	1	70	.	.
LCP81-010	L02-316	225	6	61	3	89	2	95	.	.
LCP81-010	L02-316	218	0	21	0	27	0	33	.	.
LCP81-010	L97-128	244	0	21	0	27	0	33	.	.
LCP81-010	L98-207	793	23	63	9	83	1	69	.	.
LCP81-010	L98-209	241	8	67	0	27	0	33	.	.
LCP81-010	L99-226	468	0	21	0	27	0	33	.	.
LCP81-010	L99-233	320	17	86	4	87	1	82	.	.
LCP81-010	LCP82-089	117	2	49	0	27	0	33	.	.
LCP81-010	LCP85-384	960	5	43	1	54	1	68	.	.
LCP82-089	HOCP85-845	240	0	21	0	27	0	33	.	.
LCP85-384	04P4	676	28	77	6	80	4	92	.	.
LCP86-454	04P7	1132	86	95	22	95	3	80	.	.
N27	LCP85-384	1240	19	47	3	57	1	68	.	.
TUCCP77-042	04P16	226	7	65	1	67	0	33	.	.
US79-010	HO95-988	240	0	21	0	27	0	33	.	.
US79-010	L02-316	235	8	69	1	65	1	87	.	.
US79-010	LCP85-384	248	2	43	0	27	0	33	.	.
US96-002	04P1	202	0	21	0	27	0	33	.	.
US99-002	CP77-310	216	0	21	0	27	0	33	.	.
US99-002	LCP85-384	242	11	79	0	27	0	33	.	.
2005 Crossing Series										
CP83-644	L02-316	930	15	52	3	66	.	.	.	.
HO91-572	HOCP96-540	723	0	25	0	29	.	.	.	.
HO91-572	HOCP96-540	464	0	25	0	29	.	.	.	.
HO95-988	HOCP02-623	122	7	80	1	78	.	.	.	.
HO95-988	HOCP96-540	665	0	25	0	29	.	.	.	.
HOCP00-930	05P4	237	0	25	0	29	.	.	.	.
HOCP00-930	HOCP02-610	974	0	25	0	29	.	.	.	.
HOCP00-930	L99-226	146	0	25	0	29	.	.	.	.
HOCP00-930	LCP82-089	217	0	25	0	29	.	.	.	.
HOCP02-618	L04-425	180	0	25	0	29	.	.	.	.
HOCP02-618	L99-226	910	78	91	16	91	.	.	.	.
HOCP02-618	L99-233	379	76	99	30	99	.	.	.	.
HOCP02-620	L94-426	110	8	86	3	97	.	.	.	.
HOCP02-623	HOCP98-781	173	0	25	0	29	.	.	.	.
HOCP02-652	HOCP02-610	68	0	25	0	29	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP03-757	L04-425	141	0	25	0	29	.	.	.	.
HOCP89-846	HOCP91-552	153	10	83	4	96	.	.	.	.
HOCP89-846	L02-316	330	0	25	0	29	.	.	.	.
HOCP89-846	L94-426	444	16	69	1	61	.	.	.	.
HOCP91-552	05P1	798	1	50	0	29	.	.	.	.
HOCP91-552	05P2	374	12	64	2	74	.	.	.	.
HOCP91-552	05P3	253	0	25	0	29	.	.	.	.
HOCP91-552	L99-233	1021	0	25	0	29	.	.	.	.
HOCP92-624	HOCP02-610	657	19	63	0	29	.	.	.	.
HOCP92-624	HOCP02-623	537	0	25	0	29	.	.	.	.
HOCP92-624	HOCP89-846	718	0	25	0	29	.	.	.	.
HOCP92-624	HOCP91-552	2620	68	59	6	61	.	.	.	.
HOCP92-624	HOCP96-540	1633	58	69	2	59	.	.	.	.
HOCP92-624	L02-316	214	0	25	0	29	.	.	.	.
HOCP92-624	L99-226	465	39	90	11	94	.	.	.	.
HOCP92-624	L99-233	1060	45	74	9	79	.	.	.	.
HOCP92-624	L99-233	2199	89	71	20	80	.	.	.	.
HOCP92-624	LCP85-384	221	6	61	0	29	.	.	.	.
HOCP92-648	HOCP02-623	168	0	25	0	29	.	.	.	.
HOCP92-648	LCP85-384	216	4	54	2	81	.	.	.	.
HOCP95-951	L99-233	142	27	98	8	98	.	.	.	.
HOCP95-951	L99-233	379	26	84	6	89	.	.	.	.
HOCP96-540	HOCP89-846	1006	0	25	0	29	.	.	.	.
HOCP96-540	L99-226	1565	0	25	0	29	.	.	.	.
HOCP96-540	L99-233	1116	30	61	3	64	.	.	.	.
HOCP96-561	HOCP02-652	204	0	25	0	29	.	.	.	.
HOCP96-561	HOCP98-781	403	0	25	0	29	.	.	.	.
HOCP96-561	L99-226	204	0	25	0	29	.	.	.	.
HOCP96-561	L99-233	449	28	82	3	76	.	.	.	.
L01-299	HOCP89-846	184	13	85	0	29	.	.	.	.
L01-299	HOCP91-552	228	12	79	0	29	.	.	.	.
L01-299	HOCP96-540	203	21	95	1	73	.	.	.	.
L02-316	HOCP96-540	434	0	25	0	29	.	.	.	.
L02-316	HOCP98-781	170	0	25	0	29	.	.	.	.
L02-316	L04-410	77	0	25	0	29	.	.	.	.
L02-316	L99-226	121	0	25	0	29	.	.	.	.
L03-387	L99-226	1589	53	66	5	65	.	.	.	.
L03-387	US01-040	183	4	56	1	75	.	.	.	.
L03-396	HOCP96-540	128	0	25	0	29	.	.	.	.
L03-396	L99-233	159	12	88	4	95	.	.	.	.
L04-425	HOCP02-610	630	0	25	0	29	.	.	.	.
L91-281	HOCP96-540	654	26	71	5	77	.	.	.	.
L91-281	L01-299	245	20	89	0	29	.	.	.	.
L92-312	L99-226	362	0	25	0	29	.	.	.	.
L94-433	05P3	450	42	93	2	70	.	.	.	.
L94-433	HOCP92-618	735	0	25	0	29	.	.	.	.
L94-433	HOCP96-540	291	0	25	0	29	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L94-433	L99-226	1368	0	25	0	29	.	.	.	.
L94-433	L99-233	206	9	76	2	82	.	.	.	.
L97-128	HOCP02-618	145	0	25	0	29	.	.	.	.
L97-128	HOCP02-652	101	0	25	0	29	.	.	.	.
L97-128	HOCP89-846	243	18	87	4	90	.	.	.	.
L97-128	HOCP91-552	205	9	76	3	88	.	.	.	.
L97-128	HOCP96-540	542	0	25	0	29	.	.	.	.
L97-128	HOCP96-540	485	55	96	11	92	.	.	.	.
L97-128	L02-316	214	0	25	0	29	.	.	.	.
L97-128	L03-374	418	0	25	0	29	.	.	.	.
L97-128	L04-410	534	0	25	0	29	.	.	.	.
L97-128	L99-226	1063	107	94	25	93	.	.	.	.
L97-128	L99-226	868	37	75	0	29	.	.	.	.
L97-128	L99-233	1693	147	92	17	83	.	.	.	.
L97-128	L99-233	1050	42	71	5	72	.	.	.	.
L97-128	LCP82-089	88	0	25	0	29	.	.	.	.
L97-128	US01-040	217	9	73	1	71	.	.	.	.
L98-209	HOCP91-552	735	14	54	3	66	.	.	.	.
L98-209	LCP82-089	187	0	25	0	29	.	.	.	.
L99-226	05P2	240	28	97	1	67	.	.	.	.
L99-226	HOCP96-540	615	0	25	0	29	.	.	.	.
L99-226	L94-426	312	0	25	0	29	.	.	.	.
L99-233	05P1	293	0	25	0	29	.	.	.	.
L99-233	05P3	337	8	57	0	29	.	.	.	.
LCP81-010	HOCP03-757	656	22	67	1	60	.	.	.	.
LCP81-010	HOCP89-846	273	1	50	0	29	.	.	.	.
LCP81-010	HOCP91-552	346	0	25	0	29	.	.	.	.
LCP81-010	L03-374	434	0	25	0	29	.	.	.	.
LCP81-010	L04-410	1148	31	61	5	70	.	.	.	.
LCP81-010	L99-233	2545	83	66	6	63	.	.	.	.
LCP85-384	HOCP02-610	264	0	25	0	29	.	.	.	.
LCP85-384	HOCP03-757	102	0	25	0	29	.	.	.	.
LCP85-384	L99-226	277	9	64	3	84	.	.	.	.
LCP85-384	LCP82-089	1381	0	25	0	29	.	.	.	.
TUCCP77-042	L99-226	228	11	78	3	86	.	.	.	.
TUCCP77-042	POLY	462	6	51	6	85	.	.	.	.
US01-040	L99-226	935	23	58	4	68	.	.	.	.
US01-040	US01-040	342	0	25	0	29	.	.	.	.
US79-010	HOCP96-540	920	53	81	9	83	.	.	.	.
US79-010	L99-226	721	48	83	10	87	.	.	.	.
US99-002	HOCP96-540	242	5	55	0	29	.	.	.	.
US99-004	L04-425	659	0	25	0	29	.	.	.	.
US99-004	L99-226	784	0	25	0	29	.	.	.	.
2004 Crossing Series										
HOCP92-624	LCP85-384	1844	94	85	22	84	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP97-609	LCP85-384	674	0	21	0	27	.	.	.	.
2003 Crossing Series										
HOCP00-930	HOCP91-552	418	0	38	0	39	.	.	.	
HOCP00-950	HOCP01-506	124	0	38	0	39	.	.	.	.
HOCP85-845	L02-328	477	13	78	3	82	.	.	.	.
HOCP92-648	L99-233	236	40	98	4	92	.	.	.	.
HOCP96-540	03P18	127	0	38	0	39	.	.	.	.
LCP81-010	L98-207	1768	59	79	12	83	.	.	.	.
LCP81-010	LCP85-384	705	41	83	9	89	.	.	.	.
N-27	HO95-988	1536	0	38	0	39	.	.	.	.
US01-039	LCP85-384	469	14	78	2	81	.	.	.	.
US02-096	HOCP01-553	452	0	38	0	39	.	.	.	.
2002 Crossing Series										
CP79-348	L98-207	237	2	36	0	31	.	.	.	
HOCP92-624	HOCP98-741	316	17	90	2	63	.	.	.	.
HOCP92-624	LCP85-384	401	9	54	0	31	.	.	.	.
HOCP92-624	US01-040	159	0	18	0	31	.	.	.	.
HOCP93-767	L99-226	111	3	63	1	81	.	.	.	.
L00-270	HOCP97-609	19	0	18	0	31	.	.	.	.
LCP85-384	HOCP01-517	456	9	45	0	31	.	.	.	.
LCP86-454	LCP85-384	483	0	18	0	31	.	.	.	.
N-27	HOCP96-540	347	14	77	3	72	.	.	.	.
N-27	LCP85-384	420	17	77	8	90	.	.	.	.
										.
2006 Crossing Series										
CP83-644	HOCP04-836	239	0	31	.	.	.	.	.	
CP83-644	HOCP89-846	211	20	80	.	.	.	.	.	.
CP83-644	LCP81-010	210	0	31	.	.	.	.	.	.
HO95-988	L99-233	729	56	71	.	.	.	.	.	.
HO95-988	LCP85-384	379	0	31	.	.	.	.	.	.
HOCP00-905	HOCP04-836	981	0	31	.	.	.	.	.	.
HOCP00-930	L04-408	474	44	78	.	.	.	.	.	.
HOCP00-930	L99-233	476	47	83	.	.	.	.	.	.
HOCP00-933	06P3	447	0	31	.	.	.	.	.	.
HOCP00-933	L04-410	433	49	89	.	.	.	.	.	.
HOCP00-933	L92-312	215	0	31	.	.	.	.	.	.
HOCP00-950	HOCP00-930	952	34	63	.	.	.	.	.	.
HOCP00-950	HOCP01-523	377	36	80	.	.	.	.	.	.
HOCP00-950	HOCP04-836	166	0	31	.	.	.	.	.	.
HOCP00-950	HOCP91-552	300	24	73	.	.	.	.	.	.
HOCP00-950	L99-226	82	18	99	.	.	.	.	.	.
HOCP00-950	LCP85-384	157	24	98	.	.	.	.	.	.
HOCP00-950	LCP85-384	193	21	87	.	.	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP01-523	L99-233	215	28	95	.	.	.	.	.	.
HOCP01-561	L99-233	196	0	31	.	.	.	.	.	.
HOCP01-827	LCP85-384	229	0	31	.	.	.	.	.	.
HOCP02-610	L04-410	1217	0	31	.	.	.	.	.	.
HOCP02-618	HOCP99-825	222	0	31	.	.	.	.	.	.
HOCP02-618	L99-226	408	0	31	.	.	.	.	.	.
HOCP02-618	L99-226	472	46	82	.	.	.	.	.	.
HOCP02-623	HOCP01-523	210	0	31	.	.	.	.	.	.
HOCP02-623	HOCP04-836	236	0	31	.	.	.	.	.	.
HOCP02-623	HOCP91-552	464	36	72	.	.	.	.	.	.
HOCP02-623	HOCP96-540	486	0	31	.	.	.	.	.	.
HOCP02-652	HOCP96-540	237	0	31	.	.	.	.	.	.
HOCP04-809	HOCP04-829	180	13	69	.	.	.	.	.	.
HOCP04-809	L99-233	460	0	31	.	.	.	.	.	.
HOCP04-810	HOCP96-561	201	0	31	.	.	.	.	.	.
HOCP04-824	HOCP96-540	492	0	31	.	.	.	.	.	.
HOCP04-827	HOCP02-623	236	0	31	.	.	.	.	.	.
HOCP04-829	L05-448	141	18	94	.	.	.	.	.	.
HOCP04-843	HOCP04-809	216	0	31	.	.	.	.	.	.
HOCP04-843	L99-233	236	0	31	.	.	.	.	.	.
HOCP04-843	L99-233	657	55	75	.	.	.	.	.	.
HOCP85-845	HOCP96-540	738	0	31	.	.	.	.	.	.
HOCP89-831	HOCP04-836	229	28	92	.	.	.	.	.	.
HOCP89-846	L99-233	223	0	31	.	.	.	.	.	.
HOCP89-846	LCP81-010	242	0	31	.	.	.	.	.	.
HOCP91-552	06P1	114	0	31	.	.	.	.	.	.
HOCP91-552	HOCP04-809	625	0	31	.	.	.	.	.	.
HOCP92-624	HOCP04-824	239	0	31	.	.	.	.	.	.
HOCP92-624	HOCP04-836	243	0	31	.	.	.	.	.	.
HOCP92-624	HOCP04-836	252	0	31	.	.	.	.	.	.
HOCP92-624	HOCP91-552	152	0	31	.	.	.	.	.	.
HOCP92-624	HOCP91-552	504	0	31	.	.	.	.	.	.
HOCP92-624	HOCP96-540	1391	152	87	.	.	.	.	.	.
HOCP92-624	HOCP96-540	465	52	89	.	.	.	.	.	.
HOCP92-624	HOCP96-561	493	0	31	.	.	.	.	.	.
HOCP92-624	L01-299	697	85	92	.	.	.	.	.	.
HOCP92-624	L02-316	232	0	31	.	.	.	.	.	.
HOCP92-624	L04-408	186	0	31	.	.	.	.	.	.
HOCP92-624	L04-410	986	0	31	.	.	.	.	.	.
HOCP92-624	L05-445	214	33	98	.	.	.	.	.	.
HOCP92-624	L05-448	1156	0	31	.	.	.	.	.	.
HOCP92-624	L99-233	1338	0	31	.	.	.	.	.	.
HOCP92-624	LCP81-010	240	0	31	.	.	.	.	.	.
HOCP92-624	LCP85-384	486	63	95	.	.	.	.	.	.
HOCP92-624	LCP85-384	457	53	90	.	.	.	.	.	.
HOCP92-624	LCP85-384	242	36	96	.	.	.	.	.	.
HOCP92-624	LCP85-384	230	27	91	.	.	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
HOCP92-648	HOCP02-623	228	0	31	.	.	.	.	.	.
HOCP92-648	HOCP04-824	245	24	82	.	.	.	.	.	.
HOCP92-648	HOCP04-836	500	0	31	.	.	.	.	.	.
HOCP92-648	L04-410	424	0	31	.	.	.	.	.	.
HOCP92-648	L92-312	241	0	31	.	.	.	.	.	.
HOCP92-648	L99-233	472	45	80	.	.	.	.	.	.
HOCP92-648	LCP85-384	486	29	67	.	.	.	.	.	.
HOCP93-749	HOCP02-618	421	0	31	.	.	.	.	.	.
HOCP95-951	HOCP00-905	488	0	31	.	.	.	.	.	.
HOCP95-951	HOCP04-824	416	0	31	.	.	.	.	.	.
HOCP95-951	HOCP91-552	390	35	77	.	.	.	.	.	.
HOCP95-951	HOCP96-522	238	0	31	.	.	.	.	.	.
HOCP95-951	HOCP96-540	695	0	31	.	.	.	.	.	.
HOCP95-951	L01-299	407	0	31	.	.	.	.	.	.
HOCP95-951	L04-410	230	24	85	.	.	.	.	.	.
HOCP95-951	L04-425	180	0	31	.	.	.	.	.	.
HOCP96-540	06P1	419	0	31	.	.	.	.	.	.
HOCP96-540	06P2	1053	0	31	.	.	.	.	.	.
HOCP96-540	HOCP02-618	211	0	31	.	.	.	.	.	.
HOCP96-561	06P1	231	0	31	.	.	.	.	.	.
HOCP96-561	L04-410	231	0	31	.	.	.	.	.	.
HOCP96-561	L05-448	219	27	94	.	.	.	.	.	.
HOCP97-609	HOCP04-807	232	0	31	.	.	.	.	.	.
HOCP97-609	L01-283	235	29	94	.	.	.	.	.	.
L01-299	HOCP02-610	380	22	66	.	.	.	.	.	.
L01-299	HOCP04-824	160	16	84	.	.	.	.	.	.
L01-299	HOCP96-540	374	36	81	.	.	.	.	.	.
L01-299	L05-448	194	0	31	.	.	.	.	.	.
L01-299	L99-226	189	0	31	.	.	.	.	.	.
L01-315	L01-299	246	22	76	.	.	.	.	.	.
L01-315	LCP81-010	448	42	79	.	.	.	.	.	.
L02-316	06P2	220	14	67	.	.	.	.	.	.
L02-320	06P2	174	0	31	.	.	.	.	.	.
L02-320	HOCP04-824	203	0	31	.	.	.	.	.	.
L02-320	HOCP96-522	121	0	31	.	.	.	.	.	.
L02-320	L99-226	341	0	31	.	.	.	.	.	.
L03-396	HOCP91-552	209	0	31	.	.	.	.	.	.
L03-396	L04-410	479	0	31	.	.	.	.	.	.
L04-407	HOCP96-540	1176	0	31	.	.	.	.	.	.
L04-407	L99-233	324	0	31	.	.	.	.	.	.
L04-408	HOCP04-807	452	0	31	.	.	.	.	.	.
L04-408	HOCP85-845	232	14	67	.	.	.	.	.	.
L04-408	L05-448	464	0	31	.	.	.	.	.	.
L04-408	L99-233	939	71	71	.	.	.	.	.	.
L04-425	06P1	229	0	31	.	.	.	.	.	.
L04-425	06P3	398	0	31	.	.	.	.	.	.
L04-425	HOCP91-552	450	47	85	.	.	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
L04-425	L02-316	179	0	31	.	.	.	.	.	.
L04-425	L99-233	245	0	31	.	.	.	.	.	.
L05-408	HOCP02-623	229	0	31	.	.	.	.	.	.
L05-445	L99-233	211	0	31	.	.	.	.	.	.
L05-445	LCP85-384	130	0	31	.	.	.	.	.	.
L05-448	06P1	221	18	73	.	.	.	.	.	.
L05-450	06P3	238	0	31	.	.	.	.	.	.
L05-451	06P6	219	0	31	.	.	.	.	.	.
L05-451	HOCP96-522	200	30	97	.	.	.	.	.	.
L05-451	L99-233	428	39	78	.	.	.	.	.	.
L05-460	HOCP04-807	211	0	31	.	.	.	.	.	.
L05-460	HOCP85-845	480	26	65	.	.	.	.	.	.
L05-460	HOCP96-540	693	0	31	.	.	.	.	.	.
L05-460	L04-410	215	0	31	.	.	.	.	.	.
L05-460	L99-226	386	45	91	.	.	.	.	.	.
L05-460	L99-233	147	0	31	.	.	.	.	.	.
L91-281	HOCP89-848	218	0	31	.	.	.	.	.	.
L93-399	HOCP04-836	479	0	31	.	.	.	.	.	.
L94-426	HOCP04-836	201	0	31	.	.	.	.	.	.
L94-426	L99-233	448	30	69	.	.	.	.	.	.
L94-428	HOCP04-824	228	0	31	.	.	.	.	.	.
L94-428	L05-448	1094	0	31	.	.	.	.	.	.
L94-432	L04-410	964	0	31	.	.	.	.	.	.
L94-432	L99-233	466	39	75	.	.	.	.	.	.
L94-433	HOCP00-930	220	8	63	.	.	.	.	.	.
L94-433	HOCP96-540	947	94	83	.	.	.	.	.	.
L94-433	L04-410	1585	79	65	.	.	.	.	.	.
L97-128	HOCP02-623	214	16	70	.	.	.	.	.	.
L97-128	HOCP96-540	244	25	84	.	.	.	.	.	.
L97-128	HOCP96-540	486	0	31	.	.	.	.	.	.
L97-128	L01-283	134	10	70	.	.	.	.	.	.
L97-128	L01-299	429	64	96	.	.	.	.	.	.
L97-128	L04-410	489	0	31	.	.	.	.	.	.
L97-128	L92-312	161	0	31	.	.	.	.	.	.
L98-197	HOCP00-930	227	0	31	.	.	.	.	.	.
L98-197	HOCP04-807	235	0	31	.	.	.	.	.	.
L98-197	HOCP96-540	477	0	31	.	.	.	.	.	.
L98-207	L94-428	301	0	31	.	.	.	.	.	.
L98-207	LCP81-010	444	2	62	.	.	.	.	.	.
L99-226	L04-410	429	0	31	.	.	.	.	.	.
L99-233	HOCP96-540	840	100	92	.	.	.	.	.	.
LCP81-010	HOCP96-540	951	0	31	.	.	.	.	.	.
LCP81-010	HOCP96-561	679	0	31	.	.	.	.	.	.
LCP81-010	L01-283	819	0	31	.	.	.	.	.	.
LCP81-010	L01-299	480	41	75	.	.	.	.	.	.
LCP81-010	L04-410	723	0	31	.	.	.	.	.	.
LCP81-010	L99-226	1129	100	76	.	.	.	.	.	.

Table 6. Continue.

			1st line		2nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile
LCP81-010	L99-233	713	47	68	.	.	.	.	.	.
LCP81-010	L99-233	969	47	64	.	.	.	.	.	.
LCP82-089	HOCP91-552	228	25	88	.	.	.	.	.	.
LCP82-089	HOCP96-561	202	0	31	.	.	.	.	.	.
LCP82-089	L04-408	239	0	31	.	.	.	.	.	.
LCP82-089	L92-312	229	0	31	.	.	.	.	.	.
LCP85-384	06P3	724	0	31	.	.	.	.	.	.
LCP85-384	HO95-988	860	0	31	.	.	.	.	.	.
LCP85-384	HOCP96-540	1194	0	31	.	.	.	.	.	.
LCP85-384	L02-325	483	39	73	.	.	.	.	.	.
LCP85-384	L92-312	907	0	31	.	.	.	.	.	.
US01-040	HOCP91-552	480	0	31	.	.	.	.	.	.
US01-040	L01-283	228	25	88	.	.	.	.	.	.
US79-010	L99-226	723	79	87	.	.	.	.	.	.
US93-015	HOCP91-552	186	0	31	.	.	.	.	.	.
US96-002	HOCP96-540	244	0	31	.	.	.	.	.	.
US99-002	LCP85-384	210	0	31	.	.	.	.	.	.
US99-004	HO95-988	467	0	31	.	.	.	.	.	.
										.

Table 7. Plant weight and rank summary statistics from the 2006 crossing series first stubble cross appraisal test at the Sugar Research Station in 2008.

Cross	Female	Male	Plant Weight	
			Kg/Plant	Pcnt'l
XL06-391	LCP81-010	L01-283	10.52	98
XL06-006	HOCP04-843	L99-233	10.08	96
XL06-076	L94-428	L05-448	9.32	95
XL06-067	L05-451	HOCP96-522	9.25	93
XL06-401	L97-128	HOCP04-836	9.18	91
XL06-090	LCP81-010	L99-226	8.87	90
XL06-167	L02-320	L99-226	8.82	88
XL06-271	US79-010	L99-226	8.81	86
XL06-267	US01-040	L02-325	8.73	85
XL06-001	L04-425	HOCP91-552	8.2	83
XL06-188	L05-460	HOCP85-845	8.18	81
XL06-185	LCP81-010	L04-410	8.13	80
XL06-223	US01-040	HOCP91-552	7.94	78
XL06-187	L04-408	HOCP85-845	7.83	77
XL06-335	HOCP00-930	L04-408	7.82	75
XL06-329	HOCP00-930	L99-233	7.8	73
XL06-222	HOCP02-623	HOCP91-552	7.54	72
XL06-149	HOCP00-933	L04-410	7.52	70
XL06-101	HOCP92-648	HOCP04-824	7.52	68
XL06-111	L99-233	HOCP96-540	7.51	67
XL06-025	L05-445	L99-233	7.47	65
XL06-219	HOCP02-623	HOCP01-523	7.44	63
XL06-235	HOCP92-624	HOCP04-836	7.37	62
XL06-379	HOCP89-831	HOCP04-836	7.37	60
XL06-169	HOCP95-951	HOCP91-552	7.34	59
XL06-182	L05-448	06P2	7.33	57
XL06-252	L94-432	L99-233	7.27	55
XL06-079	HOCP92-624	HOCP96-561	7.2	54
XL06-198	L04-407	HOCP96-540	7.18	52
XL06-285	L04-408	HOCP04-807	7.12	50
XL06-196	L04-408	L99-233	7.11	49
XL06-110	HOCP95-951	HOCP96-540	7.03	47
XL06-122	HOCP92-624	LCP85-384	6.92	45
XL06-345	HOCP92-624	HOCP04-836	6.75	44
XL06-238	L93-399	HOCP04-836	6.72	42
XL06-233	HOCP02-610	L04-410	6.63	40

Table 7. Continue.

Cross	Female	Male	Plant Weight	
			Kg/Plant	Pcnt'l
XL06-310	US99-002	LCP85-384	6.56	39
XL06-318	HOCP85-845	HOCP96-540	6.5	37
XL06-102	HOCP95-951	HOCP04-824	6.42	36
XL06-147	LCP81-010	L99-233	6.39	34
XL06-240	HOCP00-905	HOCP04-836	6.32	32
XL06-304	L98-197	HOCP00-930	6.24	31
XL06-317	L94-433	HOCP96-540	6.16	29
XL06-225	L02-320	HOCP04-824	6.15	27
XL06-344	CP83-644	HOCP04-836	6.12	26
XL06-131	L04-425	06P1	5.95	24
XL06-191	HOCP04-827	HOCP02-623	5.95	22
XL06-024	HOCP92-624	L99-233	5.95	21
XL06-004	HOCP04-843	HOCP04-809	5.88	19
XL06-184	HOCP92-624	L04-410	5.77	18
XL06-234	HOCP02-623	HOCP04-836	5.76	16
XL06-248	L97-128	L04-410	5.27	14
XL06-003	HOCP91-552	HOCP04-809	4.96	13
XL06-283	L05-460	HOCP04-807	4.92	11
XL06-232	HOCP92-648	L04-410	4.64	9
XL06-357	L94-433	L04-410	4.61	8
XL06-161	L04-408	L05-448	4.57	6
XL06-249	L03-396	L04-410	4.25	4
XL06-334	LCP82-089	L04-408	3.54	3
XL06-390	HOCP96-540	HOCP02-618	3.03	1

2008 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" and "HoCP." These varieties are planted in replicated nursery and infield tests at locations across the southern Louisiana sugarcane-growing areas.

One objective of the nursery and infield stages is to identify and select varieties that will perform well across the range of environments a commercial variety will encounter in Louisiana. Nursery tests are initially planted at three on-station locations (USDA-ARS - Ardoyne Farm, Iberia Research Station, and Sugar Research Station) during the year of assignment, and four to five additional and different off-station locations are planted the year after assignment. There are three off-station nurseries, Newton Cane, Inc. (Bunkie), Justin Fredrick Farm (Cecilia), Mike 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. Three commercial check varieties, HoCP96-540, L99-226, and L01-283 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 SpectraCane 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 2008 sugarcane crop experienced less-than-ideal growing conditions. The planting season was fairly normal until the land fall of two major hurricanes interrupted planting. After receiving the heavy rains associated with two hurricanes the harvest was dry which contributed to excellent maturity. The crop was severely lodged and also experienced broken tops. The sugarcane crop did experience freezing temperatures along with a rare snowfall on December 11, 2008. Recommended cultural practices were followed at all test locations.

Approximately 22% of Louisiana's harvested sugarcane acreage was in LCP85-384 for 2008. The leading variety grown in Louisiana in 2008 was HoCP96-540, which occupied 44% of the state's sugarcane acreage. Because of its increasing popularity, 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. 2008 Location, soil texture, and planting and harvest dates for the nursery and infield tests.

					Harvest Date	Varieties	
Series	Location†	Stage	Soil Texture	Planting Date	2008	No. Planted	No. Harvested
2003	Landry Farms	Nursery	Commerce silt loam	08/18/04	10/15/08	40	1
2004	Blackberry Farms	Infield	Commerce silt loam	08/12/05	10/31/08	50	3
2004	Landry Farms	Nursery	Commerce silt loam	08/18/05	10/15/08	50	1
2004	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/19/05		50	0
2004	Newton Cane, Inc.	Nursery	Moreland silt loam	08/25/05	10/23/08	50	1
2005	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/15/06	12/12/08	25	1
2005	Blackberry Farms	Infield	Commerce silt loam	08/16/06	10/31/08	25	1
2005	Newton Cane, Inc.	Nursery	Moreland silt loam	08/22/06	10/23/08	43	4
2005	Justin Frederick Farms	Nursery	Baldwin silty clay	08/24/06	11/04/08	43	4
2005	Landry Farms	Nursery	Commerce silt loam	09/29/06	11/05/08	43	4
2006	Sugar Research Station	Nursery	Sharkey clay	10/10/06	11/06/08	40	3
2006	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/25/06	12/18/08	40	3
2006	Iberia Research Station	Nursery	Baldwin silty clay	11/01/06	12/09/08	40	3
2006	Blackberry Farms	Infield	Commerce silt loam	08/17/07	12/03/08	24	7
2006	Sugarland Acres, Inc.	Infield	Coteau silt loam	09/10/07	12/12/08	24	7
2006	Newton Cane, Inc.	Nursery	Moreland silt loam	08/15/07	10/23/08	45	13
2006	Justin Frederick Farms	Nursery	Baldwin silty clay	08/28/07		45	0
2006	Landry Farms	Nursery	Commerce silt loam	08/21/07	11/06/08	45	13
2007	Sugar Research Station	Nursery	Commerce silt loam	10/10/07	11/24/08	33	11
2007	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/07	12/18/08	33	11
2007	Iberia Research Station	Nursery	Baldwin silty clay	10/15/07	12/09/08	33	11
2007	Blackberry Farms	Infield	Commerce silt loam	09/24/08		19	
2007	Newton Cane, Inc.	Nursery	Moreland silt loam	08/28/08		19	
2007	Michael Melancon	Nursery	Baldwin silty clay	09/26/08		19	
2007	Landry Farms	Nursery	Commerce silt loam	09/29/08		19	
2008	Sugar Research Station	Nursery	Commerce silt loam	10/10/08		21	
2008	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/08		21	
2008	Iberia Research Station	Nursery	Baldwin silty clay	10/17/08		21	

† Ardoyne-U.S.D.A. Ardoyne Farm (Chacahoula), Blackberry Farms (Vacherie), Iberia Research Station (Jeanerette), Newton Cane, Inc. (Bunkie), Sugar Research Station (St. Gabriel), D & N Farm (Cecilia), Justin Frederick Farms (Cecilia), Sugarland Acres Inc. (Youngsville), Landry Farms (Paincourtville).

Table 2. Nursery third-stubble means of the 2003 “L” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	10401	43.8	236	1.38	64070	11.4
Ho95-988	9622	39.3	244	1.68	45738	11.7
HoCP96-540	12253	50.3	243	1.97	51002	12.2
L97-128	12479	49.6	251	1.83	54450	12.4
L03-371	13545	54.3	250	1.90	56991	11.3

Table 3. Nursery second-stubble means of the 2004 “HoCP” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	10505	47.0	222	1.95	47735	11.2
Ho95-988	8339	38.3	216	1.82	41927	9.5 -
HoCP96-540	9294	38.7	241	1.97	39204	11.4
L97-128	12212	50.8	241	2.31	43923	12.5 +
HoCP04-838	10030	43.5	230	1.86	46827	13.8 +

Table 4. Nursery second-stubble means of the 2004 “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	5622	23.8	236	1.50	31763	11.8
Ho95-988	9866	42.5	232	1.83	46283 +	11.3
HoCP96-540	6328	26.4	240	1.68	30855	12.2
L97-128	6910	28.0	246	1.43	39204	12.3
HoCP04-838	6979	27.2	257	1.36	39930	14.0 +

Table 5. Infield second-stubble means of the 2004 "HoCP" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6152 -	23.7 -	261	1.40 -	24918	12.0
Ho95-988	7702	29.4	262	1.92 +	20646	12.0
HoCP96-540	8909	34.8	256	1.69	23860	12.8
L97-128	8859	35.5	250	2.07 +	21969	12.7
HoCP04-838	10264	39.9	258	1.80	25448	13.4

Table 6. Nursery first-stubble means of the 2005 "HoCP" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7606	32.0	238	1.57	41563	11.3 -
HoCP96-540	7842	33.4	230	2.04	32489	12.2
L97-128	6826	31.0	222	1.96	31400	12.0
L99-226	10572	42.6	249	2.25	38297	11.8
HoCP05-902	6968	27.1	257	1.36 -	40112	10.7 -
HoCP05-904	6753	28.3	239	1.57	37208	11.8
HoCP05-918	6822	29.0	232	1.61	35211	11.4
HoCP05-961	7449	30.8	242	1.75	35393	12.8

Table 7. Nursery first-stubble means of the 2005 "HoCP" assignment series on a Baldwin silty clay soil at D& N Farm in Cecilia, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7387	30.4	243	1.59	38297	10.8
HoCP96-540	8075	30.8	262	2.20	28133	11.3
L97-128	8230	32.2	256	2.07	30855	12.4 +
L99-226	8509	30.4	282	2.11	28677	11.9
HoCP05-902	7201	25.8	279	1.60	32307	9.9 -
HoCP05-904	9098	36.0	253	2.05	35030	10.7
HoCP05-918	6786	26.0	259	1.70	30674	11.1
HoCP05-961	7607	27.8	274	1.72	32307	12.1 +

Table 8. Nursery first-stubble means of the 2005 “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	9262 -	42.8	217	1.65 -	52635 +	9.9
HoCP96-540	12269	48.4	253	2.35	41201	11.2
L97-128	14475 +	60.6	239	2.47	49005	11.6
L99-226	14067 +	57.1	248	2.98 +	38115	11.8
HoCP05-902	12061	52.5	230	1.78 -	59169 +	9.3
HoCP05-904	13202	56.2	234	2.27	49550	10.3
HoCP05-961	14411 +	56.3	256	2.21	51002	12.5

Table 9. Infield first-stubble means of the 2004 “HoCP” assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7825	30.0 -	259	1.61	24729	11.3
HoCP96-540	10068	40.8	247	2.21	23595	12.1
L97-128	8674	31.2 -	268	2.19	20683 -	12.1
L99-226	8136	32.3 -	253	2.57	21099	12.5
HoCP04-838	8047	31.6 -	255	1.84	23633	14.4

Table 10. Infield first-stubble means of the 2004 “HoCP” assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8744	33.9 -	258	1.74	22574	12.9
HoCP96-540	9853	39.5	249	2.41	21591	12.6
L97-128	10821	44.5 +	243	2.13	17016 -	13.7
L99-226	11656 +	45.1 +	258	2.64	20570	12.3
HoCP04-838	9573	39.0	246	2.16	22120	14.6 +

Table 11. Nursery first-stubble means of the 2006 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7752 -	29.4	264	1.73 -	34258	11.5
HoCP96-540	15459	61.3	254	2.76	44241	11.2
L97-128	13879	55.4	252	2.72	40838	12.3
L99-226	17256	64.9	266	3.31	38569	11.5
L06-023	8270 -	33.0	250	1.86 -	36527	11.6
L06-038	13096	53.8	244	2.34	46056	12.2
L06-040	9166 -	36.8	249	2.36	31536	13.6 +

Table 12. Nursery first-stubble means of the 2006 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8288	33.4	247	1.39	48324	10.1
HoCP96-540	8689	32.2	269	1.57	41745	11.1
L97-128	10681	42.1	254	2.12 +	39703	11.6
L99-226	12750	47.2	271	2.38 +	39930	10.9
L06-023	8558	32.4	265	1.64	39249	12.0
L06-038	10000	39.1	256	1.83	42653	11.1
L06-040	11600	45.4	255	2.03 +	44694	13.5

Table 13. Nursery first-stubble means of the 2006 “L” assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	12037	50.3	239	1.90 -	53089	11.4
HoCP96-540	12100	50.8	238	2.39	42653	11.9
L97-128	10247	48.2	214	1.90 -	51047	10.9
L99-226	17571 +	69.5	252	2.91 +	47644	12.8
L06-023	13004	55.1	237	2.07	53089	12.3
L06-038	11212	48.3	232	2.01	48098	11.7
L06-040	9783	41.3	237	1.93 -	42879	12.9

Table 14. Nursery plantcane means of the 2006 “HoCP” and “L” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6924 -	26.2 -	264	1.32	39930	9.8 -
Ho95-988	8917	34.9	257	1.72	40111	10.1 -
HoCP96-540	11642	45.7	255	2.09	43741	11.1
L99-226	11283	40.8	276	2.05	39748	10.5
L06-023	10261	40.5	253	1.82	44467	12.4 +
L06-038	9579	38.6	248	1.81	42652	10.7
L06-040	10158	40.6	250	1.76	46282	11.9 +
HoCP06-512	8332	33.7	248	1.85	36481	12.4 +
HoCP06-513	6638 -	26.7 -	249	1.44	37207	10.6
Ho06-523	12286	44.3	279	2.12	40656	11.2
Ho06-530	9052	36.7	249	1.55	48097	10.3
Ho06-536	13456	56.6	238	2.29	49549	10.2 -
Ho06-537	12208	48.3	253	1.92	50094	9.6 -
Ho06-539	8639	32.1	269	1.75	36844	12.2 +
Ho06-562	11453	48.1	237	1.80	53179 +	10.4
Ho06-563	10144	40.0	254	1.80	44467	12.7 +
Ho06-565	8789	34.7	253	1.96	35755 -	11.5

Table 15. Nursery plantcane means of the 2006 "HoCP" and "L" assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	9137	38.4	239	1.57 -	48097	10.2
Ho95-988	8390	35.0	238	2.01	34122 -	10.8
HoCP96-540	12415	50.5	246	2.27	44468	10.3
L99-226	13312	55.4	240	2.69 +	41382	10.5
L06-023	9399	37.5	251	1.58 -	47371	11.0
L06-038	11007	47.9	229	2.08	45920	10.8
L06-040	10184	40.8	250	1.82 -	44831	12.8 +
HoCP06-512	8941	38.5	231	2.08	37208	12.1 +
HoCP06-513	10858	46.7	233	1.94	48098	11.1
Ho06-523	12268	49.0	250	2.15	45556	10.8
Ho06-530	9634	42.4	227	1.86 -	45556	11.8 +
Ho06-536	9709	42.7	227	2.21	38478	10.4
Ho06-537	11167	45.3	245	2.23	40656	10.6
Ho06-539	8028	33.4	240	1.62 -	41200	11.0
Ho06-562	10541	43.4	243	1.60 -	53724	11.6 +
Ho06-563	12421	57.8	215 -	2.24	51728	12.6 +
Ho06-565	11422	44.6	256	1.82 -	49005	11.8 +

Table 16. Infield plantcane means of the 2005 "HoCP" and 2006 "L" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7585	27.7	273 +	1.66	19360	11.5
Ho95-988	8557	32.8	261	2.12	18377	10.4
HoCP96-540	8660	33.7	257	2.21	18982	11.7
L99-226	11627	41.3	282 +	2.97	20078	12.3
HoCP05-902	8405	30.2	278 +	1.75	24692	10.4
HoCP05-904	9015	34.0	265	2.27	21099	10.3
HoCP05-918	9624	39.3	245	1.93	23595	12.3
HoCP05-961	9682	35.6	272 +	2.23	18717	12.6
L06-023	7645	28.7	266	1.71	23746	13.4
L06-038	9424	38.8	243	2.42	22007	12.2
L06-040	7868	31.0	254	2.20	19284	13.3

Table 17. Infield plantcane means of the 2005 "HoCP" and 2006 "L" assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	5376	20.6	262	1.70	15541	12.7
Ho95-988	6387	24.6	260	2.04	17205	11.3
HoCP96-540	6828	25.2	271	2.04	10701	12.4
L99-226	7695	29.2	265	2.37	14671	12.5
HoCP05-902	8341	30.1	277	1.80	15276	13.0
HoCP05-904	5142	20.4	252	1.87	15806	12.9
HoCP05-918	6704	26.3	254	1.76	17129	12.8
HoCP05-961	6759	26.5	255	2.20	13045	14.5
L06-023	7295	29.9	244 -	1.90	17318	14.3
L06-038	6734	26.6	253	2.07	14104	12.6
L06-040	4586	19.9	231 -	2.07	13121	15.3

Table 18. Nursery plantcane means of the 2007 "L" assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	9413 -	38.9 -	242	2.01 -	38569	10.9
HoCP96-540	11745 -	46.6 -	252	2.23 -	41745	10.9
L97-128	15578	59.8	261	2.90	41291	11.0
L99-226	15025	60.9	247	3.29	36981	11.0
L07-041	8473 -	34.7 -	247	1.80 -	38115	11.3
L07-043	13657	54.0	253	2.17 -	49686 +	11.0
L07-047	9522 -	37.9 -	251	2.27 -	33577 -	10.0
L07-050	11158 -	42.5 -	263	1.99 -	42653	11.2
L07-054	10790 -	45.8 -	235	2.00 -	45829	10.9
L07-057	10241 -	44.2 -	233	2.46	35846	13.2 +
L07-059	11620 -	46.0 -	250	2.62	34939 -	12.1
L07-061	9906 -	38.0 -	261	2.14 -	35619	12.1
L07-064	9464 -	40.5 -	229	1.94 -	41291	10.8
L07-068	12075 -	51.6	234	2.00 -	51728 +	13.6 +

Table 19. Nursery plantcane means of the 2007 "L" assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6325 -	24.8 -	255	1.48 -	33578	10.7
HoCP96-540	10079	39.8	254	1.83 -	43333	10.0
L97-128	12532	49.9	251	2.75	36073	10.5
L99-226	13081	54.6	241	2.94	36981	10.4
L07-041	7267 -	28.2 -	258	1.82 -	31536	10.4
L07-043	7437 -	30.7 -	243	1.68 -	36527	11.0
L07-047	4706 -	18.9 -	247	1.67 -	22914	10.2
L07-050	7215 -	27.9 -	260	1.71 -	32670	10.0
L07-054	6153 -	24.9 -	248	1.39 -	35846	9.8
L07-057	9122 -	37.6 -	244	2.03	36981	10.9
L07-059	9569	36.0 -	265	2.41	30174	12.8 +
L07-061	7263 -	29.2 -	249	1.67 -	34939	11.0
L07-064	9718	37.5 -	258	1.99 -	37434	11.2
L07-068	9488 -	36.7 -	259	1.70 -	43787	12.0

Table 20. Nursery plantcane means of the 2007 "L" assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8115	33.7	241	1.71 -	39703	10.3 -
HoCP96-540	7153	32.5	220	1.84 -	35392	9.5 -
L97-128	10395	44.1	237	2.75	32216	11.7
L99-226	13767 +	55.2	249	3.32 +	33351	10.6 -
L07-041	10424	41.6	250	2.10 -	39703	10.1 -
L07-043	8599	34.7	248	1.76 -	39703	11.4
L07-047	7382	29.8 -	247	2.10 -	28359	10.3 -
L07-050	5925 -	23.2 -	253	1.71 -	26771	9.9 -
L07-054	6889 -	26.5 -	261	1.58 -	33351	11.0
L07-057	9680	40.1	241	2.31 -	34485	11.7
L07-059	8570	33.7	254	2.45 -	28132	13.4 +
L07-061	6697 -	27.9 -	241	1.96 -	29267	11.9
L07-064	8264	33.1	250	2.00 -	33124	11.7
L07-068	8933	37.9	236	2.26 -	33577	13.0 +

Table 21. Infield and nursery second-stubble means of the 2004 "HoCP" assignment series across locations in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7427	31.5	240	1.62	34805	11.6
Ho95-988	8635	36.7	237	1.86	36285	10.9 -
HoCP96-540	8177	33.3	246	1.78	31306	12.1
L97-128	9327	38.1	246	1.94	35032	12.5
HoCP04-838	9091	36.8	248	1.67	37402	13.7 +

Table 22. Infield first-stubble means of the 2004 "HoCP" series across locations in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8284	32.0	258	1.67 -	23652	12.1
HoCP96-540	9961	40.1	248	2.31	22593	12.3
L97-128	9785	37.9	252	2.11	18850 -	13.1
L99-226	9896	38.7	255	2.60 +	20835	12.4
HoCP04-838	8810	35.3	250	2.00 -	22877	14.5 +

Table 23. Infield and nursery first-stubble means of the 2005 "HoCP" assignment series across locations in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8165	33.8	243	1.63 -	35960 +	11.2 -
HoCP96-540	9621	38.6	248	2.24	29401	11.9
L97-128	9847	39.9	244	2.15	29792	12.4 +
L99-226	10588	41.5	258	2.51 +	29352	12.0
HoCP05-902	8708	34.3	258	1.61 -	37621 +	10.3 -
HoCP05-904	9649	39.3	245	1.99 -	34354	11.3
HoCP05-918	8353	33.8	245	1.80 -	29151	11.4
HoCP05-961	9787	37.5	260	1.92 -	33325	12.8 +

Table 24. Nursery first-stubble means of the 2006 "L" assignment series across locations in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	9359	37.7	250	1.67 -	45224	11.0
HoCP96-540	12082	48.1	253	2.24	42879	11.4
L97-128	11602	48.5	240 -	2.25	43863	11.6
L99-226	15859	60.5	263	2.86 +	42048	11.7
L06-023	9944	40.2	250	1.86	42955	12.0
L06-038	11436	47.0	244	2.06	45602	11.7
L06-040	10183	41.2	247	2.11	39703	13.3 +

Table 25. Nursery plantcane means of the 2007 "L" assignment series across locations in 2008.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7951 -	32.5 -	246	1.73 -	37283	10.6
Ho95-988	9659 -	39.6 -	242	1.97 -	40157	10.1 -
HoCP96-540	12835	51.3	249	2.80	36527	11.1
L99-226	13958	56.9	246	3.18 +	35771	10.7
L07-041	8721 -	34.8 -	252	1.91 -	36451	10.6
L07-043	9898 -	39.8 -	248	1.87 -	41972	11.1
L07-047	7203 -	28.9 -	248	2.01 -	28284 -	10.2
L07-050	8100 -	31.2 -	259	1.80 -	34031	10.3
L07-054	7944 -	32.4 -	248	1.66 -	38342	10.6
L07-057	9681 -	40.6 -	239	2.27 -	35771	12.0
L07-059	9919 -	38.6 -	257	2.49 -	31082	12.8 +
L07-061	7955 -	31.7 -	250	1.92 -	33275	11.6
L07-064	9149 -	37.0 -	246	1.98 -	37283	11.2
L07-068	10165 -	42.1 -	243	1.99 -	43031	12.9 +

2008 LOUISIANA "HoCP" NURSERY AND INFIELD VARIETY TRIALS

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Three years after selection in single-stools at the seedling stage, scientists in the breeding program assign permanent "HoCP" or "Ho" numbers to experimental varieties advanced for further testing. These newly assigned varieties are planted in replicated nursery trials at three locations (Ardoyne Farm in Schriever, 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 three commercial sugarcane farms, each representing a different region of the sugarcane belt. Two years after assignment, active varieties are replanted in three infield tests (Ardoyne Farm and two additional farms). In addition, two years after assignment, varieties are introduced to outfield locations and primary stations.

USDA nursery test plots are planted during the year of assignment in 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 (LCP 85-384, HoCP 96-540, Ho 95-988, L 97-128, L 99-226 or L 01-283) are planted in each test for comparison purposes. In addition to experimental commercial varieties, clones from the USDA Recurrent Selection for Borers (RSB) program are included in nursery trials. Yield data collected on RSB clones give breeders needed agronomic information to aid in deciding what crosses should be made with these borer-resistant clones. The year after assignment, varieties from the USDA program, combined with varieties from the LSU program, are planted in nurseries on commercial farms. Plot length in these tests are increased to 20 feet.

Nursery test plots are routinely rated for agronomic traits in the spring and summer each year. Stalk counts of mature, millable stalks are made in late July or August. A ten-stalk sample is hand-cut from each plot 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 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 & two commercial farms) two years after assignment. Tests on commercial farms are conducted cooperatively with the LSU Ag Center sugarcane variety program. Infield tests are planted in a randomized complete block design with two replications, and include a minimum of four commercial varieties (LCP 85-384, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, or L 01-283) for use as checks. Plot size in infield tests are two rows wide (twelve feet) by twenty-four feet long. A 10-stalk sample is hand-cut from each plot just prior to harvesting and sent to the sucrose lab at 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. Plot weights and sucrose analysis are used to estimate sugar per acre, tons of cane per acre, sugar per ton of cane, mean stalk weight, and number of stalks per acre.

Table 1 includes planting and harvest dates of USDA infield and nursery tests. 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. 2008 Planting and harvest dates of "HoCP@ nursery & infield tests.

					Harvest Dates		
Series	Location[2/]	Soil Texture [3/]	Test type	Planting Date	2006	2007	2008
2003	AFH	Sc	Infield	9/14/05	11/07	11/07	11/10
2004	AFH	Sc	Infield	10/05/06		11/14	11/10
2005	AFL	Csl	Nursery	10/26/05	12/01	10/25	11/18
2005	IRS	Bsc	Nursery	10/28/05	12/08	11/13	10/29
2005	STG	Sc	Nursery	10/27/05	12/12	11/08	10/30
2005	AFH	Sc	Infield	9/21/07			11/12
2006	AFL	Csl	Nursery	10/25/06		11/19	12/04
2006	IRS	Bsc	Nursery	11/01/06		11/20	12/09
2006	STG	Sc	Nursery	11/14/06		--- [4/]	12/05
2006	AFH	Sc	Infield	10/03/08			
2007	AFL	Csl	Nursery	10/16/07			12/05
2007	IRS	Bsc	Nursery	10/15/07			12/09
2007	STG	Sc	Nursery	10/12/07			12/05
2008	AFL	Csl	Nursery	10/31/08			
2008	IRS	Bsc	Nursery	10/29/08			
2008	STG	Sc	Nursery	10/30/08			

[2/] AFH = Ardoyne Farm heavy soil, AFL = Ardoyne Farm Light soil in Schriever, IRS = Iberia Research Station in Jeanerette, STG = St. Gabriel Research Station in St. Gabriel.

[3/] Bsc = Baldwin silty clay, Csl = Commerce silt loam, Sc = Sharkey clay

[4/] Not harvested in 2007.

Table 2. Infield second-stubble means of the 2003 "HoCP" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre	Fiber
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)	(%)
LCP 85-384	6066	24.2	251	1.18	41719	11.5
Ho 95-988	7224 +	29.5	245 +	1.63	36316	11.6
HoCP 96-540	**5783**	**22.3**	**260**	**1.24**	**36043**	**11.3**
L 97-128	7002 +	27.3	257 +	1.64	34875	12.3
L 03-371	8012 +	30.5	263 +	1.67	36918	10.9

Table 3. Infield first-stubble means of the 2004 "HoCP" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre	Fiber
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)	(%)
LCP 85-384	6749	25.2	267	1.81	28131	11.1
HoCP 96-540	**9101**	**34.9**	**263**	**1.72**	**40577**	**11.2**
L 97-128	7979	32.2	248	1.79	36700	12.3
L 99-226	6387	24.1	264	2.33	20753	12.0
HoCP 04-838	8991	34.2	263	1.61	42949	12.8

Table 4. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Commerce silt loam soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	12622 -	40.9 -	308	1.51	54223
Ho 95-988	13166	44.0 -	298	1.79	49005 -
HoCP 96-540	**17405**	**58.6**	**297**	**1.91**	**61710**
L 97-128	13040	43.8 -	298	1.96	44694 -
HoCP 05-902	14355	47.4	301	2.04	47871 -
HoCP 05-904	16003	55.8	286	1.78	62618
HoCP 05-918	13055	43.7 -	299	1.52	57853
Ho 05-961	13390	43.2 -	310	1.71	50820 -
US 05-9604	9466 -	36.9 -	256 -	1.18 -	62844
US 05-9605	7996 -	35.4 -	226 -	1.41	50366 -
US 05-9606	8591 -	37.8 -	227 -	0.99 -	76230 +

Table 5. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	9648 -	45.6	210 -	1.53	59895
Ho 95-988	15131	52.0	291	1.54	67836
HoCP 96-540	**14508**	**49.1**	**295**	**1.63**	**59668**
L 97-128	10284 -	37.7	270	1.64	46056 -
HoCP 05-902	11440	37.1 -	308	1.29 -	57626
HoCP 05-904	11577	42.9	270	1.53	56265
HoCP 05-918	11741	39.6	297	1.50	52862
Ho 05-961	12534	39.7	316	1.66	47871
US 05-9604	9329 -	32.8 -	285	0.99 -	66021
US 05-9605	5714 -	26.8 -	213 -	1.29 -	42653 -
US 05-9606	7244 -	32.6 -	222 -	0.92 -	71239

Table 6. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	8521	32.3	261	1.32 -	48551
Ho 95-988	10420	41.1	253	1.65	49005
HoCP 96-540	**9062**	**35.9**	**250**	**1.76**	**40838**
L 97-128	9446	38.1	246	1.76	42653
HoCP 05-902	12504	48.4	258	1.48	65567 +
HoCP 05-904	10815	45.4	242	1.66	54223
HoCP 05-918	10252	40.9	250	1.57	51954
Ho 05-961	13523 +	47.6	283 +	1.70	56265 +
US 05-9604	7104	29.2	243	1.13 -	52181
US 05-9605	6802	36.0	187 -	1.76	40838
US 05-9606	7396	40.0	186 -	1.00 -	80541 +

Table 7. Nursery second-stubble means of the 2005 "HoCP" assignment series across locations in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	10264 -	39.6	260	1.45 -	54223
Ho 95-988	12905	45.7	281	1.66	55282
HoCP 96-540	**13658**	**47.9**	**281**	**1.77**	**54072**
L 97-128	10923 -	39.9	271	1.78	44468
HoCP 05-902	12766	44.3	289	1.60	57021
HoCP 05-904	12798	48.0	266	1.66	57702
HoCP 05-918	11683	41.4	282	1.53 -	54223
Ho 05-961	13149	43.5	303	1.69	51652
US 05-9604	8633 -	33.0 -	261	1.10 -	60349
US 05-9605	6838 -	32.7 -	209 -	1.48 -	44619
US 05-9606	7744 -	36.8 -	212 -	0.97 -	76003 +

Table 8. Infield plant-cane means of the 2005 "HoCP" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre	Fiber
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)	(%)
LCP 85-384	9516	36.4	261	1.95	38883	10.9
Ho 95-988	10986 +	41.9 +	262	2.39	35014	10.8
HoCP 96-540	**9143**	**34.5**	**266**	**2.01**	**34263**	**10.8**
L 99-226	11080 +	42.6 +	260	2.67	32032	10.1
HoCP 05-902	10307	35.9	287	1.97	36425	9.8
HoCP 05-904	8404	33.3	253	1.91	35598	9.8
HoCP 05-918	9810	36.3	270	1.61	45321	10.3
Ho 05-961	12181 +	44.4 +	274	2.04	43582	11.5

Table 9. Nursery first-stubble means of the 2006 "HoCP" assignment series on a Commerce silt loam soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	9038 -	30.2 -	297	1.77 -	34031
Ho 95-988	11509 -	43.0 -	267	2.16 -	39930
HoCP 96-540	**17330**	**60.7**	**285**	**2.88**	**42199**
L 97-128	13341	48.9	273	2.56	38342
HoCP 06-512	12386 -	45.9	272	2.42 -	38115
HoCP 06-513	12754	47.8	267	2.24 -	42653
Ho 06-523	19498	67.0	290	2.56	52408
Ho 06-530	12865	47.9	268	2.25 -	42653
Ho 06-536	12325 -	45.1	273	2.22 -	40838
Ho 06-537	19260	66.6	289	2.74	48778
Ho 06-539	11849 -	45.1	265	1.88 -	48098
Ho 06-562	18328	62.6	294	1.84 -	68063 +
Ho 06-563	14737	57.2	260	2.39 -	47417
Ho 06-565	9772 -	34.5 -	284	2.11 -	32670
US 06-9609	7993 -	39.2 -	204 -	2.29 -	34485
US 06-9610	8210 -	31.5 -	261	1.84 -	34485

Table 10. Nursery first-stubble means of the 2006 "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	11814	41.9	279	1.69	50139
Ho 95-988	14577	48.2	302	1.85	52181
HoCP 96-540	**16528**	**57.8**	**284**	**2.34**	**48098**
L 97-128	13441	44.4	304	2.22	39930
HoCP 06-512	13214	46.3	287	1.95	47644
HoCP 06-513	12057	41.3	292	1.75	47190
Ho 06-523	13543	45.5	298	2.09	43560
Ho 06-530	15562	55.5	281	2.01	55358
Ho 06-536	13789	48.9	283	2.18	44921
Ho 06-537	11585	38.4	301	1.90	40157
Ho 06-539	12744	40.2	317	1.89	42653
Ho 06-562	17213	53.8	320	1.56	68970 +
Ho 06-563	15281	54.0	283	2.39	45148
Ho 06-565	13048	43.0	302	1.61	52862
US 06-9609	5375	25.9	213 -	1.41	36073 -
US 06-9610	9167	32.8	279	1.74	37661 -

Table 11. Nursery first-stubble means of the 2006 "HoCP" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	5912 -	21.0 -	279	1.68	24503 -
Ho 95-988	11022	39.2	281	2.12	36981
HoCP 96-540	**12918**	**44.5**	**291**	**1.99**	**44694**
L 97-128	8938	32.4	276	1.92	33804 -
HoCP 06-512	9293	35.0	266	1.82	38796
HoCP 06-513	8701	33.6	259 -	1.66	40611
Ho 06-523	11116	38.8	286	1.89	41064
Ho 06-530	14595	54.8	268	2.27	47644
Ho 06-536	8740	33.7	259 -	1.72	39249
Ho 06-537	12068	40.4	298	1.90	42879
Ho 06-539	8321 -	27.5 -	303	1.59	34712 -
Ho 06-562	10916	37.2	293	1.32 -	56265 +
Ho 06-563	12102	44.5	270	2.11	42199
Ho 06-565	12380	42.8	289	1.80	47644
US 06-9609	7670 -	39.7	193 -	1.50	52862
US 06-9610	8012 -	29.1 -	274	1.38 -	42199

Table 12. Nursery first-stubble means of the 2006 "HoCP" assignment series across locations in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	8921 -	31.0 -	285	1.71 -	36224
Ho 95-988	12369	43.5	283	2.04 -	43031
HoCP 96-540	**15592**	**54.3**	**287**	**2.40**	**44997**
L 97-128	11907 -	41.9 -	284	2.23	37359
HoCP 06-512	11631 -	42.4 -	275	2.06 -	41518
HoCP 06-513	11171 -	40.9 -	273	1.88 -	43484
Ho 06-523	14719	50.4	291	2.18	45678
Ho 06-530	14341	52.8	272	2.18	48551
Ho 06-536	11618 -	42.6	272	2.04 -	41669
Ho 06-537	14304	48.5	296	2.18	43938
Ho 06-539	10971 -	37.6 -	295	1.78 -	41821
Ho 06-562	15486	51.2	302	1.57 -	64433 +
Ho 06-563	14040	51.9	271	2.29	44921
Ho 06-565	11733 -	40.1 -	291	1.84 -	44392
US 06-9609	7013 -	34.9 -	203 -	1.73 -	41140
US 06-9610	8463 -	31.1 -	271	1.65 -	38115

Table 13. Nursery plant cane means of the 2007 "HoCP" assignment series on a Commerce silt loam soil at Ardoyne Farm in Schriever, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	12335	44.2	279	2.19 -	40384
HoCP 96-540	**15914**	**55.9**	**285**	**2.82**	**39930**
L 97-128	13773	50.2	275	2.64	38115
L 99-226	15845	55.7	284	3.32	33578 -
HoCP 07-600	14373	51.2	281	2.37	43333
Ho 07-602	16792	66.3	252 -	2.81	47190 +
Ho 07-604	14863	54.7	272	2.30	47644 +
HoCP 07-608	10247 -	41.7	246 -	3.22	25864 -
Ho 07-612	16704	61.5	272	2.82	43333
Ho 07-613	17319	61.1	283	2.90	42426
HoCP 07-615	16263	55.5	293	2.52	44241
Ho 07-616	14030	49.8	282	2.75	36300
Ho 07-617	13549	46.6	290	2.47	37888
US 06-9607	14576	56.0	260 -	2.56	43787
US 06-9608	13267	52.8	252 -	2.16 -	49005 +
US 06-9609	7021 -	39.1 -	179 -	2.04 -	38342
US 06-9610	10829 -	43.6	248 -	1.93 -	45148

Table 14. Nursery plant cane means of the 2007 "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	9255	31.8	291	2.00	32216
HoCP 96-540	**9370**	**32.1**	**292**	**2.15**	**29948**
L 97-128	10261	35.2	291	2.22	31763
L 99-226	9948	33.2	300	2.38	28359
HoCP 07-600	7961	29.1	275	1.74	33351
Ho 07-602	7601	31.4	242 -	2.20	28586
Ho 07-604	11376	39.3	289	1.96	40157 +
HoCP 07-608	9058	33.5	271 -	2.95 +	22914 -
Ho 07-612	9499	35.4	269 -	1.96	36073 +
Ho 07-613	9980	35.5	282	2.20	32216
HoCP 07-615	9207	31.5	292	2.16	29267
Ho 07-616	7941	29.5	270 -	2.15	27452
Ho 07-617	11054	36.0	307 +	1.79	40384 +
US 06-9607	7605	26.7	286	1.67	31989
US 06-9608	7805	31.8	246 -	1.81	35166
US 06-9609	5984 -	30.7	195 -	2.13	29040
US 06-9610	6185 -	23.9	257 -	1.46 -	31989

Table 15. Nursery plant cane means of the 2007 "HoCP" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	11719	42.8	274	2.06	41518
HoCP 96-540	**12823**	**45.2**	**284**	**2.36**	**38342**
L 97-128	13785	51.6	268	2.75	37434
L 99-226	12995	47.8	273	2.81	34031
HoCP 07-600	12139	42.7	281	2.20	38796
Ho 07-602	7232	33.4	219 -	1.95	34258
Ho 07-604	10472	37.4	277	1.72 -	43106
HoCP 07-608	11017	42.4	259	2.45	34712
Ho 07-612	9874	37.4	264	1.90	39476
Ho 07-613	12939	46.7	278	2.44	38115
HoCP 07-615	10636	40.0	265	2.32	34485
Ho 07-616	9042	32.9	274	1.83	36073
Ho 07-617	10301	35.6	289	1.68 -	42426
US 06-9607	10555	39.7	266	2.16	36754
US 06-9608	9308	37.7	248	1.91	39476
US 06-9609	5853	31.2	186 -	1.76	33804
US 06-9610	4974	18.6	268	1.41 -	22914 -

Table 16. Nursery plant cane means of the 2007 “HoCP” assignment series across locations in 2008.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
LCP 85-384	11103	39.6	282	2.08 -	38039
HoCP 96-540	**12702**	**44.4**	**287**	**2.44**	**36073**
L 97-128	12606	45.7	278	2.54	35771
L 99-226	12929	45.6	285	2.83 +	31989
HoCP 07-600	11491	41.0	279	2.10	38493
Ho 07-602	10542	43.7	237 -	2.32	36678
Ho 07-604	12237	43.8	279	1.99 -	43636 +
HoCP 07-608	10107	39.2	258 -	2.87 +	27830 -
Ho 07-612	12025	44.8	268 -	2.22	39628
Ho 07-613	13413	47.7	281	2.51	37586
HoCP 07-615	12035	42.4	283	2.33	35998
Ho 07-616	10338	37.4	275	2.24	33275
Ho 07-617	11635	39.4	295	1.98 -	40233
US 06-9607	10912	40.8	270 -	2.13	37510
US 06-9608	10127	40.7	248 -	1.96 -	41216
US 06-9609	6373 -	34.1	187 -	2.02 -	33729
US 06-9610	7800 -	30.7	256 -	1.64 -	33351

2008 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 2008 outfield tests. Included are multi-year yield analyses for appropriate test varieties (tables 27-29).

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. To reflect industry practices, all locations were harvested with a combine harvester. 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 are 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.

Until 2008, LCP85-384 had been the leading sugarcane variety in Louisiana since 1998. In 2008, 22% of the sugarcane acreage was grown to this variety. The new leading variety in

Louisiana in 2008 was HoCP96-540. It comprised 44% of the sugarcane harvested in 2008, which is the largest increase for any of the new varieties. HoCP96-540 will also be the most widely grown variety in Louisiana for the 2009 crop. Accordingly for comparison, HoCP96-540 is now 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 9.0, 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.

Twelve experimental varieties representing the 2006 assignment series were introduced to outfield locations for seed increase in 2008 (Table 1). Six experimental and five commercial varieties were planted at 12 outfield locations. Twenty-five tests were harvested in 2008 including nine plantcane, eight first-stubble, six second-stubble, and two third-stubble crops (Table 2).

Variety yields are reported by crop and trait with overall means and individual location data in the same table (Table 3-22) and in summary tables by crop (Tables 23-26). Tables 27-29 provide combined analysis of plantcane, first-stubble, second-stubble, and third-stubble crops averaged over several years that is used to evaluate commercial and experimental varieties.

The sugarcane crop lodged badly after Hurricane Gustav hit in September. The dry fall enabled all outfield trials to be planted but may hamper stands in the spring of 2009. The harvest of 2008 was marked by less than average rainfall, which was extremely helpful with the harvest of a lodged crop.

L03-371 was harvested in plantcane and first stubble tests in 2008. The experimental variety had sugar per acre values equal to HoCP96-540 in both crops. L 03-371 had significantly higher sugar per ton of cane in the plantcane crop.

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 2008.

Commercial Varieties		Experimental Varieties		Experimental Varieties Introduced to the Outfield		
HoCP96-540	HoCP00-950	L03-371	HoCP05-904	L06-023	HoCP06-513	Ho06-539
L99-233	L01-283	HoCP04-838	HoCP05-918	L06-038	Ho06-523	Ho06-562
L99-226		HoCP05-902	HoCP05-961	L06-040	Ho06-530	Ho06-563
				HoCP06-512	Ho06-537	Ho06-565

Table 2. Harvest and planting dates for all outfield locations harvested in 2008.

Location	Parish	Plantcane			First-stubble		Second-stubble		Third-stubble	
		2008 Planting Date	2008 Harvest Date	2007 Planting Date	2008 Harvest Date	2006 Planting Date	2008 Harvest Date	2005 Planting Date	2008 Harvest Date	2004 Planting Date
A. Landry	Iberville	10/07	***	08/27	11/11	09/07	10/16	09/15	***	09/09
Allains[1]	St. Mary	10/15	01/05	10/05	01/05	10/04	***	09/21	***	09/01
Alma	Pointe Coupee	09/29	11/20	10/22	11/20	09/21	10/29	09/16	***	09/20
Bon Secour	St. James	09/24	12/17	09/06	12/18	09/26	11/3	09/08	11/03	09/08
Brunswick*	Pointe Coupee	09/22	11/21	09/15						
F. Martin*	St. Mary	10/13	***	09/28						
Glenwood	Assumption	10/02	12/04	09/12	12/04	08/16	***	09/13	12/04	09/10
Lanaux	St. John	09/24	12/02	09/11	11/06	08/29	11/06	09/14	***	08/25
Levert-St. John	St. Martin	09/23	11/17	09/19	***	08/30	***	09/09	***	08/26
Magnolia	Terrebonne	10/17	11/24	09/07	11/24	10/10	11/24	10/06	***	09/10
Mary*	Lafourche	10/09	***	09/20						
R. Hebert	Iberia	10/13	11/19	09/27	11/19	09/12	11/14	09/12	***	09/13

* New location; *** No test harvested at this location.
[1] Harvested in 2009.

Table 3. Plantcane sugar per acre for eight commercial and two experimental varieties at nine outfield locations in 2008.

	Heavy				Light					
Variety	Allains	Alma	St. John	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)									
LCP85-384	6552 -	4434 -	6347	5586 -	6481 -	8607 -	6529	6888 -	6709	6459 -
Ho95-988	6186 -	4943	6916	6683 -	7977 -	8908 -	7799	6369 -	7756	7060 -
HoCP96-540	9178	5801	8039	9768	10452	13477	8046	8768	8198	9081
L97-128	7011 -	5387	8205	7255 -	9068 -	12266	8539	7657 -	9002	8265
L99-226	9966	7285 +	8298	9106	9047 -	11732	9685	8587	9297	9222
L99-233	9023	6373	8793	6500 -	8709 -	10529 -	9992 +	8413	9477	8645
HoCP00-950	7880 -	6259	8404	6719 -	10206	11413	9441	9210	9112	8738
L01-283	7982	6756	8227	8016 -	11274	10392 -	8503	8733	9595	8831
L03-371	8390	6691	10051 +	8305	11230	11781	8491	8538		9223
HoCP04-838	9149	5527	8476	7263 -	11289	12217	9938	7799	8974	8959

Table 4. Plantcane cane yield for eight commercial and two experimental varieties at nine outfield locations in 2008.

	Heavy				Light					
Variety	Allains	Alma	St. John	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)									
LCP85-384	23.5 -	17.3 -	22.1	19.0 -	22.1 -	28.8 -	22.7 -	24.3 -	23.7 -	22.6 -
Ho95-988	22.9 -	20.0	25.1	23.4 -	29.9 -	31.4 -	28.6	22.4 -	27.8	25.7 -
HoCP96-540	31.3	21.7	27.6	35.3	36.4	43.8	29.3	30.1	29.7	31.7
L97-128	26.0 -	19.3	31.1	24.8 -	33.5	41.6	29.2	28.6	31.0	29.5
L99-226	35.8 +	26.6 +	27.8	30.5 -	29.8 -	39.9	31.5	28.1	30.8	31.2
L99-233	33.3	23.3	32.1	26.2 -	32.5	37.6	35.8 +	31.5	35.1 +	32.0
HoCP00-950	26.3 -	20.8	27.5	21.4 -	35.1	40.1	30.4	32.0	30.4	29.3
L01-283	27.8	24.0	28.4	26.6 -	37.8	39.3	29.5	30.4	32.0	30.6
L03-371	28.6	23.7	32.4	28.4 -	37.0	37.8	28.3	29.0		30.7
HoCP04-838	33.2	20.4	30.2	25.7 -	40.2	42.7	33.9	28.5	31.6	31.8

Table 5. Plantcane sugar per ton for eight commercial and two experimental varieties at nine outfield locations in 2008.

	Heavy				Light					
Variety	Allains	Alma	St. John	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)									
LCP85-384	280	256 -	287	294	293	300	286	283	283	285
Ho95-988	270 -	246 -	275	285	269	283	272	284	279	274 -
HoCP96-540	292	268	292	278	287	308	274	292	276	285
L97-128	270 -	280	263 -	292	271	294	292	268 -	291	280
L99-226	279	274	299	299	305	294	307 +	305 +	300	296 +
L99-233	271 -	274	273	248 -	268	280 -	280	266 -	270	270 -
HoCP00-950	299	301 +	306	313 +	291	290	310 +	288	300	300 +
L01-283	287	281	291	300 +	299	265 -	288	288	300	289
L03-371	293	282	310	292	304	312	300 +	295	299	299 +
HoCP04-838	276 -	271	282	284	281	287	294	273 -	284	281

Table 6. Plantcane stalk weight for eight commercial and two experimental varieties at nine outfield locations in 2008.

	Heavy				Light					
Variety	Allains	Alma	St. John	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)									
LCP85-384	1.88 -	1.65 -	2.09 -	2.11 -	1.93 -	1.85 -	2.46	1.93 -	1.85 -	1.97 -
Ho95-988	1.95	1.61 -	2.29 -	2.14 -	2.52	2.41	2.29	2.13 -	2.29	2.18 -
HoCP96-540	2.37	2.12	2.99	2.89	2.74	2.57	3.20	2.62	2.55	2.67
L97-128	2.28	2.28	2.81	2.65	2.70	2.57	2.94	2.36	2.59	2.58
L99-226	2.92 +	2.41	3.15	2.65	3.21 +	2.92 +	2.75	2.92	2.83	2.86 +
L99-233	2.28	1.81	2.27 -	1.63 -	1.96 -	1.72 -	2.23	2.07 -	2.30	2.03 -
HoCP00-950	1.80 -	2.04	2.58	1.89 -	2.23 -	2.26	2.39	1.81 -	2.38	2.15 -
L01-283	2.31	2.03	2.32 -	2.40 -	2.23 -	2.03 -	2.61	2.19 -	2.33	2.27 -
L03-371	2.44	2.33	2.54	2.61	2.50	2.35	2.42	2.48	2.15	2.45 -
HoCP04-838	2.18	2.08	2.35 -	1.96 -	2.74	2.14 -	2.45	2.41	2.01 -	2.26 -

Table 7. Plantcane stalk number for eight commercial and two experimental varieties at nine outfield locations in 2008.

	Heavy				Light					
Variety	Allains	Alma	St. John	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)									
LCP85-384	26153	20979	21235	18273 -	23092	31070	18467	25646	25588	23389
Ho95-988	23611	25919	22125	21928	23803	26466	25119	21143	24770	23876
HoCP96-540	26979	20570	18802	24592	26676	34216	18646	23289	23539	24145
L97-128	23086	16900	22239	18789 -	24776	32354	20170	24916	24078	23034
L99-226	24665	22145	17902	23184	18945 -	27716	23215	19504	21830	22123
L99-233	29576	25817	28325 +	32287 +	33617 +	43849 +	34975	30271 +	30613 +	32148 +
HoCP00-950	29537	20709	21122	22793	31841	35324	25845	35833 +	25656	27629 +
L01-283	24376	24377	24884 +	22201	34342 +	39417	22787	27750	27684	27535 +
L03-371	23751	20387	25560 +	21940	29594	32198	24356	23751		25235
HoCP04-838	30703	19755	26000 +	26257	29958	40697	27793	23793	31902 +	28540 +

Table 8. First-stubble sugar per acre for one experimental and eight commercial varieties at eight outfield locations in 2008.

	Heavy				Light				
Variety	Allains	Alma	Landry	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Mean
	(lbs/tons)								
LCP85-384	6909 -	4339 -	6839	4639	7516 -	7745 -	5303 -	5994	6160 -
Ho95-988	6605 -	6635	7299	5198	8289 -	8756 -	6339 -	7930	7131 -
HoCP96-540	9565	7129	7382	6066	9541	11815	8439	7437	8422
L97-128	6717 -	6128	7170	4614	10630	10303	7323 -	6581	7433 -
L99-226	9066	7904	8852	5856	9625	10700	8183 -	8547	8592
L99-233	8748	6087 -	8197	5031	9592	9192 -	8354	7709	7864
HoCP00-950	9076	6899	8977 +	5475	9698	7362 -		8876	8061
L01-283	7635	6561	7048	5350	11686 +	9741	9436	8360	8227
L03-371	9895	6217	8396	5877	9897	9557	9314	7458	8326

Table 9. First-stubble cane yield for one experimental and eight commercial varieties at eight outfield locations in 2008.

	Heavy				Light				
Variety	Allains	Alma	Landry	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Mean
	(lbs/tons)								
LCP85-384	24.4	15.8 -	23.0	16.3	25.1 -	28.3 -	19.1 -	20.6	21.6 -
Ho95-988	26.3	23.7	24.6	17.9	28.4	29.6 -	22.6 -	26.7	25.0 -
HoCP96-540	31.5	25.6	24.6	20.7	33.1	38.8	31.0	26.7	29.0
L97-128	24.9	21.0 -	23.1	15.8	37.7	33.6	26.5 -	23.4	25.7 -
L99-226	31.2	26.8	28.7	19.6	31.2	34.2	27.0 -	28.6	28.4
L99-233	31.5	20.8 -	27.2	17.7	34.6	32.0 -	32.2	27.5	27.9
HoCP00-950	31.0	22.5	28.2	17.2	31.2	24.6 -		29.3	26.5 -
L01-283	26.9	21.3 -	22.7	17.3	37.8	35.3	34.4	28.1	28.0
L03-371	34.9	21.5 -	27.6	19.1	32.5	30.8 -	32.1	25.6	28.0

Table 10. First-stubble sugar per ton for one experimental and eight commercial varieties at eight outfield locations in 2008.

	Heavy				Light				
Variety	Allains	Alma	Landry	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Mean
	(lbs/tons)								
LCP85-384	285 -	274	297	285	299	275	277	291	285
Ho95-988	252 -	279	297	291	292	297	281	297	286
HoCP96-540	303	280	300	301	289	305	272	279	291
L97-128	271 -	292	311	296	281	306	277	281	289
L99-226	292	296 +	308	302	309 +	312	303 +	299	303 +
L99-233	277 -	293	302	288	277	288	260	279	283
HoCP00-950	292	306 +	320	320 +	311 +	299		303	306 +
L01-283	284 -	308 +	309	309	309 +	277	274	296	296
L03-371	283 -	288	304	307	304	311	290	291	297

Table 11. First-stubble stalk weight for one experimental and eight commercial varieties at eight outfield locations in 2008.

	Heavy				Light				
Variety	Allains	Alma	Landry	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Mean
	(lbs/tons)								
LCP85-384	1.73 -	1.59 -	1.49	1.34 -	1.69 -	1.20	1.92	1.78 -	1.59 -
Ho95-988	1.72 -	2.09	1.89	1.86	2.11	1.99	2.13	2.13	1.99
HoCP96-540	2.23	2.30	1.64	1.71	2.24	1.67	2.40	2.19	2.05
L97-128	1.99	2.07	2.07	1.84	2.39	2.04	2.24	2.14	2.10
L99-226	2.70 +	2.64	2.40	2.13 +	3.03 +	2.32 +	2.72	2.43	2.55 +
L99-233	1.56 -	1.54 -	1.68	1.61	1.81 -	1.36	2.04	1.89	1.69 -
HoCP00-950	1.82 -	1.82	1.99	1.61	1.95	1.87		1.74 -	1.85 -
L01-283	1.94	1.87	1.66	1.58	1.77 -	1.57	1.99	1.83	1.77 -
L03-371	2.37	2.08	1.98	1.72	2.04	2.29 +	1.98	2.09	2.07

Table 12. First-stubble stalk number for one experimental and eight commercial varieties at eight outfield locations in 2008.

	Heavy				Light				
Variety	Allains	Alma	Landry	Magnolia	Bon Secour	Glenwood	Lanaux	R. Hebert	Mean
	(lbs/tons)								
LCP85-384	28069	19881	31500	24955	30464	47767	19972	23209	28227
Ho95-988	31260	23167	26038	19507	26887	30686 -	21170	25545	25532
HoCP96-540	28364	23263	30310	23197	29570	47315	25925	24657	29075
L97-128	24934	20516	22278	16709	31506	33168 -	23804	21960	24359 -
L99-226	24217	20809	24645	18325	20686 -	29907 -	20007	23948	22818 -
L99-233	40339	27652	32597	21745	38337 +	46990	32534	29151	33668 +
HoCP00-950	33920	24737	29823	20672	32359	26828 -		34480	28796
L01-283	28127	22813	27469	22480	42994 +	45067	34957 +	30583	31811
L03-371	30053	20725	28060	22220	32116	26996 -	33499 +	24873	27318

Table 13. Second-stubble sugar per acre for eight commercial varieties at five outfield locations in 2008.

	Heavy		Light			
Variety	Alma	Magnolia	Bon Secour	Lanaux	R. Hebert	Mean
	(stalks/A)					
LCP85-384	5511 -	5107	7538	4950	9514	6524 -
Ho95-988	6863 -	6423	7881	4282 -	8700	6830
HoCP96-540	9595	5859	8344	6700	7801	7660
L97-128	10073	4483	8340	6592	8309	7559
L99-226	9068	4995	8742	6047	10816 +	7933
L99-233	9605	5656	8949	6686	11171 +	8413
HoCP00-950	9722	5232	8102	7171	9077	7861
L01-283	9450	5428	9779 +	5356	9356	7874

Table 14. Second-stubble cane yield for eight commercial varieties at five outfield locations in 2008.

	Heavy		Light			
Variety	Alma	Magnolia	Bon Secour	Lanaux	R. Hebert	Mean
	(stalks/A)					
LCP85-384	22.0 -	18.1	25.3 -	17.6 -	31.8	23.0 -
Ho95-988	24.6 -	21.6	28.7	15.9 -	29.7	24.1 -
HoCP96-540	34.1	19.7	29.2	23.6	28.1	26.9
L97-128	35.8	15.8	29.5	22.9	29.2	26.7
L99-226	30.6	16.4	29.7	19.8	35.8 +	26.5
L99-233	36.4	19.7	32.4	24.3	39.5 +	30.4 +
HoCP00-950	34.3	16.5	27.4	24.1	29.9	26.4
L01-283	35.8	18.2	33.2 +	19.0	31.4	27.5

Table 15. Second-stubble sugar per ton for eight commercial varieties at five outfield locations in 2008.

	Heavy		Light			
Variety	Alma	Magnolia	Bon Secour	Lanaux	R. Hebert	Mean
	(stalks/A)					
LCP85-384	250	282	298	283	299 +	282
Ho95-988	279	297	274	270	293	282
HoCP96-540	281	296	286	283	278	285
L97-128	282	286	282	287	284	284
L99-226	297	305	295	305 +	302 +	301 +
L99-233	264	287	277	274	284	277
HoCP00-950	284	318 +	296	297	304 +	300 +
L01-283	264	296	295	281	299 +	287

Table 16. Second-stubble stalk weight for eight commercial varieties at five outfield locations in 2008.

	Heavy		Light			
Variety	Alma	Magnolia	Bon Secour	Lanaux	R. Hebert	Mean
	(stalks/A)					
LCP85-384	1.29 -	1.61	1.39 -	1.44 -	1.41	1.43 -
Ho95-988	1.74	1.57	1.80	1.54 -	1.52	1.64 -
HoCP96-540	2.04	1.53	2.15	2.12	1.67	1.90
L97-128	2.07	1.73	2.26	1.91	1.95	1.99
L99-226	2.26	2.12 +	2.52	1.93	2.19 +	2.21 +
L99-233	1.46 -	1.67	1.76	1.54 -	1.70	1.63 -
HoCP00-950	1.91	1.39	1.64 -	1.68 -	1.59	1.64 -
L01-283	1.76	1.74	1.74	1.75	1.49	1.70 -

Table 17. Second-stubble stalk number for eight commercial varieties at five outfield locations in 2008.

	Heavy		Light			
Variety	Alma	Magnolia	Bon Secour	Lanaux	R. Hebert	Mean
	(stalks/A)					
LCP85-384	35101	22759	36620	24688	46540 +	33142 +
Ho95-988	28481	27834	32276	21065	39126	29756
HoCP96-540	33992	26485	27686	22711	33535	28882
L97-128	34657	18178	26219	24040	30246	26668
L99-226	27150	15548 -	23893	20471	32765	23966 -
L99-233	49857 +	24470	37134	32771	46544 +	38155 +
HoCP00-950	36810	24231	35461	28750	37990	32648
L01-283	41586	21200	38748 +	21003	42797	33067 +

Table 18. Third-stubble sugar per acre for one experimental and nine commercial varieties at two outfield locations in 2008.

	Light		
Variety	Bon Secour	Glenwood	Mean
	(tons/A)		
LCP85-384	5903+	5901	5902
HoCP91-555	6022+	6838	6430
Ho95-988	6400+	6447	6424
HoCP96-540	4508	5978	5243
L97-128	6178+	8699+	7439+
L99-226	7831+	8541+	8186+
L99-233	7062+	9320+	8191+
HoCP00-950	8021+	8007+	8014+
L01-283	7391+	9997+	8694+
L01-299	7299+	10877+	9088+

Table 19. Third-stubble cane yield for one experimental and nine commercial varieties at two outfield locations in 2008.

Variety	Light		Mean
	Bon Secour	Glenwood	
	(tons/A)		
LCP85-384	20.4+	20.7	20.5
HoCP91-555	20.2+	23.3	21.7+
Ho95-988	21.5+	23.6	22.6+
HoCP96-540	16.1	20.2	18.1
L97-128	21.4+	28.1+	24.7+
L99-226	25.5+	27.6+	26.6+
L99-233	24.9+	33.3+	29.1+
HoCP00-950	24.7+	25.9+	25.3+
L01-283	24.1+	31.3+	27.7+
L01-299	26.2+	36.0+	31.1+

Table 20. Third-stubble sugar per ton for one experimental and nine commercial varieties at two outfield locations in 2008.

Variety	Light		Mean
	Bon Secour	Glenwood	
	(tons/A)		
LCP85-384	290	288	289
HoCP91-555	299	294	297
Ho95-988	297	269-	283
HoCP96-540	281	296	288
L97-128	289	310	300
L99-226	307+	309	308+
L99-233	284	279	281
HoCP00-950	325+	310	317+
L01-283	307+	320	313+
L01-299	279	302	291

Table 21. Third-stubble stalk weight for one experimental and nine commercial varieties at two outfield locations in 2008.

Variety	Light		Mean
	Bon Secour	Glenwood	
	(tons/A)		
LCP85-384	1.44-	1.26	1.35-
HoCP91-555	1.41-	1.23-	1.32-
Ho95-988	1.40-	1.64	1.52
HoCP96-540	1.76	1.54	1.65
L97-128	1.68	1.94+	1.82
L99-226	2.11+	2.02+	2.06+
L99-233	1.47	1.49	1.48
HoCP00-950	1.76	1.52	1.64
L01-283	1.49	1.37	1.43-
L01-299	1.67	1.51	1.59

Table 22. Third-stubble stalk number for one experimental and nine commercial varieties at two outfield locations in 2008.

Variety	Light		Mean
	Bon Secour	Glenwood	
	(tons/A)		
LCP85-384	28319+	32552	30436+
HoCP91-555	28744+	38360+	33552+
Ho95-988	30983+	28928	29955+
HoCP96-540	18294	26315	22304
L97-128	25925+	29811	27868+
L99-226	24245+	27428	25836
L99-233	34348+	44971+	39659+
HoCP00-950	28226+	34155	31190+
L01-283	32507+	45755+	39131+
L01-299	31176+	47919+	39547+

Table 23. Plantcane means from nine outfield locations in 2008: Allains, Alma, Brunswick, Bon Secour, Glenwood, Lanaux, Magnolia, 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)
LCP85-384	6459-	22.6-	285	1.97-	23389
Ho95-988	7060-	25.7-	274-	2.18-	23876
HoCP96-540	9081	31.7	285	2.67	24145
L97-128	8265-	29.5	280	2.58	23034
L99-226	9222	31.2	296+	2.86+	22123
L99-233	8645	32.0	270-	2.03-	32148+
HoCP00-950	8738	29.3	300+	2.15-	27629+
L01-283	8831	30.6	289	2.27-	27535+
L03-371	9223	30.7	299+	2.44-	25234
HoCP04-838	8959	31.8	281	2.26-	28540+

Table 24. First-stubble means from eight outfield locations in 2008: Allains, Alma, Magnolia, Landry, Bon Secour, Glenwood, Lanaux, and R. Hebert.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6160-	21.6-	285	1.59-	28227
Ho95-988	7131-	25.0-	286	1.99	25532
HoCP96-540	8422	29.0	291	2.05	29075
L97-128	7433-	25.7-	289	2.10	24359-
L99-226	8592	28.4	303+	2.55+	22818-
L99-233	7864	27.9	283	1.69-	33668+
HoCP00-950	8061	26.5	306+	1.85-	28796
L01-283	8227	28.0	296	1.77-	31811
L03-371	8326	28.0	297	2.07	27318

Table 25. Second-stubble means from five outfield locations in 2008: Alma, Bon Secour, Lanaux, R. Hebert and Magnolia.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6524	23.0	282	1.43-	33142
Ho95-988	6830	24.1	282	1.64-	29756
HoCP96-540	7660	26.9	285	1.90	28882
L97-128	7559	26.7	284	1.99	26668
L99-226	7933	26.5	301+	2.21+	23966
L99-233	8413	30.4	277	1.63-	38155+
HoCP00-950	7861	26.4	300+	1.64-	32648
L01-283	7874	27.5	287	1.70	33067

Table 26. Third-stubble means from two outfield locations in 2008: Bon Secour and Glenwood.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	5902	20.5	289	1.35-	30436
HoCP91-555	6430	21.7	297	1.32-	33552+
Ho95-988	6424	22.6	283	1.52	29955
HoCP96-540	5243	18.1	288	1.65	22304
L97-128	7439+	24.7+	300	1.82	27868
L99-226	8186+	26.6+	308	2.06+	25836
L99-233	8191+	29.1+	282	1.48	39659+
HoCP00-950	8014+	25.3+	317	1.64	31190+
L01-283	8694+	27.7+	313	1.43	39131+
L01-299	9088+	31.1+	291	1.59	39547+

Table 27. Combined plantcane means across outfield locations from 2005 to 2008.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7245-	26.3-	275	1.86-	28937
HoCP95-988	8615-	31.7-	271-	2.26-	28406
HoCP96-540	9712	34.9	279	2.42	29638
L97-128	8912-	33.0-	270-	2.43	27413-
L99-226	10122	34.6	292+	2.76+	25692-
L99-233	9282	35.2	263-	1.91-	37597+
HoCP00-950	9666	32.9-	294+	2.14-	31116
L01-283	9654	34.3	281	2.14-	32901+

Table 28. Combined first-stubble means across outfield locations from 2006 to 2008.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7322-	25.9-	282	1.73-	30607
HoCP95-988	8416	29.8	283	2.16	27767
HoCP96-540	8880	31.3	284	2.18	29301
L97-128	8279-	29.3-	283	2.26	25888-
L99-226	9725+	32.1	303+	2.65+	24615-
L99-233	8636	31.0	279	1.78-	35656+
HoCP00-950	8773	28.9-	304+	2.00-	29192
L01-283	9449+	32.4	293+	1.91-	34208+

Table 29. Combined second-stubble means across outfield locations from 2007 to 2008.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6378	24.2-	264	1.50-	33418+
HoCP95-988	7310	26.9	273+	1.86	29309
HoCP96-540	7091	27.4	259	1.86	29803
L97-128	7231	26.8	270+	1.96	27529
L99-226	7946+	27.9	285+	2.30+	24696-
L99-233	7975+	31.1+	257	1.62-	38977+
HoCP00-950	8312+	28.5+	292+	1.80	32192
L01-283	8156+	29.4+	278+	1.70	35047+

SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION

Gert Hawkins and Kenneth Gravois
Sugar Research Station

The Sugar Research Station sucrose laboratory processed 2402 samples during the 2008 harvest season (Table 1). Standard laboratory procedures were used to analyze 217 sugarcane samples. Sucrose percent and theoretical recoverable sugar (lbs/ton of cane) was calculated based on the Brix and pol values. These procedures included the use of Octapol® for clarification, and Brix was measured by a refractometer and pol was measured by saccharimeter (Autopol 880). The juice was extracted from sweet sorghum samples via a three-roller mill for 403 samples where only Brix values were estimated. The sucrose laboratory processed samples from August 2008 to December 2008.

A total of 1,999 samples were analyzed using the Spectracane FT-NIR instrument. The sample was prepared using a Dedini shredder that was then fed into the Spectracane unit that uses NIR technology to analyze the sample for Brix, pol, fiber content, moisture content, purity, and theoretical recoverable sugar. In December, parallel wet chemistry was run on 152 samples of high fiber clones to extend the NIR calibrations. The overall performance of the instrument was excellent.

Table 1. Number of sugarcane samples processed at the Sugar Research Station sucrose laboratory during the 2008 harvest season.

Unit/Project Area	Leader	Number of Samples
School of Plant, Environmental, and Soil Sciences	James Griffin	24
	Brenda Tubana	280
	Magdi Selim	12
	Jim Wang	64
Iberia Research Station	Howard Viator	34
Plant Pathology and Crop Physiology	Jeff Hoy	379
Sugar Research Station/Variety Development	Line Trials	409
	Increase	109
	Nursery	270
	Genetics	62
Audubon Sugar Institute	Don Day	8
USDA	Anna Hale	152
	Rich Johnson	124
Contract Services		72
Macon Ridge Research Station (Sweet Sorghum)	Wink Alison	97
LCES (Sweet Sorghum)	Jerry Whatley	16
Hill Farm Research Station (Sweet Sorghum)	Buddy Pittman	46
Rice Research Station (Sweet Sorghum)	Dustin Harrell	127
Iberia Research Station (Sweet Sorghum)	Howard Viator	53
Southeast Research Station (Sweet Sorghum)	Kun-Jun Han	64
TOTAL		2402

LAES SUGARCANE TISSUE CULTURE LABORATORY

Q.J.Xie[1], J.L Flynn[1], and K.A.Gravois[2]
Certis USA, LLC[1] and Sugar Research Station[2]

During the 2008 production season, about 30,000 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
L99-233	2,952
L03-371	2,304
HoCP96-540	6,264
HoCP85-845	1,368
HoCP91-552	3,816
HoCP00-950	5,400
L99-226	4,176
L01-283	2,880
CP89-2143	1,224
TOTAL	30,708

THE 2008 LOUISIANA SUGARCANE VARIETY SURVEY

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INTRODUCTION

A sugarcane variety survey was conducted during the summer of 2008 by the county agents in the 23 sugarcane-growing parishes (counties) of Louisiana to determine the variety makeup and distribution across the industry in the state. There were no parish survey reports from either Cameron or Evangeline Parishes; however, the total area planted to sugarcane in those two parishes did not exceed 500 acres in 2008. The information presented in this survey was summarized from the 21 individual parish reports that were submitted. According to USDA-FSA, there were 417,329 acres planted to sugarcane in Louisiana in 2008. There were 391,026 acres included in this survey or 94 percent of the acres reported by USDA-FAS.

Agents in each sugarcane-producing parish collected acreage figures by variety and crop from growers in their respective parishes. Nine varieties, LCP 85-384, HoCP 85-845, HoCP 91-555, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, L 99-233 and HoCP 00-950 were listed along with "Others" in the survey. The category of others included, but was not limited to, small acreages of CP 70-321, LHo 83-153, CP 89-2143 and the newly released variety, L 01-283. There was also a small acreage of L 03-371 on the secondary stations; this variety is eligible for commercial release in 2010. 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 2008 was 417,329 acres according to state USDA-FSA records (Cooper, personal communications). However, 391,026 acres were included in the survey. In 2008, according to information received from county agents included in the Louisiana State University Agricultural Center's Ag Summary, sugarcane was grown on 401,435 acres (a decrease of 17,498 acres or 4.2% when compared to the 2007 crop) by 526 producers (a decrease of 83 producers or 13.6%; this is the largest decrease in the number of producers in recent years.) in 23 Louisiana parishes (counties). An estimated 375,342 acres (a decrease of 16,360 acres or 4.2%) were available for harvest for sugar, assuming 6.5% of the total acres were used for seed cane purposes. The actual acreage for harvest may be slightly lower because, undoubtedly, more cane was needed for seed due to the lodged condition of the crop at planting as a result of two hurricanes (Gustav and Ike) that affected the industry in 2008. Further, many producers had to

plant "billets" as they were unable to plant the crooked, whole stalks. The use of billets means a decrease in the planting ratio resulting in the need for more seed cane per acre.

Figure 1 shows the parishes where sugarcane is grown in the state. Total area planted to sugarcane for the three regions, Bayou Teche, River-Bayou Lafourche and Northern, and list of parishes by regions are also shown in Table 1. The Bayou Teche region had the largest area reported with 165,052 acres, a decrease of 16,404 acres when compared to 2007. This represented approximately 42.2% of the planted area reported in the state (Table 3). The River-Bayou Lafourche area reported 158,973 acres (40.7% of the state's acreage), an increase of 2,327 acres when compared to the 2007 survey. The Northern area reported 67,001 acres (17.1% of the state's acreage), down 13,279 acres from what was reported in the 2007 survey. The parishes with the largest acreage in sugarcane are as follows: 1) Teche region - Iberia, St. Mary, St. Martin and Vermilion; 2) River-Bayou Lafourche region - Assumption, Iberville, Lafourche and St. James; and, 3) Northern region - Pointe Coupee, West Baton Rouge, Avoyelles and Rapides.

The total area planted to sugarcane in Louisiana has declined each year since 2000 when the state's acreage approached 500,000 acres. Overall, the drop has been approximately 100,000 acres over the last 9-year period. The main reasons for this decline in recent years are a low return on investment due to low sugar prices, high grain prices that have enticed growers to switch commodities (especially in the Northern region) and urban encroachment (especially in the Teche region along the I-49 corridor between Lafayette and Morgan City).

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 2008 was HoCP 96-540 with 44% of the total area planted to this variety. This is the first time since 1998 that a variety other than LCP 85-384 held the lead spot. However, LCP 85-384 held on to the second spot with 22% of the planted area followed by L 97-128, Ho 95-988 and L 99-226 with 17%, 5% and 5%, respectively. All other varieties in the survey had each 2% or less of the planted area for 2008.

LCP 85-384 and HoCP 91-555 are listed as two of the older varieties, having been released to the industry in 1993 and 1999, respectively (Legendre 2001). The acreage of LCP 85-384 continued to decrease with only 1% of the plant-cane area while the acreage planted to HoCP 96-540 and L 97-128 continued to increase with 52% and 19% of the plant-cane area, respectively, following closely by L 99-226 with 12% of the plantcane area. Growers, concerned with the decline in yield of LCP 85-384, have switched to other varieties, namely HoCP 96-540, L 97-128 and L 99-226. They have continued to plough out much of their older stubble of LCP 85-384 in order to plant the newer varieties. Other options for 2008 were Ho 95-988 and L 99-233 (each with 6% of the plantcane acreage). The new variety, HoCP 00-950, released to the industry in the fall of 2007, was planted on 1% of the plantcane acreage in 2008. Another new variety, L 01-283, was released for commercial planting in 2008; however, there was only limited seed cane available for planting in 2008. .

The majority of the Louisiana sugarcane crop has been harvested by cane combine since 2000 when over 70% of the crop was planted to LCP 85-384 (Legendre & Gravois 2008), presumably to take advantage of the variety's superior yield potential. However, with the lower yields experienced since 2003, especially in the older stubble crops, many growers, especially in

the Bayou Teche region, have switched back to the whole-stalk "soldier" system for harvesting their crop. This is mainly due to the lower costs of operating the whole-stalk system, especially in low yielding fields. Further, the newer varieties, with the possible exceptions of Ho 95-988 and L 99-233, generally have better harvesting characteristics, i.e. less tendency to lodge and less brittle, which lend themselves for harvest by the whole-stalk system.

Sugarcane Distribution by Region and Crop. With the prominence of LCP 85-384, there had been a trend to plant less cane each year and keep more acres in older stubble crops; however, because of the poor performance of LCP 85-384, especially in the older stubble crops, that trend changed in 2004 and continued into 2008 when more acres were replanted in all regions than had been reported in previous years (Table 3). In 2008, 31.2% of the state's acreage was in the plant-cane crop while only 10.0% in the third and older stubble crops. As recently as 2003, the acreage in second and older stubble was over 50% of the total acreage; now it is only 36.9%.

For the current survey, the Northern region, which has routinely kept older stubble, had only 10.8% in third and older stubble in 2008 compared to 14.3% and 22.0% in 2007 and 2006, respectively (Table 3). The percentage in plantcane increased from 27.6% in 2006 to 33.3% in 2008. The River-Bayou Lafourche region tends to plant more cane each year, with less of its area devoted to stubble crops. In this region, there was only 10.1% of the acreage in third- and older stubble crops and 30.0% in the plant-cane crop in 2008. The trend for less stubble and more plantcane was also evident for the Bayou Teche region; the amount of older stubble decreased from 15.6% in 2006 to 10.0% in 2007 to 9.7% in 2008 while plantcane increased from 29.7% in 2006 to 31.0% in 2007 to 31.3% in 2008.

Sugarcane Distribution by Variety and Crop for the Three Regions. HoCP 96-540 is now the leading variety in the plant and first-stubble crops for all regions in 2008 while LCP 85-384 leads the way in the second- and third- and older stubble crops (Tables 4, 5 and 6). HoCP 96-540 lead the way in planted acreage with 56%, 48% and 51% of the plant-cane crop in the Bayou Teche, River-Bayou Lafourche and Northern regions, respectively. The percentages for LCP 85-384 in the plant-cane crop for the three regions dropped to 1%, 2% and <1%, respectively. There was also a significant planting of both L 97-128 and L 99-226 in all regions. The popularity of the older varieties, namely HoCP 85-845 and HoCP 91-555, continued to lose favor by growers in all regions. The area planted to the variety, Ho 95-988, remained rather constant in 2008 when compared to 2007 while growers increased plantings of L 99-233 in all regions. Growers also increased the planting of HoCP 00-950 to the extent of their limited seed cane supply.

Variety Trends. For the fourth consecutive year the total acreage planted to LCP 85-384 decreased from the previous year (Table 7). LCP 85-384 reached its maximum utilization in 2004 when 91% of the Louisiana acreage was planted to this variety. The one year change for LCP 85-384 between 2007 and 2008 was 24 percentage points. Prior to the release of LCP 85-384, CP 70-321 was the leading variety which peaked in 1995 with 49% of the planted area of the state. Only one other variety, CP 65-357, released in 1973, reached more than 70% of the total acreage in the state with a high of 71% in 1980. HoCP 96-540, released for commercial planting in 2003, now occupies 44% of the state's acreage, an increase of 13 percentage points between 2007 and 2008. The acreage of Ho 95-988, released in 2004, increased only 1 percentage point while the increase in acreage of L 97-128, L 99-226 and L 99-233 was 5%, 4%,

and 2% percentage points, respectively. According to Blackwelder et al. (2008), all newer varieties are generally superior to LCP 85-384 in yield of sugar per acre throughout the crop cycle. Ho 95-988 has good stubbling ability; HoCP 96-540 has excellent yield of cane and sugar per acre; and, L 97-128 has early, high sucrose content to go along with its early maturity classification. Ho 95-988 is classified as resistant to mosaic and leaf scald and moderately susceptible to smut and susceptible to brown rust and the sugarcane borer. It was reported that Ho 95-988 had a high percentage of broken stalks following Hurricane Gustav in 2008. HoCP 96-540 is classified as resistant to smut and mosaic, moderately resistant 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 and its resistance may break down as the area planted to the variety increases (as was the case with LCP 85-384). The yield of sugar per acre for HoCP 96-540 appears to diminish with older stubble crops and, for 2007, its yield in sugar per acre was less than most varieties in the test (Blackwelder et al. 2008). L 97-128 is classified as resistant to mosaic, moderately resistant to leaf scald and rust, moderately susceptible to smut and susceptible to the sugarcane borer. However, it now appears that L 97-128 is more susceptible to smut than first thought which might have limit its acceptance by growers. All three varieties are more erect than LCP 85-384; hence, losses associated with mechanical harvesting should be less when compared to LCP 85-384.

L 99-226 and L 99-233, with superior yield of both cane and sugar per acre were released to the industry in 2006. Both varieties have adequate resistance to the major disease complexes with L 99-226 exhibiting an added attribute of having some resistance to the sugarcane borer. Many producers have planted these two varieties to significant acreages for 2008. HoCP 00-950 was released for commercial planting in 2007 and is expected to gain favor with growers in the future because of its superior yields of both sugar per ton of cane and per acre. 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. L 01-283 was released for commercial planting in 2008 with great expectations. It has superior yield of tons cane per acre and sugar per ton of cane and per acre. 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 has exhibited resistance to the sugarcane borer. To date, clean seed companies have been generally unsuccessful in using tissue culture to micropropagate L 01-283 because it exhibits an unacceptable high level of somaclonal variants (off-types) With the release of seven new varieties since 2003 and more promising experimental clones on the horizon, it is believed that the Louisiana sugarcane industry should have a more balanced mix of varieties.

Concern Over the Dependence of a Single Variety (Monoculture). Occasionally, expectations outweigh potential risk considerations to the planting of a single variety (Tew 1987). Hoy (2005) reported that LCP 85-384 was susceptible to common brown rust, and this disease has had a significant negative impact on both cane and sugar yield in areas of severe rust infection. He reported that rust can be controlled by fungicides; however, the best control option at this point is to plant the new varieties which have shown a greater degree of resistance. However, one new variety, Ho 95-988, is now considered susceptible to brown rust and has not been widely adapted by the industry. Further, in 2007 and again in 2008 there were many fields

of HoCP 96-540 that showed symptoms of brown rust but the severity of infection was not considered serious. However, as the industry increases the planting of this variety, there might be an increase in severity of rust infection. Again, the message is to diversify and not rely on one variety. During the 2007 crop year, a new disease, orange rust, was discovered in Florida but not in Louisiana. Although orange rust is not considered a serious disease to most sugarcane industries around the world, it has been responsible for the demise of several varieties in other countries. It appears that one of Florida's major varieties, CP 80-1743, is susceptible to this new disease and its future is questionable.

Another disease was found in LCP 85-384 in recent years, *sugarcane yellow leaf* disease (Grisham et al. 2001); although it appears now that the variety is tolerant to this disease. However, it is entirely possible that this new virus is also taking its toll on yield of this and other varieties.

In a continuing effort to lessen the dependence of the industry on one variety, the Louisiana variety development program has developed seven new high yielding varieties since 2003, namely, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, L 99-233, HoCP 00-950 and L 01-283. However, from the most recent variety survey, many growers are concentrating on planting four of these varieties, HoCP 96-540, L 97-128, L99-226 and L 99-233. It is too early to tell whether HoCP 00-950 or L 01-283 will be accepted by the industry. Hopefully, the industry learned a valuable lesson and will not succumb to the practice of planting only one or two varieties, even though they might appear to have superior yield performance when compared to other varieties. Monocultures were common to the Louisiana sugarcane industry prior to the introduction of interspecific hybrids in the 1920s. However, the Louisiana sugarcane industry can no longer afford to rely upon a single variety today as it did with LCP 85-384; therefore, we want to emphasize the need to plant several varieties to help to spread the risk of crop failure for any one variety.

Crop Summary for 2008. The 2008 sugarcane variety census shows that Louisiana producers have continued the switch to the newer varieties, especially HoCP 96-540 (44% of the planted area) and L 97-128 (17%) while dramatically decreasing the area planted to LCP 85-384 (91% in 2004 to 22% in 2008). Although field yields were somewhat disappointing for the 2008 crop, there were several reasons for the shortfall. For the most part, producers were very satisfied with the performance of the newer varieties as they realized that yields were compromised due to a significant drought during much of the summer in several areas of the belt, the impact of the two hurricanes (Gustav and Ike) on sugarcane growth and harvestabiltiy (with lodged cane there is a tendency for greater scrap losses in the field) and the extended dry weather conditions that reduced extraneous matter in harvested cane (lower extraneous material meant lower gross yields but better cane quality and a higher level of recoverable sugar per ton of cane). There was also approximately 30,000 acres of sugarcane that were flooded as a result of Hurricane Ike that caused lower yields of both tons of cane per acre and recoverable sugar per ton of cane.

Although rainfall was generally well distributed throughout the growing season, there were several areas of the state that experienced brief periods of drought during the summer that may have adversely affected cane and sugar yields in those areas. For the most part, there was below normal rainfall during the harvest season that helped to improve the quality of harvested

cane. Following the hurricanes, cane growth slowed dramatically due to excessive lodging and physiological shock to the plant. Also, after the storms there was an extended period of dry weather with unlimited sunlight that helped to improve maturity of the crop. Previous research had shown that given a variety with early maturity and high sucrose content, incident sunlight is the most important criteria for sugarcane maturity in Louisiana. Because of the lodged conditions of the crop, the usage of the chemical ripener glyphosate was reduced although approximately 50% of the total acres harvested were treated to help to improve the yield of recoverable sugar per ton of cane. However, with the lodged condition of the crop, it is expected that the response to the ripener was lessened. Another possible reason for the improved yield of recoverable sugar per ton of cane was the delayed start to the grinding season as a direct result of the two hurricanes. Many producers had little or no cane planted prior to the storms and with the crooked stalks, most of the cane was planted in September and October as planting efficiency was reduced. Most producers are unable to both plant and harvest their crops at the same time as the same personnel and equipment are used in the two operations.

Although cane and sugar yields were generally good throughout much of the sugarcane belt, producers reported lower profits because of the low price of sugar and the high input prices paid for fuel and fertilizer. Because of the high cost of fertilizer in general, many producers used less nitrogen in 2008 than was used in past years although recommendations have stressed that maximum yields of sugar per ton of cane and per acre could be achieved with lower rates of nitrogen. Undoubtedly, the lower rates of nitrogen helped to improve the maturity of the crop and increased the yield of recoverable sugar per ton of cane. Producers also applied less phosphorus and potassium in 2008 due to the high costs of these two fertilizer nutrients. Further, research data have showed that little or no response in yield of cane or sugar per acre could be expected when used even though soil tests indicated that there was an insufficient level of these nutrients in their soils. In an effort to reduce fuel costs, many producers operated their whole-stalk or “soldier” harvesters whenever possible and burned standing cane prior to harvest when harvested by the cane combine.

ACKNOWLEDGMENTS

We acknowledge the assistance of the county agents for soliciting the sugarcane variety information published in this survey. We also want to thank the sugarcane growers 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 (county), 2008.[12]

Bayou Teche region		River-Bayou Lafourche region		Northern region	
Parish	Acres	Parish	Acres	Parish	Acres
Acadia	1,500	Ascension	14,603	Avoyelles	8,954
				Evangeline	NAR
Calcasieu	2,279	Assumption	39,115	Pointe Coupee	30,790
Cameron	NAR				
Iberia	56,166	Iberville	32,510	Rapides	7,096
Jeff Davis	4,134	Lafourche	28,899	St. Landry	6,192
Lafayette	12,088	St. Charles	1,564	West Baton Rouge	13,969
St. Martin	30,930	St. James	23,881		
St. Mary	29,794	St. John	8,560		
Vermilion	28,161	Terrebonne	9,841		
Total	165,052	Total	158,973	Total	67,001
Total all regions: 391,026					

[1] Acreage based on information obtained in variety surveys from 21 parishes by the county agents in 2008

[2] NAR = No acres reported for parish

Table 2. Estimated statewide sugarcane acreage percentage by variety and crop, all regions, 2008.[1]

Variety	Plant-cane	First-stubble	Second-stubble	Third-stubble and older	Total
	----------%----------				
LCP 85-384	1	7	45	71	22
HoCP 85-845	1	1	2	3	1
HoCP 91-555	<1	<1	2	6	2
Ho 95-988	6	7	4	1	5
HoCP 96-540	52	53	35	13	44
L 97-128	19	26	11	4	17
L 99-226	12	3	<1	<1	5
L 99-233	6	2	<1	<1	2
HoCP 00-950	2	<1	<1	0	1
Other	1	1	1	2	1
Total acres Percent of total crop	121,826 31.2	124,747 31.9	105,189 26.9	39,264 10.0	391,026

[1] Based on information obtained in variety surveys from 21 parishes by county agents in 2008

Table 3. Estimated sugarcane distribution by region and crop, 2008.[1]

Crop	Bayou Teche	River-Bayou Lafourche	Northern	State Total
Plant-cane Area (acres) Percent (%)	51,710 31.3	47,785 30.0	22,331 33.3	121,826 31.2
First-stubble Area (acres) Percent (%)	53,466 32.4	49,838 31.4	21,443 32.0	124,747 31.9
Second-stubble Area (acres) Percent (%)	43,849 26.6	45,325 28.5	16,015 23.9	105,189 26.9
Third-stubble and older Area (acres) Percent (%)	16,027 9.7	16,025 10.1	7,212 10.8	39,264 10.0
Total area (acres) Percent (%)	165,052 42.2	158,973 40.7	67,001 17.1	391,026

[1] Based on information obtained in variety surveys from 21 parishes by county agents in 2008

Table 4. Estimated area planted to sugarcane in percent by variety and crop for the Bayou Teche region, 2008.[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	1	5	43	65	20
HoCP 85-845	1	<1	1	5	1
HoCP 91-555	<1	1	3	11	2
Ho 95-988	4	5	3	1	4
HoCP 96-540	56	57	36	13	47
L 97-128	19	26	12	3	18
L 99-226	11	3	1	<1	5
L 99-233	5	2	<1	<1	2
HoCP 00-950	1	<1	<1	0	<1
Others	2	1	2	2	1
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 8 parishes by county agents in 2008

Table 5. Estimated area planted to sugarcane in percent by variety and crop for the River/Bayou Lafourche region, 2008.[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	2	12	49	73	25
HoCP 85-845	1	1	2	2	1
HoCP 91-555	<1	1	2	3	1
Ho 95-988	6	6	3	1	5
HoCP 96-540	48	49	33	15	41
L 97-128	21	26	11	5	18
L 99-226	13	3	<1	<1	5
L 99-233	7	1	<1	<1	3
HoCP 00-950	2	<1	<1	0	<1
Others	<1	1	<1	1	1
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 8 parishes by county agents in 2008

Table 6. Estimated area planted to sugarcane in percent by variety and crop for the Northern region, 2008[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	<1	2	44	82	20
HoCP 85-845	4	3	1	0	3
HoCP 91-555	0	1	1	3	1
Ho 95-988	9	13	8	<1	9
HoCP 96-540	51	54	38	12	44
L 97-128	13	23	8	2	14
L 99-226	13	2	<1	0	5
L 99-233	7	1	<1	0	3
HoCP 00-950	2	<1	0	0	1
Others	1	1	<1	1	<1
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 5 parishes by county agents in 2008

Table 7. Louisiana sugarcane variety trends, by variety and years, all regions, 2004 - 2008[1]

	Area planted to sugarcane by variety and years (%)					
Variety	2004	2005	2006	2007	2008	1 yr. Change[2]
LCP 85-384	91	89	73	46	22	-24
HoCP 85-845	3	2	1	2	1	-1
HoCP 91-555	3	4	5	3	2	-1
Ho 95-988	<1	<1	2	4	5	+1
HoCP 96-540	1	3	14	31	44	+13
L 97-128	<1	1	4	12	17	+5
L 99-226	0	0	0	1	5	+4
L 99-233	0	0	0	<1	2	+2
HoCP 00-950	0	0	0	0	1	+1
Others	<1	<1	<1	1	1	NC
Totals	100	100	100	100	100	

[1] Based on annual variety surveys from 21 parishes by county agents, 2004-2008
[2] NC = no change

Figure 1. Parishes (counties) in Louisiana where sugarcane is grown.

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

Herman Waguespack
American Sugar Cane League

Kenneth Gravois and Keith Bischoff
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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. Herman Waguespack proposed that a yield trial be conducted to determine the effect of off-types on the sugar yield of L 01-283. We also wanted to determine if off-types 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 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 plantcane 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 of absence of off-type characteristics. Seven stalks were measured with a caliper to determine stalk diameter (mm). Each sample was then sent to the labortory 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 PDIFF option of PROC MIXED.

Table 1. Plantcane 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.

COMPARISON OF TISSUE CULTURE AND FIELD RUN SEED-CANE SOURCES

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Sugar Research Station

In the fall of 2005, seed-cane specialists with Helena Chemical Co. contacted the sugarcane breeders from the LSU AgCenter to conduct yield trials comparing their tissue culture seed-cane product (SugarTech) to field-run seed-cane. We agreed to do conduct field trials at no expense to the company.

Yield trials were planted at the LSU AgCenter's Sugar Research Station on September 13, 2005 (Trial I), September 28, 2006 (Trial II), and September 18, 2007 (Trial III). Each 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. SugarTech tissue culture seed-cane was supplied by their seed-cane specialists. Breeders at the AgCenter supplied the field-run seed-cane source, which was taken from a seed increase that had been heat treated the previous year. In Trial 1, the varieties tested were HoCP 91-555 and L 97-128. The varieties tested in Trial II were HoCP 96-540, L 99-226, and L 99-233. The varieties tested in Trial III were Ho 95-988, HoCP 96-540 (two different tissue culture sources), L 99-226, and L 99-233.

Standard cultural practices were followed during all growing seasons. Millable stalk counts were made in early August of each year and were used to estimate stalk population (#/acre). Trial I was harvested on 12/8/2006 as plantcane, 12/7/2007 as first stubble, and 12/12/2008 as second stubble. Trial II was harvested on 12/5/2007 as plantcane and 12/12/2008 as first stubble. Trial III was harvest on 12/12/2008 as plantcane. Plots were combine harvested and weighed to determine cane yield (tons/acre). A ten-stalk sample was hand-cut out of each plot and weighed to determine stalk weight (lbs) and sent to the laboratory to determine sucrose content and fiber content. In 2007 and 2008, samples were analyzed via NIR technology (SpectraCane). In some years, five stalks were measured with a caliper to determine stalk diameter (mm). 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; variety and seed-cane source were considered fixed effects. 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 PDIFF option of PROC MIXED.

Table 1. Field trials conducted at the Sugar Research Station in St. Gabriel, Louisiana comparing field run sugarcane seed sources with tissue culture SugarTech seed sources†.

Variety	Seed Source	Sugar Yield lbs/ac	Cane Yield tons/ac	Sugar Content lbs/ton	Stalk Weight lbs.	Stalk Population # per Acre	Stalk Diameter mm	Fiber %
			Plantcane – 2006					
HoCP91-555	Field Run	8736	35.2	249	2.14	39527	20.01	
HoCP91-555	Sugar Tech	7801	31.0 -	252	1.90	45930 +	18.49 -	
L97-128	Field Run	12937	51.6	252	2.67	34535	21.27	
L97-128	Sugar Tech	10406 -	43.0 -	242	2.25 -	42854 +	19.55 -	
			First Stubble – 2007					
HoCP91-555	Field Run	8018	32.8	246	2.09	31388		
HoCP91-555	Sugar Tech	9137	36.0	253	1.69	42603 +		
L97-128	Field Run	11660	46.9	249	2.75	34109		
L97-128	Sugar Tech	9771 -	41.2 -	237	1.84 -	44783 +		
			Second Stubble – 2008					
HoCP91-555	Field Run	5890	23.3	252	1.84	25456	20.9	11.9
HoCP91-555	Sugar Tech	6076	24.8	245	1.60	31351	19.7	12.1
L97-128	Field Run	9888	39.3	251	2.40	32681	22.6	12.6
L97-128	Sugar Tech	8045	33.9	237	1.78 -	38355	19.4 -	12.2

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

Table 2. Field trials conducted at the Sugar Research Station in St. Gabriel, Louisiana comparing field run sugarcane seed sources with tissue culture SugarTech seed sources†.

Plantcane - 2007

Variety	Seed Source	Sugar Yield lbs/ac		Cane Yield tons/ac		Sugar Content lbs/ton	Stalk Weight lbs.		Stalk Population # per Acre	Fiber %	Stalk Diameter mm
HoCP96-540	Field Run	8964		37.3		240	3.09		24142		
HoCP96-540	Sugar Tech	11100	+	46.2	+	240	3.08		30000		
L99-226	Field Run	9581		39.3		244	3.72		21129		
L99-226	Sugar Tech	8408	-	35.3	-	238	3.01	-	23455		
L99-233	Field Run	8798		38.8		227	2.45		31673		
L99-233	Sugar Tech	8481		35.9	-	236	1.91	-	37592		

First Stubble - 2008

HoCP96-540	Field Run	8211		33.2		247	2.79		25150	11.4	21.9
HoCP96-540	Sugar Tech	11126		43.5		256	2.60		33642	11.8	22.0
L99-226	Field Run	8872		33.8		263	3.09		21883	12.0	24.0
L99-226	Sugar Tech	7637		29.8		256	2.67		22378	12.0	23.1
L99-233	Field Run	9898		41.0		241	2.37		35659	13.1	20.5
L99-233	Sugar Tech	7245	-	31.0		234	1.89		33027	13.9	18.8

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

Table 3. Plantcane field trial conducted in 2008 at the Sugar Research Station in St. Gabriel, Louisiana comparing field run sugarcane seed sources with tissue culture SugarTech seed sources†.

Variety	Seed Source	Sugar Yield lbs/ac	Cane Yield tons/ac	Sugar Content lbs/ton	Stalk Weight lbs.	Stalk Population # per Acre	Fiber %	Stalk Diameter mm
Ho95-988	Field Run	6830	27.1	252	2.33	23447	10.5	23.5
Ho95-988	Sugar Tech	5403	21.9	247	1.95	22888	11.6 +	22.1
HoCP96-540	Field Run	6339	25.4	249	2.58	19696	10.8	21.6
HoCP96-540	SugarTech - FL	6348	25.6	248	2.15	24232	12.0 +	20.7
HoCP96-540	SugarTech - HI	6295	24.7	255	2.30	21527	10.8	21.9
L99-226	Field Run	7613	28.9	262	2.99	19551	11.5	25.7
L99-226	Sugar Tech	6462	26.1	248 -	2.48 -	21272	10.5 -	22.9 -
L99-233	Field Run	6445	27.3	236	2.19	24851	12.9	21.7
L99-233	Sugar Tech	6139	26.0	236	1.98	26564	12.9	20.0

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

STARCH IN SUGARCANE PROCESSING AND PROSPECTS OF BREEDING FOR LOW STARCH CONTENT IN SUGARCANE

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Starch is a sugarcane impurity that adversely affects the quantity and quality of sugar processes and products. The increased production of combine and green harvested sugarcane has increased delivery of starch to sugarcane factories. Starch occurs as granules composed of amylose and amylopectin polysaccharides. Starch can reduce crystallization and centrifugation rates, occlude into the sucrose crystal, increase molasses production, reduce filterability and affination of raw sugars, and impede refinery decolorization processes. The behavior of starch granules on hydration and heating directly influences processing. The enzyme α-amylase used to hydrolyze starch in the factory is expensive and not always efficient.

The deployment of low starch cultivars would be a more preventative, economical, and efficient solution (Fig 1). We report on the variations in starch content among wild species germplasm and clones used in breeding sugarcane and speculate on the prospects of breeding for low starch content in sugarcane. Significant differences exist in starch levels among *Saccharum* and allied species and clones within these species (Tables 1and 2). *Saccharum* species can be grouped into high (*S. bengalense*, *Erianthus* and *S. spontaneum*), medium (*S. barberi*, *S. sinense* and *S. robustum*) and low starch (*S. officinarum* and *Miscanthus*). The cultivated species generally produce less starch than their wild relatives; thus low starch in sugarcane may be advantageous for sucrose production. The normal distribution in starch for *S. spontaneum*, a high starch species, means low starch clones can be selected for introgression (Fig 2). When cultivars were crossed to *S. spontaneum* and the F_1s backcrossed to cultivars, the starch content ranked as cultivars < BC_1 < F_1 clones (Table 3). Moderate to high broad sense heritability estimates for starch content indicate the potential to select for low starch genotypes among cultivars or introgression lines (Table 4).

Environmental conditions such as freezing temperature tended to decrease starch content in sugarcane. Low starch clones consistently produced lower and more stable starch across replications, years and locations compared to high starch clones (Figures 3, 4 and 5). From a breeding standpoint, cultivars developed or selected for low levels of starch are likely to produce relatively low and stable starch content over a wide range of conditions. To avoid increasing selection traits for breeding programs, future research to lower starch in cultivars should focus on selecting parents with low starch in introgression and crossing programs. Low starch clones are stable and consistently produce low starch, which warrants further investigation into the potential of scheduling of cultivars based on their starch content. It is likely to be more beneficial to harvest low starch cultivars early and high starch cultivars later, when their starch content would have declined due to decreasing temperatures. This approach may have the overall effect of lowering the amount of starch delivered to the factory and can potentially lower the costs associated with high starch in sugarcane juice.

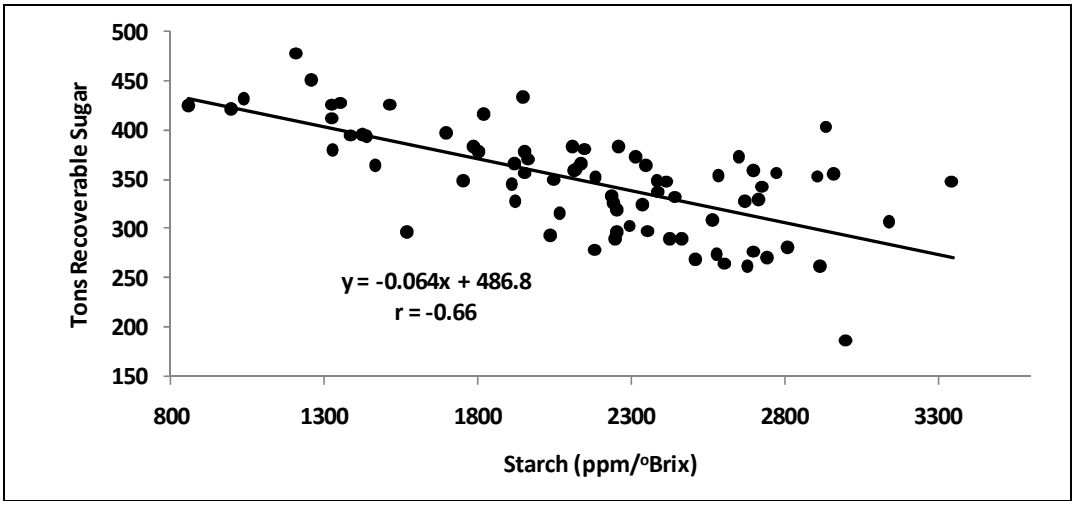

Figure 1. Tons recoverable sugar plotted against starch content.

Table 1. Starch content (ppm/°Brix) among *Saccharum* species.

Species	Number of clones	Starch (ppm/°Brix)	Standard Deviation	% of *Saccharum officinarum*
Saccharum barberi	13	1914	121	131
Saccharum bengalense	1	2581	53	176
Erianthus species	1	2454	11	168
Miscanthus species	1	1537	332	105
Saccharum officinarum	9	1464	270	100
Saccharum robustum	11	1748	461	119
Saccharum sinense	8	1929	530	131
Saccharum spontaneum	5	2349	899	160

Table 2. The mean starch for *Saccharum* hybrids, *S. barberi*, *S. officinarum*, *S. robustum* and *S. spontaneum* clones sampled from the wild species collections growing at the Sugarcane Field Station, Canal Point, Florida.

Species	Number Of clones	Starch		
		Mean	Std Dev	% of *S. officinarum*
S. barberi	7	476.55	289.51	381
Saccharum hybrids	14	319.86	244.46	256
S. officinarum	1	124.97	9.28	100
S. sinense	36	380.19	406.67	304
S. spontaneum	4	737.01	340.19	590

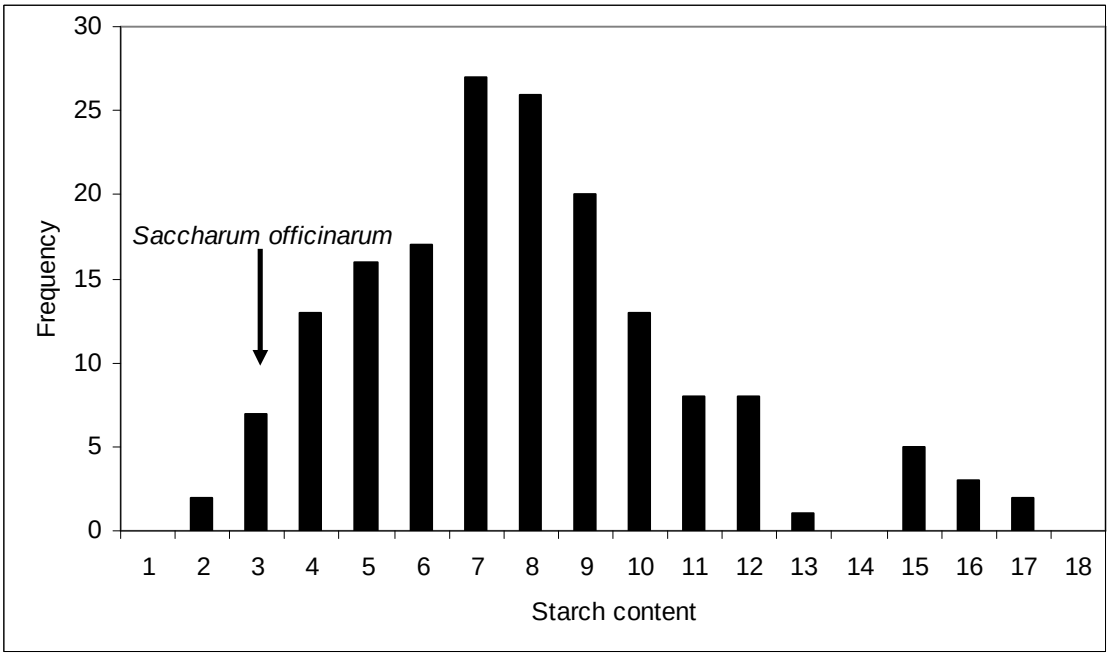

Figure 2. Frequency distribution of starch content (ppm/^{o}Brix) among 52 *Saccharum spontaneum* and one *S. officinarum* accessions. The corresponding values for starch content shown here in parenthesis were as follows: 1 (0 to 500), 2 (501 to 1000), 3 (1001 to 1500), 4 (1501 to 2000), 5 (2001 to 2500), 6 (2501 to 3000), 7 (3001 to 3500), 8 (3501 to 4000), 9 (4001 to 4500), 10 (4501 to 5000), 11 (5001 to 5500), 12 (5501 to 6000), 13 (6001 to 6500), 14 (6501 to 7000), 15 (7001 to 7500), 16 (7501 to 8000), 17 (8001 to 8500), 18 (8501 to 9000).

Table 3. Starch content (ppm/^{o}Brix) among cultivars, F_1 and BC_1 clones.

Entry	Number of clones	Starch (ppm/^{o}Brix)	Standard error
Cultivars	6	1264	75
BC1	29	1944	38
F1	41	2436	34

Table 4. Variance components and broad sense heritability estimates for starch content in different sugarcane populations.

Population parameters	Population		
	SESpop	Larta	St Gabriel
Population and trial description	One hundred twenty clones derived from a *S. officinarum x S. spontaneum* cross evaluated in a single environment using three replicates.	Seventy clones of F_1 and BC_1 origin derived from crosses between cultivars and *S. spontaneum* evaluated over 2 years in a single environment using 3 replicates.	19 varieties planted at three locations and each location harvested on a different date
σ_g^2	7754	127786	9422.26
σ_{yv}^2	N.A.	31372	N.A.
σlv^2	N.A.		8441.73
σ_e^2	7629.72	85805	225.23
Heritability	$\sigma_g^2/(\sigma_g^2+\sigma_{e/r}^2)$	$\sigma_g^2/(\sigma_g^2+\sigma_{yv/y}^2+\sigma_{e/ry}^2)$	$\sigma_g^2/(\sigma_g^2+\sigma_{lv/l}^2+\sigma_{e/rl}^2)$
Heritability	75.3	80.9	76.8

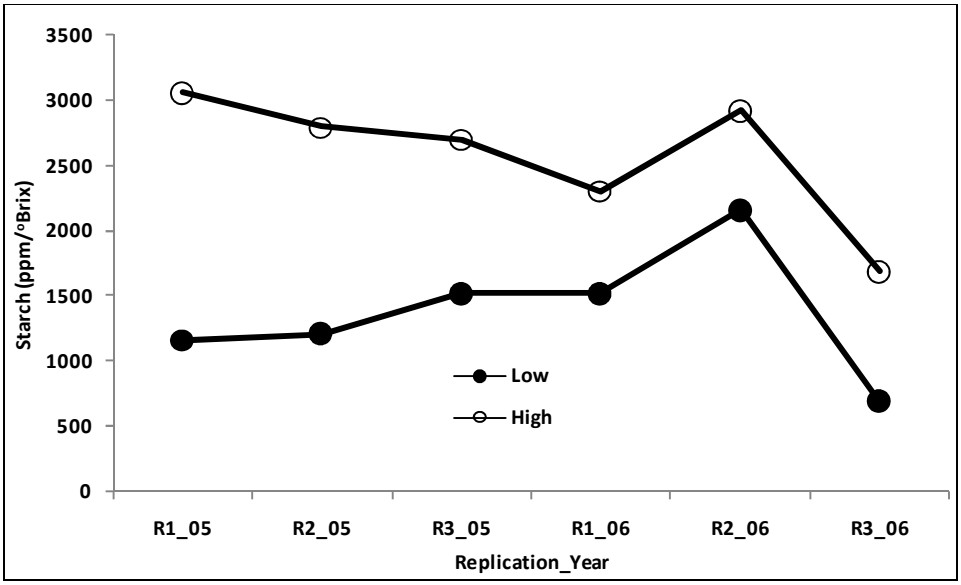

Figure 3. The mean starch content of the highest 10% and lowest 10% of clones in replications 1, 2, 3 for crops sampled in 2005 and 2006. The mean starch content for each of 76 clones in the study was derived by averaging starch content over three replicates and two crop years.

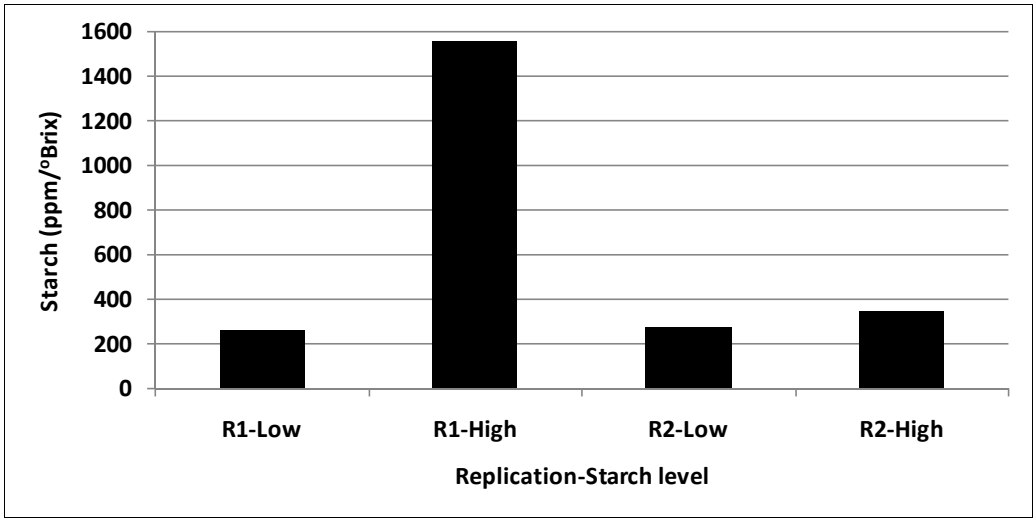

Figure 4. Starch content of the high (10%) and low (10%) starch clones sampled before a freeze R1 (Replication 1) and after the freeze R2 (Replication 2) at Houma, Louisiana. The mean starch content for each of 300 clones in the study was derived by averaging starch content over the two replicates.

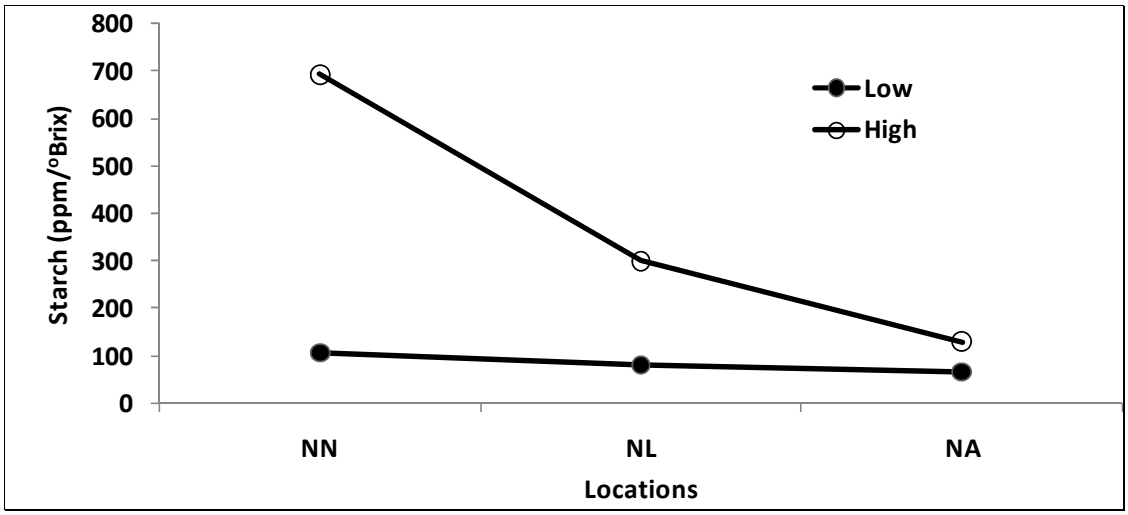

Figure 5. Starch content of the high and low starch clones sampled at locations NN, NL and NA at Sugar Research Station, Louisiana, U.S. The mean starch content for each of 19 clones in the study was derived by averaging starch content over the two replicates and three locations.