AN OVERVIEW OF 2009 ACTIVITIES IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

Kenneth Gravois
Sugar Research Station

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 2009.

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	Selection, 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 September 10th. On September 1, 2009, repairs due to Hurricane Gustav were completed to the crossing house and the first cross was made that day. Seed inventories were low due to limited

crossing in 2008. Leading up to flowering, temperatures during initiation were conducive to flowering, which resulted in exceptionally good flowering in 2009. The first cross was made on September 1, 2009 with a total of 635 crosses for the year. Germination tests were conducted in November and December, 2009. Seed production for 2009 was excellent based on germination tests, with a record 842,055 true seed produced.

A total of 76,213 seedlings from 132 crosses of the 2004 (31), 2005 (8), 2006 (41), 2007 (17), and 2008 (48) crossing series were planted in the field in the April of 2009. A total of 73,953 seedlings survived transplanting. In addition, seedlings were also planted in a cross appraisal trial. Selection will be carried out in 2010 when these seedlings are in the first stubble crop.

In the fall of 2009, individual selection was practiced on 65,348 first-stubble seedlings that represented the 2007 crossing series. Family selection (top 92.1% of the population representing 116 crosses in 2009) was utilized based on information from the cross appraisal study and assessment of the seedling populations. Seedling selection was done in early September with fairly erect crop conditions). A total of 1,909 clones (2.9% selection rate) were selected and planted to establish the first-line trials. Incidence of smut and rust were high in seedling populations. After field selection, these single stool selections were evaluated for Brix.

Established procedures were used to advance superior clones of the 2006 crossing series from first-line trials to second-line trials (352 clones) and of the 2005 crossing series from second-line trials to increase trials (166 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 in 2009 was extensive due high rainfall in September and October. Pith levels were relatively low; smut and rust levels were relatively high.

The best 35 experimental varieties from the 2004 crossing series were assigned permanent variety designations in the fall of 2009. Newly assigned varieties were entered in replicated nursery trials at two locations (Sugar Research Station and USDA-ARS Ardoyne Farm). The nursery at the Iberia Research Station could not be planted in 2009 due to wet conditions. “L”, “HoCP, or Ho” varieties of the 2009 assignment series were exchanged in the fall of 2009 to plant cooperative infield and nursery tests the following year.

Experimental varieties were replanted in infield and nursery tests (7 varieties of the 2008 assignment series), introduced to the outfield tests (two varieties of the 2007 assignment series), and planted in outfield tests (experimental varieties L 03-371, HoCP 04-838, HoCP 05-902, Ho 05-961, Ho 06-537, and Ho 06-563). Breeding personnel assisted Dr. Jeff Hoy and Dr. Gene Reagan to enter experimental varieties in the sugarcane smut and sugarcane borer resistance trials, respectively.

In 2009, rust continued to be seen in high levels in LCP 85-384 and Ho 95-988 throughout the growing season, especially in the plant-cane crop. Rust levels also seemed to be increasing in L 99-226 and L 01-283. Smut and leaf scald were prevalent in 2009. 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 2009, and bored internodes were few.

The growing conditions during the summer were only fair because of dry weather. Heavy rainfall in early September and October delayed some plantings and made harvesting the crop difficult. November weather was drier, but rains resumed in December.

The decision regarding the further testing and seed increase of candidate varieties was determined at the Variety Advancement Committee meeting. The 2009 meeting was held on August 7th at the American Sugar Cane League office in Thibodaux, Louisiana.

On August 28, 2009, the representative of the Variety Release Committee decided to release L 01-299. The release was made without a distribution of seed from the League's secondary increase stations.

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

Table 1. Number of "L" varieties by assignment series for each stage of testing in 2009.

Assignment Series	Stage of Testing	Number of experimental varieties
L 2003	Outfield – Replanted and harvested as plantcane, first stubble, and second stubble	1
L 2004	Outfield – Replanted and harvested as plantcane and first stubble Off-station nurseries and infield – 3rd stubble harvested	0
L 2005	Outfield – Replanted and harvested as plantcane On-station nurseries - 3rd stubble harvested Off-station nurseries and infield – 2nd stubble harvested.	0
L 2006	Outfield – Planted On-station nurseries - 2nd stubble harvested Off-station nurseries and infield - 1st stubble harvested	0
L 2007	Outfield - Introduced On-station nurseries - 1st stubble harvested Off-station nurseries and infield - plantcane harvested.	2
L 2008	On-station nurseries - plantcane harvested Off-station nurseries and infield planted	7
L 2009	Assignment On-station nurseries planted	35

2009 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

Dexter Fontenot and Kenneth Gravois
Sugar Research Station

Photoperiod and crossing are the first stages in the LSU Agcenter's Sugarcane Variety Development Program. For the release of new varieties to be productive, 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 viable 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.

The crossing house at the Sugar Research Station was rendered useless due to Hurricane Gustav in 2008. Repairs were completed in early 2009 that replace glass panes with insulated acrylic panels that had UV blocking capabilities. This allows for much cooler conditions within the crossing house and worked exceptionally well during the 2009 crossing season.

Cuttings of potential parent varieties used for the 2009 crossing season were planted in the fall of 2008. After establishing the plants from the cuttings, the plants were fertilized biweekly with a 200 ppm solution of Peter's 20-20-20. In late January 2009, the cuttings were then transferred to can culture. In April, the cans were moved from the greenhouse to the photoperiod rail carts. Soluble fertilizer applications were continued on a biweekly basis. Fertilization was discontinued in early- to mid-May to condition the plants for floral induction. Two additional applications of dry granular fertilizer (8-24-24, one Tbs/can) were applied to the cans during July and August. A reduced nitrogen ratio makes a higher C:N ratio, which is more desirable for the 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 34 consecutive days of 12 ½ hours of constant day length. After the initial constant photoperiod days, day length was shortened by one minute per day. Treatments differed by the number of days with constant day length and the date on which the decline of photoperiod was initiated. All photoperiod treatments were discontinued on September 10, 2009, when natural day length was 12 ½ hours and decreasing.

Photoperiod treatments require pulling the carts out of the photoperiod bays at their appropriate time each morning to receive full sunlight. On certain days when the weather was severe, the carts were pushed back into the photoperiod chambers to protect the parental varieties

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

Flowering percentage of total stalks were average on the photoperiod carts in 2009 (Tables 1-2). Total flowering percentage for the six bays was 60%, which was comprised from 1,543 stalks of which 932 produce tassels. Although the flowering percentage was excellent in 2009, successful seed production is comprised of a multitude of factors. An adequate germination rate provided the Variety Development Program with sufficient seed production. In 2009 as in previous years, seedlings were produced from hybridization techniques that used sugarcane yield components, borer resistance, and disease resistance as some of the criteria to determine which breeding clones were most compatible.

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

The flowering season in 2009 began during the last week of August. The normal time frame for first flowering can be as early as the last week of August or as late as the third week of September. There can be a slight deviation for first flower due to temperature during the photoperiod induction phase, varietal characteristics, and the photoperiod treatments. Crossing began on September 1 and ended on October 30, 2009. A total of 932 tassels of 83 clones were used to produce 635 crosses. Germination rate was estimated based on the germination of 0.5 g of seed that was germinated under greenhouse conditions in early December. A total of 842,160 viable seed were produced in 2009. A total of 512,800 seed were produced from bi-parental crosses, and 228,002 seed were produced from polycrosses (Table 3).

Table 1. Summary of the 2009 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	282±1	98	58
1	B	16-Jun	44	30-Jul	72	87	281±1	95	47
1	C	16-Jun	44	30-Jul	72	87	275±1	83	59
2	A	16-Jun	34	30-Jul	72	87	280±1	96	61
2	B	16-Jun	34	30-Jul	72	87	281±2	90	44
2	C	16-Jun	34	30-Jul	72	87	279±2	80	28
3	A	30-May	37	6-Jul	87	102	265±1	86	83
3	B	30-May	37	6-Jul	87	102	258±2	80	70
3	C	30-May	37	6-Jul	87	102	256±2	85	65
4	A	30-May	37	6-Jul	87	102	262±1	93	80
4	B	30-May	37	6-Jul	87	102	256±1	91	59
4	C	30-May	37	6-Jul	87	102	259±2	79	54
5	A	30-May	36	10-Jul	82	97	264±1	79	76
5	B	30-May	36	10-Jul	82	97	265±2	84	50
5	C	30-May	36	10-Jul	82	97	261±2	79	58
6	A	30-May	41	10-Jul	82	97	268±2	81	68
6	B	30-May	41	10-Jul	82	97	263±1	83	66
6	C	30-May	41	10-Jul	82	97	265±2	81	60

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----------								
83	324	272	1543	932	4.76±.98	3.42±1.43	5.21±2.15	71.77±11.13

† Based upon cans with tassels.
‡ Rating of 1 to 4 being male and 5 to 9 being female.
§ Days from decline date to flowering.

Table 3. Summary of 2009 crossing and seed production.

Type of Cross	Crosses	Sum of Seed Production	Mean Seed Production Per Cross	Mean Seed Production Per Female Tassel	Mean Germination Per Gram Seed
----------Number----------					
Biparental	411	512,800	1248±1517	1248±1517	83±71
Polycross	132	228,002	1727±1918	1727±1918	95±76
Self	92	101,358	1101±1750	1101±1750	68±82
Total	635	842,160	1326±1653	1326±1653	88±73

Table 4. Varietal flowering summary in 2009 in the photoperiod bays.

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
CP83-644	38	271	95±4	7	20	9	45
HO01-564	40	259	78±3	6±1	11	10	91
HO05-961	38	266	91±3	6±1	28	12	43
HO06-523	40±1	259	84±2	4±1	15	10	67
HO06-530	39±1	273	86±2	7±1	14	7	50
HO06-537	39±1	266	87±2	7±1	12	8	67
HO06-562	41	261	76±1	6	30	22	73
HO06-563	37±1	254	71±1	6±1	9	9	100
HO07-604	42±1	282	91	8	9	1	11
HO07-612	43	294	83	8	6	1	17
HO07-613	40±1	261	87±10	5±1	17	4	24
HO07-617	40±1	275	75±5	8	16	4	25
HO95-988	39±1	261	75±1	4	19	16	84
HOCP00-930	40±1	257	75±4	6±1	8	6	75
HOCP00-950	39	254	69±1	8	60	54	90
HOCP01-517	39±1	266	82±2	4	15	9	60
HOCP01-523	39±1	257	81±5	4±1	22	6	27
HOCP02-610	40±1	254	70±1	7	24	21	88
HOCP02-618	40±1	261	82±7	4±1	14	5	36
HOCP02-623	38	259	75±1	6	17	14	82
HOCP04-838	40	244	61±1	7	46	38	83
HOCP04-847	39±1	268	83±3	7	25	10	40
HOCP05-902	40±1	261	73±2	8	16	7	44
HOCP05-904	38±1	259	80±5	3	10	5	50
HOCP05-918	38±1	261	80±2	5±1	9	6	67
HOCP07-600	43	.	.	.	5	.	.
HOCP07-615	36	257	75±2	5±1	4	4	100
HOCP85-845	39±1	261	81±5	4±1	24	6	25
HOCP91-552	40±1	244	57	3	20	17	85
HOCP92-618	39±1	254	77±5	5±1	19	10	53
HOCP92-624	40±1	246	62±2	7	24	23	96
HOCP92-648	39±1	254	68±1	8	17	9	53
HOCP96-540	40	254	72±1	4	57	49	86
HOCP96-561	40±1	261	79±2	7±1	17	16	94
HOCP97-606	41±1	282	94±3	8±1	7	2	29
HOCP97-609	40±1	259	72±1	3	13	6	46
L01-283	39	261	84±1	4	62	40	65
L01-299	39	248	65±1	3	70	61	87
L01-315	42±1	268	67±3	7	9	5	56
L02-325	40	.	.	.	11	.	.
L03-371	39	303	112	8	20	1	5
L05-448	40±1	257	70±2	5±1	21	16	76
L05-457	41±1	244	61±1	8	29	28	97
L06-001	37	248	68±1	4	16	15	94
L06-038	40±1	251	67±1	4	27	22	81
L07-043	38±1	282	95	8	7	1	14

Table 4. Continue.

Variety	Days of Constant Photoperiod	First Flower Date	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L07-068	41	.	.	.	10	.	.
L08-075	40	.	.	.	5	.	.
L08-076	42	254	68±3	5±1	11	8	73
L08-077	42	299	108	8	11	2	18
L08-078	43	282	71	7	6	1	17
L08-079	42±1	282	90±1	8	9	3	33
L08-080	43	.	.	.	5	.	.
L08-081	43	.	.	.	6	.	.
L08-082	43	275	66±1	8	4	4	100
L08-084	42±1	261	73±4	8	8	4	50
L08-085	43	275	71±3	6	4	3	75
L08-086	42	.	.	.	12	.	.
L08-088	43	.	.	.	6	.	.
L08-089	43	268	66±7	3	5	5	100
L08-090	40±1	243	58±2	7	10	4	40
L08-091	43	.	.	.	5	.	.
L08-092	43	.	.	.	11	.	.
L08-093	40±1	299	90±1	5±1	12	4	33
L08-094	43	282	75±4	7±1	5	2	40
L08-095	43	273	65±3	6±2	10	2	20
L94-424	40	.	.	.	13	.	.
L94-426	40±1	257	75±1	6±1	19	9	47
L94-428	38	254	76±3	4	20	12	60
L94-432	40	259	81±6	4±1	10	8	80
L94-433	40±1	268	86±4	7±1	16	6	38
L97-128	41	248	66±1	7	43	33	77
L98-207	39	248	77±4	5±1	41	11	27
L98-209	40±1	251	71±4	8	17	4	24
L99-226	40	248	67±1	3	61	46	75
L99-233	40	244	64±1	3	65	56	86
LCP81-010	40±1	246	66±1	7	25	20	80
LCP85-384	39	254	77±2	3	57	33	58
LCP86-454	38±1	259	78±5	4±1	13	3	23
N-27	37	254	72±3	7	15	7	47
TUCCP77-042	42	266	80±1	7±1	10	9	90
US01-040	39±1	259	75±2	4±1	9	7	78
US08-9504	40	266	75	8	3	1	33

Table 5. Crosses and seed made in 2009 sorted by cross number.

Cross	Female	Male	Seed
XL09-001	L05-457	L99-233	2148
XL09-002	HOCP04-838	HOCP91-552	2189
XL09-003	LCP81-010	L99-233	5420
XL09-004	HOCP92-624	L99-233	1551
XL09-005	HOCP04-838	L99-233	3009
XL09-006	L99-233	L99-233	1919
XL09-007	HOCP04-838	HOCP91-552	1552
XL09-008	HOCP92-624	HOCP91-552	4208
XL09-009	L05-457	HOCP91-552	2102
XL09-010	HOCP91-552	HOCP91-552	3335
XL09-011	HOCP92-624	L99-233	2622
XL09-012	HOCP04-838	L99-233	1133
XL09-013	L05-457	L99-233	5844
XL09-014	L05-457	HOCP91-552	2140
XL09-015	HOCP04-838	HOCP91-552	4948
XL09-016	L06-001	L01-299	462
XL09-017	HOCP04-838	L01-299	1238
XL09-018	LCP81-010	L01-299	1510
XL09-019	L05-457	L01-299	687
XL09-020	L01-299	L01-299	39
XL09-021	HOCP92-624	L98-207	4917
XL09-022	LCP81-010	L98-207	0
XL09-023	L97-128	L98-207	1470
XL09-024	L98-207	L98-207	1060
XL09-025	HOCP04-838	L99-226	411
XL09-026	L97-128	L99-226	491
XL09-027	LCP81-010	L99-226	1589
XL09-028	L99-226	L99-226	801
XL09-029	L97-128	L99-233	411
XL09-030	LCP81-010	L99-233	1943
XL09-031	HOCP04-838	L99-233	1758
XL09-032	L99-233	L99-233	1017
XL09-033	HOCP04-838	L01-299	743
XL09-034	HOCP92-624	L01-299	1568
XL09-035	L97-128	L01-299	570
XL09-036	HOCP04-838	09P1	2205
XL09-037	HOCP92-624	09P1	5205
XL09-038	L01-299	09P1	2721
XL09-039	L99-226	09P1	1927
XL09-040	L99-233	09P1	344
XL09-041	HOCP04-838	L01-299	1771
XL09-042	HOCP92-624	L01-299	1248
XL09-043	L05-457	L01-299	1889
XL09-044	L08-090	L01-299	1653
XL09-045	L01-299	L01-299	103
XL09-046	HOCP04-838	L06-038	667
XL09-047	HOCP92-624	L06-038	1216
XL09-048	L97-128	L06-038	322
XL09-049	L06-038	L06-038	0
XL09-050	L06-001	L99-226	268
XL09-051	L98-209	L99-226	867
XL09-052	L05-457	L99-226	1688
XL09-053	HOCP04-838	L99-226	614
XL09-054	L99-226	L99-226	324
XL09-055	L06-001	L99-233	195
XL09-056	HOCP04-838	L99-233	645
XL09-057	L97-128	L99-233	1457
XL09-058	L99-233	L99-233	2717
XL09-059	L01-299	09P2	1610
XL09-060	L97-128	09P2	840
XL09-061	L99-226	09P2	2306
XL09-062	L99-233	09P2	713
XL09-063	L01-299	09P3	1552
XL09-064	L97-128	09P3	894
XL09-065	L99-226	09P3	372
XL09-066	L99-233	09P3	5380
XL09-067	HO06-563	HOCP96-540	1549
XL09-068	HOCP00-950	HOCP96-540	1538
XL09-069	HOCP92-618	HOCP96-540	548
XL09-070	HOCP92-624	HOCP96-540	2430
XL09-071	HOCP96-540	HOCP96-540	9168
XL09-072	HOCP00-950	L01-299	3663
XL09-073	HOCP92-618	L01-299	1266
XL09-074	HOCP92-624	L01-299	1430
XL09-075	HOCP92-648	L01-299	1138
XL09-076	L01-299	L01-299	202
XL09-077	LCP81-010	L06-001	3383
XL09-078	L97-128	L06-001	262
XL09-079	HOCP00-950	L06-001	2734
XL09-080	HOCP04-838	L06-001	964
XL09-081	N-27	L06-001	0
XL09-082	HOCP02-610	L06-001	4011
XL09-083	L06-001	L06-001	104
XL09-084	L97-128	L06-038	195
XL09-085	HOCP04-838	L06-038	1574
XL09-086	HOCP00-950	L06-038	1152
XL09-087	L06-038	L06-038	13
XL09-088	HOCP00-950	L94-428	702
XL09-089	HOCP04-838	L94-428	1159
XL09-090	HOCP92-648	L94-428	462
XL09-091	L08-076	L94-428	110
XL09-092	N-27	L94-428	4901
XL09-093	L94-428	L94-428	163
XL09-094	LCP81-010	L99-226	16112
XL09-095	HOCP00-950	L99-226	3864
XL09-096	L08-076	L99-226	496

Table 5. Continue.

Cross	Female	Male	Seed
XL09-097	N-27	L99-226	6765
XL09-098	L99-226	L99-226	732
XL09-099	HOCP00-950	L99-233	1278
XL09-100	HOCP96-540	L99-233	9409
XL09-101	HOCP04-838	L99-233	802
XL09-102	L99-233	L99-233	3914
XL09-103	HO06-563	LCP85-384	1210
XL09-104	HOCP00-950	LCP85-384	591
XL09-105	L97-128	LCP85-384	387
XL09-106	LCP85-384	LCP85-384	739
XL09-107	HOCP96-540	09P4	5091
XL09-108	L01-299	09P4	1100
XL09-109	L06-001	09P4	575
XL09-110	L06-038	09P4	76
XL09-111	L99-226	09P4	1665
XL09-112	L99-233	09P4	2485
XL09-113	HOCP96-540	09P5	11165
XL09-114	L01-299	09P5	942
XL09-115	L06-038	09P5	265
XL09-116	L99-226	09P5	2736
XL09-117	L99-233	09P5	2128
XL09-118	L94-426	L06-001	1809
XL09-119	L05-448	L06-001	1894
XL09-120	HOCP02-610	L06-001	3733
XL09-121	HO06-563	L06-001	1723
XL09-122	L06-001	L06-001	141
XL09-123	HOCP00-950	HOCP01-523	22
XL09-124	HO06-563	HOCP01-523	915
XL09-125	HOCP02-610	HOCP01-523	2940
XL09-126	HOCP92-624	HOCP01-523	744
XL09-127	HOCP01-523	HOCP01-523	1123
XL09-128	LCP81-010	HOCP96-540	127
XL09-129	HOCP97-609	HOCP96-540	5466
XL09-130	HOCP00-950	HOCP96-540	652
XL09-131	HO06-563	HOCP96-540	2238
XL09-132	HOCP96-540	HOCP96-540	8567
XL09-133	L05-457	L99-226	1720
XL09-134	HOCP00-950	L99-226	212
XL09-135	HO06-563	L99-226	950
XL09-136	L99-226	L99-226	94
XL09-137	HOCP00-930	09P6	1833
XL09-138	HOCP07-615	09P6	91
XL09-139	HOCP92-618	09P6	4580
XL09-140	L01-299	09P6	1598
XL09-141	L99-226	09P6	21
XL09-142	L99-233	09P6	3245
XL09-143	LCP85-384	09P6	3692
XL09-144	LCP86-454	L06-001	2505
XL09-145	LCP81-010	L06-001	2745
XL09-146	HOCP02-610	L06-001	2766
XL09-147	HOCP92-624	L06-001	1437
XL09-148	HOCP00-950	L06-001	77
XL09-149	L06-001	L06-001	53
XL09-150	L08-076	L05-448	87
XL09-151	L06-038	L05-448	51
XL09-152	HOCP92-648	L05-448	208
XL09-153	HOCP92-618	L05-448	3470
XL09-154	HOCP00-950	L05-448	273
XL09-155	L05-448	L05-448	711
XL09-156	HOCP92-648	LCP85-384	208
XL09-157	HOCP01-523	LCP85-384	2301
XL09-158	HOCP00-950	LCP85-384	1728
XL09-159	HO06-523	LCP85-384	1360
XL09-160	LCP85-384	LCP85-384	701
XL09-161	LCP81-010	HOCP96-540	1729
XL09-162	HOCP02-610	HOCP96-540	2064
XL09-163	HOCP00-950	HOCP96-540	193
XL09-164	HOCP00-930	HOCP96-540	1720
XL09-165	HOCP96-540	HOCP96-540	5804
XL09-166	HOCP00-950	HOCP97-609	0
XL09-167	HOCP02-610	HOCP97-609	1961
XL09-168	HOCP00-930	HOCP97-609	634
XL09-169	HO01-564	HOCP97-609	1474
XL09-170	HOCP97-609	HOCP97-609	2020
XL09-171	HOCP04-838	L94-428	751
XL09-172	HOCP02-623	L94-428	512
XL09-173	HOCP02-610	L94-428	1703
XL09-174	HOCP00-950	L94-428	325
XL09-175	L94-428	L94-428	233
XL09-176	HOCP02-623	L94-432	1068
XL09-177	HOCP02-610	L94-432	3125
XL09-178	HOCP00-950	L94-432	882
XL09-179	N-27	L94-432	6295
XL09-180	L94-432	L94-432	633
XL09-181	HOCP05-904	09P7	5831
XL09-182	HOCP96-540	09P7	6339
XL09-183	L01-299	09P7	573
XL09-184	L05-448	09P7	427
XL09-185	L06-001	09P7	844
XL09-186	L98-207	09P7	758
XL09-187	HOCP02-623	US01-040	469
XL09-188	HOCP00-930	US01-040	1615
XL09-189	HOCP00-950	US01-040	1400
XL09-190	US01-040	US01-040	353
XL09-191	HO01-564	HO06-562	226
XL09-192	HO07-613	HO06-562	2298
XL09-193	HOCP00-950	HO06-562	1058
XL09-194	HOCP02-610	HO06-562	2814
XL09-195	HO06-562	HO06-562	0
XL09-196	HOCP85-845	HO95-988	1604

Table 5. Continue.

Cross	Female	Male	Seed
XL09-197	HOCP07-615	HO95-988	12
XL09-198	L01-283	HO95-988	34
XL09-199	L08-084	HO95-988	142
XL09-200	HO95-988	HO95-988	84
XL09-201	HOCP05-902	L99-226	204
XL09-202	HOCP05-918	L99-226	0
XL09-203	HOCP00-950	L99-226	0
XL09-204	L94-426	L99-226	2252
XL09-205	L99-226	L99-226	1105
XL09-206	HOCP00-950	L01-299	10
XL09-207	HOCP07-615	L01-299	0
XL09-208	HOCP92-648	L01-299	0
XL09-209	L94-426	L01-299	0
XL09-210	L98-207	L01-299	647
XL09-211	L01-299	L01-299	46
XL09-212	HOCP02-610	HOCP96-540	1594
XL09-213	HO95-988	HOCP96-540	877
XL09-214	L94-426	HOCP96-540	0
XL09-215	HOCP96-540	HOCP96-540	4500
XL09-216	HO01-564	L06-001	422
XL09-217	HOCP00-950	L06-001	164
XL09-218	HOCP02-610	L06-001	4510
XL09-219	L06-001	L06-001	22
XL09-220	HOCP02-610	LCP85-384	2567
XL09-221	HOCP00-950	LCP85-384	326
XL09-222	HOCP92-624	LCP85-384	0
XL09-223	LCP85-384	LCP85-384	973
XL09-224	HO06-562	09P8	228
XL09-225	HO95-988	09P8	1816
XL09-226	HOCP96-540	09P8	4220
XL09-227	L99-226	09P8	1938
XL09-228	HOCP92-618	09P8	857
XL09-229	HO95-988	09P9	3696
XL09-230	HOCP02-618	09P9	301
XL09-231	HOCP96-561	09P9	2217
XL09-232	LCP99-226	09P9	265
XL09-233	HO01-564	HO06-562	888
XL09-234	HO07-613	HO06-562	701
XL09-235	HOCP02-610	HO06-562	2698
XL09-236	L01-283	HO06-562	1081
XL09-237	HOCP02-623	HO06-562	1811
XL09-238	HO06-562	HO06-562	461
XL09-239	HO06-563	L01-299	1614
XL09-240	HOCP00-950	L01-299	317
XL09-241	HOCP02-623	L01-299	1117
XL09-242	HOCP05-902	L01-299	2804
XL09-243	HOCP05-918	L01-299	2031
XL09-244	L01-299	L01-299	317
XL09-245	HO06-563	HOCP96-540	2781
XL09-246	HOCP02-623	HOCP96-540	1193
XL09-247	L05-457	HOCP96-540	2251
XL09-248	L01-299	HOCP96-540	194
XL09-249	HOCP96-540	HOCP96-540	5153
XL09-250	HOCP02-610	L99-233	869
XL09-251	HOCP02-623	L99-233	851
XL09-252	HOCP04-838	L99-233	834
XL09-253	L01-283	L99-233	2429
XL09-254	L99-233	L99-233	729
XL09-255	HOCP92-618	09P10	5040
XL09-256	HOCP91-552	09P10	3248
XL09-257	HOCP96-540	09P10	706
XL09-258	L06-038	09P10	30
XL09-259	LCP85-384	09P10	1742
XL09-260	HOCP91-552	09P11	4303
XL09-261	HOCP96-540	09P11	2103
XL09-262	L06-038	09P11	106
XL09-263	L99-233	09P11	1419
XL09-264	LCP85-384	09P11	1332
XL09-265	TUCCP77-042	L01-283	226
XL09-266	HOCP05-918	L01-283	3420
XL09-267	HOCP05-902	L01-283	761
XL09-268	HOCP00-950	L01-283	0
XL09-269	L01-283	L01-283	1332
XL09-270	HOCP00-950	HOCP85-845	18
XL09-271	HOCP05-902	HOCP85-845	155
XL09-272	HOCP01-517	HOCP85-845	224
XL09-273	HO05-961	HOCP85-845	450
XL09-274	HOCP85-845	HOCP85-845	1426
XL09-275	L98-209	HOCP02-623	209
XL09-276	L97-128	HOCP02-623	58
XL09-277	L94-426	HOCP02-623	111
XL09-278	L05-457	HOCP02-623	345
XL09-279	HOCP02-623	HOCP02-623	96
XL09-280	HOCP05-902	HOCP92-618	230
XL09-281	HOCP04-838	HOCP92-618	1865
XL09-282	HOCP02-618	HOCP92-618	461
XL09-283	HOCP01-523	HOCP92-618	114
XL09-284	HOCP92-618	HOCP92-618	1491
XL09-285	HO06-563	L01-299	902
XL09-286	HO06-537	L01-299	30
XL09-287	HO01-564	L01-299	452
XL09-288	L94-428	L01-299	398
XL09-289	L01-299	L01-299	107
XL09-290	HOCP02-623	09P12	979
XL09-291	HOCP05-904	09P12	1814
XL09-292	HOCP85-845	09P12	225
XL09-293	HOCP91-552	09P12	4942
XL09-294	HOCP96-540	09P12	3007
XL09-295	LCP85-384	09P12	1053
XL09-296	L99-233	09P12	2581

Table 5. Continue.

Cross	Female	Male	Seed
XL09-297	LCP85-384	09P13	1649
XL09-298	L01-299	09P13	1149
XL09-299	TUCCP77-042	09P13	86
XL09-300	L01-283	09P13	930
XL09-301	HO06-562	09P13	589
XL09-302	HOCP02-623	09P13	318
XL09-303	HOCP91-552	09P13	1859
XL09-304	HO01-564	HOCP01-517	470
XL09-305	HOCP02-623	HOCP01-517	948
XL09-306	HOCP04-838	HOCP01-517	1225
XL09-307	HOCP04-847	HOCP01-517	174
XL09-308	L05-457	HOCP01-517	1346
XL09-309	HOCP01-517	HOCP01-517	241
XL09-310	HO05-961	HOCP07-615	1206
XL09-311	HO95-988	HOCP07-615	1253
XL09-312	HOCP04-838	HOCP07-615	1117
XL09-313	HOCP07-615	HOCP07-615	262
XL09-314	L94-426	L08-089	250
XL09-315	HOCP02-623	L08-089	354
XL09-316	HOCP04-838	L08-089	1826
XL09-317	HOCP04-847	L08-089	632
XL09-318	HOCP92-624	L08-089	1620
XL09-319	L08-089	L08-089	108
XL09-320	HOCP92-624	L01-283	3006
XL09-321	L01-315	L01-283	1039
XL09-322	L94-433	L01-283	1529
XL09-323	L05-457	L01-283	2408
XL09-324	L01-283	L01-283	662
XL09-325	HOCP01-517	09P14	1393
XL09-326	HOCP05-904	09P14	856
XL09-327	HOCP91-552	09P14	1615
XL09-328	US01-040	09P14	817
XL09-329	HOCP96-540	09P14	811
XL09-330	L05-457	09P14	817
XL09-331	L99-233	09P14	3003
XL09-332	L08-089	09P14	1416
XL09-333	CP83-644	L01-283	905
XL09-334	HOCP00-950	L01-283	1509
XL09-335	HOCP04-838	L01-283	1284
XL09-336	HOCP04-847	L01-283	0
XL09-337	L05-457	L01-283	1351
XL09-338	L01-283	L01-283	828
XL09-339	HO06-537	L94-433	242
XL09-340	HOCP00-950	L94-433	126
XL09-341	HOCP96-561	L94-433	44
XL09-342	L08-076	L94-433	21
XL09-343	L08-084	L94-433	98
XL09-344	L94-433	L94-433	32
XL09-345	HOCP92-624	HO01-564	572
XL09-346	HOCP96-561	HO01-564	89
XL09-347	L05-448	HO01-564	105
XL09-348	L05-457	HO01-564	631
XL09-349	L97-128	HO01-564	488
XL09-350	HO01-564	HO01-564	156
XL09-351	HOCP92-624	HOCP01-517	2073
XL09-352	HOCP96-561	HOCP01-517	930
XL09-353	L05-457	HOCP01-517	3500
XL09-354	L97-128	HOCP01-517	599
XL09-355	L98-207	HOCP01-517	1230
XL09-356	HOCP01-517	HOCP01-517	196
XL09-357	HOCP92-624	L99-226	3534
XL09-358	HOCP96-561	L99-226	1533
XL09-359	L05-457	L99-226	661
XL09-360	TUCCP77-042	L99-226	104
XL09-361	N-27	L99-226	6076
XL09-362	L99-226	L99-226	843
XL09-363	HOCP92-624	HOCP06-523	2568
XL09-364	L05-457	HOCP06-523	2598
XL09-365	TUCCP77-042	HOCP06-523	28
XL09-366	L01-283	HOCP06-523	5047
XL09-367	HOCP06-523	HOCP06-523	2050
XL09-368	HOCP02-618	09P15	7
XL09-369	L01-283	09P15	1746
XL09-370	L99-233	09P15	9596
XL09-371	HOCP04-847	09P15	52
XL09-372	HO01-564	HO06-523	0
XL09-373	HO05-961	HO06-523	0
XL09-374	HOCP92-648	HO06-523	0
XL09-375	L05-457	HO06-523	99
XL09-376	HOCP00-950	HO06-523	0
XL09-377	HO06-523	HO06-523	223
XL09-378	HOCP04-838	HOCP05-904	816
XL09-379	L05-457	HOCP05-904	732
XL09-380	L08-095	HOCP05-904	0
XL09-381	HOCP05-904	HOCP05-904	38
XL09-382	HO06-530	HOCP05-918	9336
XL09-383	L05-457	HOCP05-918	309
XL09-384	L94-433	HOCP05-918	684
XL09-385	LCP81-010	HOCP05-918	1770
XL09-386	HOCP05-918	HOCP05-918	0
XL09-387	HO05-961	L99-226	1163
XL09-388	HO06-530	L99-226	344
XL09-389	L94-428	L99-226	0
XL09-390	L97-128	L99-226	408
XL09-391	LCP81-010	L99-226	1328
XL09-392	L99-226	L99-226	0
XL09-393	HO06-530	L06-038	1693
XL09-394	HOCP00-950	L06-038	66
XL09-395	L05-457	L06-038	663
XL09-396	L97-128	L06-038	0

Table 5. Continue.

Cross	Female	Male	Seed
XL09-397	LCP81-010	L06-038	4468
XL09-398	L06-038	L06-038	27
XL09-399	HOCP00-950	L05-448	0
XL09-400	L05-457	L05-448	205
XL09-401	L97-128	L05-448	237
XL09-402	L05-448	L05-448	71
XL09-403	HOCP96-540	09P16	2646
XL09-404	HOCP96-561	09P16	716
XL09-405	L99-233	09P16	230
XL09-406	LCP85-384	09P16	1006
XL09-407	L97-128	09P16	0
XL09-408	LCP86-454	09P16	3170
XL09-409	HOCP04-838	09P16	1509
XL09-410	HO06-530	HO06-523	540
XL09-411	HO07-617	HO06-523	311
XL09-412	HOCP00-950	HO06-523	153
XL09-413	L01-315	HO06-523	1028
XL09-414	LCP81-010	HO06-523	1128
XL09-415	HO06-523	HO06-523	577
XL09-416	L08-082	LCP86-454	360
XL09-417	HOCP00-950	LCP86-454	777
XL09-418	HOCP05-902	LCP86-454	1771
XL09-419	L97-128	LCP86-454	179
XL09-420	LCP86-454	LCP86-454	717
XL09-421	HO06-537	L01-299	889
XL09-422	HOCP02-610	L01-299	900
XL09-423	HOCP05-902	L01-299	17
XL09-424	L08-085	L01-299	22
XL09-425	L01-299	L01-299	405
XL09-426	HOCP04-838	HOCP96-540	1809
XL09-427	HOCP04-847	HOCP96-540	465
XL09-428	HOCP92-648	HOCP96-540	1293
XL09-429	L01-315	HOCP96-540	1085
XL09-430	L08-082	HOCP96-540	521
XL09-431	HOCP96-540	HOCP96-540	3450
XL09-432	HOCP00-950	L06-038	366
XL09-433	HOCP02-610	L06-038	2599
XL09-434	L01-315	L06-038	2332
XL09-435	L05-448	L06-038	1127
XL09-436	L97-128	L06-038	623
XL09-437	L06-038	L06-038	12
XL09-438	HO06-537	L99-226	781
XL09-439	HOCP00-950	L99-226	343
XL09-440	L05-448	L99-226	447
XL09-441	L08-084	L99-226	281
XL09-442	LCP81-010	L99-226	1016
XL09-443	L99-226	L99-226	80
XL09-444	HOCP00-950	L01-283	123
XL09-445	L05-448	L01-283	1219
XL09-446	L97-128	L01-283	347
XL09-447	L98-209	L01-283	278
XL09-448	L01-283	L01-283	128
XL09-449	HOCP00-950	09P17	1486
XL09-450	HOCP96-540	09P17	2768
XL09-451	L05-448	09P17	938
XL09-452	L06-038	09P17	0
XL09-453	L97-128	09P17	760
XL09-454	LCP85-384	09P17	1895
XL09-455	HOCP04-838	09P17	1144
XL09-456	CP83-644	HO05-961	706
XL09-457	HO06-530	HO05-961	852
XL09-458	HOCP96-561	HO05-961	377
XL09-459	L94-433	HO05-961	434
XL09-460	HO05-961	HO05-961	1217
XL09-461	HO06-523	HOCP00-930	2180
XL09-462	L06-038	HOCP00-930	0
XL09-463	L08-095	HOCP00-930	503
XL09-464	L99-226	HOCP00-930	1060
XL09-465	HOCP00-930	HOCP00-930	602
XL09-466	HO06-537	HOCP02-610	1358
XL09-467	L01-283	HOCP02-610	2110
XL09-468	L08-082	HOCP00-610	918
XL09-469	L97-128	HOCP02-610	235
XL09-470	L99-226	HOCP02-610	104
XL09-471	HOCP02-610	HOCP02-610	1568
XL09-472	HO06-530	L08-076	2051
XL09-473	HOCP00-950	L08-076	510
XL09-474	L01-283	L08-076	922
XL09-475	L01-315	L08-076	2264
XL09-476	L94-432	L08-076	1837
XL09-477	L08-076	L08-076	159
XL09-478	HO06-523	L94-428	2499
XL09-479	HOCP04-847	L94-428	59
XL09-480	L01-283	L94-428	2339
XL09-481	L06-038	L94-428	8
XL09-482	L08-082	HOCP96-540	725
XL09-483	L94-428	L94-428	600
XL09-484	L06-038	HOCP96-540	37
XL09-485	L99-233	HOCP96-540	1683
XL09-486	LCP85-384	HOCP96-540	2320
XL09-487	HO05-961	HOCP96-540	1935
XL09-488	HOCP96-540	HOCP96-540	3920
XL09-489	HO06-562	09P18	216
XL09-490	HOCP92-624	09P18	1689
XL09-491	HOCP96-540	09P18	6173
XL09-492	L08-076	09P18	89
XL09-493	L94-428	09P18	0
XL09-494	HO06-562	HOCP97-609	983
XL09-495	HO07-617	HOCP97-609	225
XL09-496	HOCP00-950	HOCP97-609	799

Table 5. Continue.

Cross	Female	Male	Seed
XL09-497	HOCP04-847	HOCP97-609	408
XL09-498	HOCP97-609	HOCP97-609	1131
XL09-499	L06-038	L99-226	0
XL09-500	HOCP04-838	L99-226	1770
XL09-501	HO07-613	L99-226	979
XL09-502	HO06-562	L99-226	570
XL09-503	L99-226	L99-226	2781
XL09-504	L06-038	L99-233	0
XL09-505	HO06-562	L99-233	622
XL09-506	HO06-537	L99-233	2560
XL09-507	HO06-523	L99-233	3209
XL09-508	L99-233	L99-233	1442
XL09-509	HOCP96-540	09P19	7689
XL09-510	L08-089	09P19	81
XL09-511	L99-233	09P19	3004
XL09-512	LCP81-010	09P19	3805
XL09-513	HOCP97-606	HO05-961	93
XL09-514	L08-078	HO05-961	524
XL09-515	HOCP04-847	HO05-961	214
XL09-516	L98-207	HO05-961	1818
XL09-517	L08-079	HO05-961	10
XL09-518	HO05-961	HO05-961	0
XL09-519	CP83-644	HOCP01-517	3377
XL09-520	HO06-562	HOCP01-517	1065
XL09-521	L98-207	HOCP01-517	1181
XL09-522	HOCP92-648	HOCP01-517	1198
XL09-523	HO07-604	HOCP01-517	148
XL09-524	HOCP01-517	HOCP01-517	276
XL09-525	HOCP92-648	L01-283	1290
XL09-526	HO06-562	L01-283	606
XL09-527	L08-076	L01-283	188
XL09-528	CP83-644	L01-283	1530
XL09-529	L01-283	L01-283	69
XL09-530	LCP85-384	L01-299	2343
XL09-531	L08-094	L01-299	1313
XL09-532	L08-079	L01-299	0
XL09-533	HOCP00-950	L01-299	51
XL09-534	L01-299	L01-299	61
XL09-535	CP83-644	09P20	805
XL09-536	HOCP00-950	09P20	86
XL09-537	HOCP04-838	09P20	615
XL09-538	HOCP04-847	09P20	943
XL09-539	L07-043	09P20	136
XL09-540	L98-128	09P20	0
XL09-541	L98-207	09P20	754
XL09-542	LCP81-010	HO06-523	3000
XL09-543	HOCP96-561	HO06-523	190
XL09-544	L08-085	HO06-523	0
XL09-545	HO06-523	HO06-523	5764
XL09-546	CP83-644	HO06-562	4316
XL09-547	HOCP04-847	HO06-562	45
XL09-548	L97-128	HO06-562	179
XL09-549	HOCP96-561	HO06-562	273
XL09-550	HO06-562	HO06-562	519
XL09-551	HOCP00-930	HOCP96-540	1506
XL09-552	HOCP00-950	HOCP96-540	812
XL09-553	HOCP96-561	HOCP96-540	711
XL09-554	L97-128	HOCP96-540	0
XL09-555	LCP85-384	HOCP96-540	836
XL09-556	HOCP96-540	HOCP96-540	3130
XL09-557	L08-084	L94-426	0
XL09-558	L01-283	L94-426	1166
XL09-559	HOCP97-606	L94-426	278
XL09-560	HOCP96-561	L94-426	863
XL09-561	HO06-562	L94-426	293
XL09-562	L94-426	L94-426	57
XL09-563	L05-448	LCP85-384	1784
XL09-564	HO06-562	LCP85-384	474
XL09-565	CP83-644	LCP85-384	1598
XL09-566	HOCP96-561	LCP85-384	855
XL09-567	LCP85-384	LCP85-384	801
XL09-568	L01-283	L99-233	1593
XL09-569	HOCP96-561	L99-233	1667
XL09-570	HO06-562	L99-233	716
XL09-571	HOCP96-540	L99-233	2856
XL09-572	L99-233	L99-233	391
XL09-573	US01-040	09P21	647
XL09-574	L98-207	09P21	841
XL09-575	L01-299	09P21	77
XL09-576	HOCP05-904	09P21	2778
XL09-577	HO95-988	09P21	931
XL09-578	HO06-562	09P21	746
XL09-579	HO06-537	09P21	282
XL09-580	HOCP85-845	HOCP97-609	500
XL09-581	US01-040	HOCP97-609	2154
XL09-582	L01-283	HOCP97-609	0
XL09-583	HO07-617	HOCP97-609	28
XL09-584	HOCP97-609	HOCP97-609	219
XL09-585	HO05-961	L01-299	371
XL09-586	TUCCP77-042	L01-299	33
XL09-587	L08-094	L01-299	1293
XL09-588	L94-432	L01-299	751
XL09-589	L01-299	L01-299	247
XL09-590	L01-283	L99-226	546
XL09-591	L97-128	L99-226	56
XL09-592	L98-209	L99-226	1822
XL09-593	LCP81-010	L99-226	1389
XL09-594	L99-226	L99-226	566
XL09-595	TUCCP77-042	L01-283	537
XL09-596	L01-283	L01-283	0

Table 5. Continue.

Cross	Female	Male	Seed
XL09-597	HO05-961	HOCP02-618	376
XL09-598	HO06-562	HOCP02-618	228
XL09-599	LCP81-010	HOCP02-618	4529
XL09-600	HOCP96-540	HOCP02-618	3480
XL09-601	HOCP96-561	TUCCP77-042	507
XL09-602	HO01-564	TUCCP77-042	1205
XL09-603	HO06-562	TUCCP77-042	1280
XL09-604	L98-207	TUCCP77-042	1740
XL09-605	HO07-612	L01-283	0
XL09-606	HO06-562	L01-283	1005
XL09-607	HO95-988	L01-283	1020
XL09-608	CP83-644	L99-226	1889
XL09-609	HO06-562	L99-226	630
XL09-610	L94-433	L99-226	956
XL09-611	L99-233	L99-226	3025
XL09-612	HO07-617	TUCCP77-042	36
XL09-613	L08-077	TUCCP77-042	0
XL09-614	L08-093	TUCCP77-042	1463
XL09-615	L01-299	TUCCP77-042	441
XL09-616	HO07-613	09P22	660
XL09-617	LCP85-384	09P22	323
XL09-618	L99-226	09P22	1254
XL09-619	L08-077	09P22	122
XL09-620	HOCP96-540	09P23	2374
XL09-621	L08-079	09P23	14
XL09-622	HO05-961	09P23	359
XL09-623	L08-093	09P23	1036
XL09-624	HO95-988	HOCP01-523	337
XL09-625	HOCP00-930	HOCP01-523	169
XL09-626	L03-371	HOCP01-523	0
XL09-627	CP83-644	L08-093	2646
XL09-628	HO06-530	L08-093	1485
XL09-629	HO06-562	L08-093	154
XL09-630	L99-233	L08-093	1654
XL09-631	HOCP96-540	09P24	5175
XL09-632	HOCP92-618	09P24	548
XL09-633	L08-089	09P24	834
XL09-634	L94-432	09P24	916
XL09-635	HO95-988	09P24	726

SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2009

Keith Bischoff, Kenneth Gravois, Michael Pontif, Gert Hawkins, and Dexter Fontenot
Sugar Research Station

SUMMARY

In the selection phase of the LSU AgCenter's Sugarcane Variety Development Program, superior clones are advanced through the single stool, first line, second line, and increase stages of the breeding program. In the first stubble crop of the second-line trials, those clones with acceptable breeding or commercial value are assigned a permanent variety number. A total of 76,213 seedlings from 153 crosses were planted in the field in the spring of 2009. The majority of these seedlings are progeny of poly crosses among commercial and elite experimental varieties. Due to lack of seed production previous crosses were selected from the freezer to supplement seedlings planted in 2009. In the fall of 2009, family selection was practiced on the 70,878 stubble seedlings surviving the winter. This selection resulted in the planting of 1,836 first-line trial plots. At the same time, superior clones were also selected and advanced through subsequent stages (341 to second line trials, 157 to the increase stage). Assignments of permanent "L09" numbers were given to the 35 best clones of the 2004 crossing series.

PROCEDURES

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

RESULTS AND DISCUSSION

A total of 76,213 seedlings from 153 crosses of the 2008 crossing series were planted to the field in the spring of 2009 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2009, individual selection was practiced on the 70,878 stubble single stools of the 2007 crossing series that survived the winter. The 1,836 clones selected and advanced from the single stools were planted in 10-foot first-line trial plots. Dates of planting and harvesting of all plots in the selection phase of the program can be found in Table 2.

The 2,623 first-line trial plots of the 2006 crossing series were rated for cane yield and pest resistance in August of 2009 (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 341 clones in single row 16-foot second line trials plots.

Stalk counts were made on the 334 plant-cane second line trial plots of the 2005 crossing series in August 2009. Based on these counts and sucrose lab data collected in 2008, 157 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 2010. Of the 164 candidates from the first stubble crop of the second line trial plots, the best 35 clones from the 2004 crossing series were assigned permanent "L09" numbers (Table 5). These newly assigned "L09" 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 2004 through 2008 is shown in Table 6. Crosses are sorted by female parent in ascending order, with the percentile ranking given for each cross in each stage of the program.

Table 1. Summary of selections, advancements and assignments made during 2009 by the Louisiana, "L," Sugarcane Variety Development Program's personnel.

Crossing series	Crosses		Plants transplanted	Over-wintered plants	Advanced to			
	Progeny test	Selection program			1st line	2nd line	Increase	On-station Nurseries (L09 Assignments)
			---------- number of clones ----------					
X04	67	194	93490	76377	2334	458	164	35
X05	60	128	79395	50655	2000	334	157	
X06	120	178	84307	51867	2623	341		
X07	70	132	81474	70878	1836			
X08	--	153	76213					

Table 2. Dates of seedling and line trials planted or harvested in 2009.

Crossing Series	Test	Crop	Date Planted	Date Harvested
X08	Seedlings	Planted	4/15 - 4/23	
X07	Seedlings	First Stubble	4/15 - 4/15/08	
X07	First Line Trials	Planted	9/10/09	
X06	First Line Trials	Plant-cane	10/09- 10/15/08	
X05	First Line Trials	First Stubble	9/07 - 9/17/07	12/03/09
X06	Second Line Trials	Planted	10/01/09	
X05	Second Line Trials	Plant-cane	10/21/08	10/21/09
X04	Second Line Trials	First Stubble	9/20/07	10/12/09
X03	Second Line Trials	Second Stubble	9/26/06	11/09/09
X05	Light Soil Increase	Planted	10/21/09	
X04	Light Soil Increase	Plant-cane	10/02/08	12/07/09
X03	Light Soil Increase	First Stubble	9/21/07	11/30/09
X02	Light Soil Increase	Second Stubble	10/03/06	10/26/09
X04	Heavy Soil Increase	Plant-cane	10/02/08	11/23/09
X03	Heavy Soil Increase	First Stubble	9/21/07	11/09/09
X02	Heavy Soil Increase	Second Stubble	10/03/06	11/09/09

Table 3. Numbers of experimental clones dropped for identified faults in the 2006 crossing series first-line trials.

	Fault	
Trait	Frequency	Percent
---------- 2623 clones enter first round of evaluation ----------		
Initial Selection (Rating)	1669	63.6
---------- 962 clones enter second round of evaluation ----------		
Pith / Tube	105	4.0
Short	6	0.2
Smut	125	4.7
Rust	46	1.8
---------- 282 clones dropped ----------		
----------680 clones enter third round of evaluation ----------		
Brix	339	12.9
Clones advanced	341	13.0

Table 4. Number of experimental clones dropped for identified faults in the 2005 crossing series of the plantcane second line trial prior to advancement to the increase stage.

	Fault	
Trait	Frequency	Percent
---------- 334 clones enter first round of evaluation ----------		
Stalk count <75 per plot & observations	246	73.7
Lodged	11.0	3.3
Pith / Tube	24.0	7.2
Leaf Scald	1.0	0.2
Smut	37.0	11.1
Rust	9.0	2.7
Short	6.0	1.8
---------- 177 clones dropped ----------		
Clones advanced to Increase stage	157	47.0

Table 5. Yield data of the 2009 “L” assignments made in the first-stubble second line trials.

Variety	Female	Male	Sugar Per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
			Lbs/A	Tons/A	Lbs/Ton	Lbs	Stalks/A	%
HOCP96-540	LCP86-454	LCP85-384	10101	51.5	197	3.61	28700	10.3
L99-226	CP89-846	LCP81-030	11983	57.7	206	3.11	37094	11.2
L01-283	L93-365	LCP85-384	13651	63.4	217	2.92	43333	11.4
L09-096	LCP81-010	L98-207	11849	60.1	200	2.90	41291	12.5
L09-097	HOCP01-523	L02-316	7252	34.3	211	1.93	35619	12.1
L09-098	L01-283	LCP81-010	9277	41.9	222	2.60	33124	13.4
L09-099	HOCP00-930	HOCP91-552	9924	49.9	198	2.43	41064	11.9
L09-100	LCP85-384	04P4	7495	37.3	203	2.01	38115	12.0
L09-101	N27	LCP85-384	7785	42.5	180	2.34	36073	9.1
L09-102	L97-128	L99-226	8437	44.7	187	2.28	38796	10.8
L09-103	LCP85-384	04P4	12461	57.0	218	2.95	38569	12.2
L09-104	HOCP01-553	L99-233	9487	46.2	207	2.28	40384	14.0
L09-105	HOCP00-930	L99-233	14171	68.0	209	3.30	42199	13.1
L09-106	HOCP00-930	L99-233	12392	62.1	200	2.66	47190	12.2
L09-107	HOCP00-930	L99-233	14343	67.2	214	3.24	41518	11.8
L09-108	HOCP92-624	L99-226	8014	38.1	210	2.11	36073	10.3
L09-109	L01-299	HOCP91-552	8047	44.5	185	2.17	40611	11.4
L09-110	LCP81-010	HO95-988	8004	41.9	192	2.36	35393	12.6
L09-111	HOCP89-831	LCP85-384	7956	44.1	180	2.54	34485	11.5
L09-112	HOCP01-523	L02-316	13123	71.9	184	3.45	41745	12.1
L09-113	HOCP89-831	LCP85-384	9841	44.5	221	1.91	46283	9.2
L09-114	CP65-357	L02-316	11438	57.5	199	2.60	44241	13.1
L09-115	L97-128	04P10	6500	34.1	190	2.00	34031	11.2
L09-116	HOCP00-930	L00-266	9122	44.5	205	2.32	38115	9.9
L09-117	HOCP01-517	L98-207	9519	42.8	223	2.19	39023	10.7
L09-118	HOCP01-517	L98-207	9529	45.3	211	3.23	28359	11.3
L09-119	HOCP97-609	HOCP92-618	9570	47.8	201	1.85	51954	12.4
L09-120	HOCP92-624	L99-226	9599	49.1	197	2.76	35393	12.2
L09-121	HOCP01-517	L98-207	11499	60.8	189	2.92	41745	11.5
L09-122	HOCP92-624	L99-233	12035	58.7	205	2.66	44014	14.1
L09-123	L99-233	HOCP85-845	13592	66.6	204	3.38	39249	12.5
L09-124	HOCP95-951	L02-325	8007	42.8	187	2.56	33578	12.0
L09-125	HOCP92-624	L98-207	8962	40.2	222	2.72	29267	11.9
L09-126	HOCP00-930	L00-266	9197	46.4	199	2.71	34258	11.8
L09-127	HOCP92-624	LCP85-384	7109	33.1	214	2.45	26998	11.3
L09-129	HOCP92-624	LCP85-384	8244	38.3	216	2.07	37208	13.7
L09-130	L99-233	HOCP85-845	13323	72.9	183	3.25	44921	12.0
L09-131	L99-233	HOCP85-845	12828	56.0	230	2.77	40611	12.3

Table 6. Advancement summary of crosses in the 2002 through 2007 crossing series.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
2002 Crossing Series										
CP79-348	L98-207	237	2	36	0	31	0	36	.	.
HOCP92-624	HOCP98-741	316	17	90	2	63	1	72	.	.
HOCP92-624	LCP85-384	401	9	54	0	31	0	36	.	.
HOCP92-624	US01-040	159	0	18	0	31	0	36	.	.
HOCP93-767	L99-226	111	3	63	1	81	0	36	.	.
L00-270	HOCP97-609	19	0	18	0	31	0	36	.	.
LCP85-384	HOCP01-517	456	9	45	0	31	0	36	.	.
LCP86-454	LCP85-384	483	0	18	0	31	0	36	.	.
N-27	HOCP96-540	347	14	77	3	72	2	81	.	.
N-27	LCP85-384	420	17	77	8	90	6	90	.	.
2003 Crossing Series										
HOCP00-930	HOCP91-552	418	0	27	0	27	0	31	.	.
HOCP00-950	HOCP01-506	124	0	27	0	27	0	31	.	.
HOCP85-845	L02-328	477	13	54	3	63	3	72	.	.
HOCP92-648	L99-233	236	40	90	4	90	4	90	.	.
HOCP96-540	03P18	127	0	27	0	27	0	31	.	.
LCP81-010	L98-207	1768	59	72	12	72	5	63	.	.
LCP81-010	LCP85-384	705	41	81	9	81	5	81	.	.
N-27	HO95-988	1536	0	27	0	27	0	31	.	.
US01-039	LCP85-384	469	14	63	2	54	0	31	.	.
US02-096	HOCP01-553	452	0	27	0	27	0	31	.	.
2004 Crossing Series										
CP65-357	HO95-988	238	8	69	0	27	0	33	0	44
CP65-357	L02-316	488	29	87	9	95	2	84	1	92
CP65-357	L98-207	693	0	21	0	27	0	33	0	44
CP65-357	L99-233	684	18	60	10	91	2	81	0	44
CP73-351	L98-207	956	0	21	0	27	0	33	0	44
CP79-318	L02-316	247	0	21	0	27	0	33	0	44
CP79-318	LCP85-384	724	16	54	3	63	1	72	0	44
HO01-564	HOCP91-552	238	11	80	0	27	0	33	0	44
HO01-564	L99-226	444	0	21	0	27	0	33	0	44
HO01-564	TUCCP77-042	743	47	89	6	77	1	70	0	44
HO91-572	04P1	234	0	21	0	27	0	33	0	44
HO95-988	HOCP89-846	251	6	57	2	76	0	33	0	44
HO95-988	HOCP91-552	941	17	51	4	65	0	33	0	44
HO95-988	HOCP91-552	498	0	21	0	27	0	33	0	44
HO95-988	L98-207	1126	27	57	8	74	3	80	0	44
HO95-988	LCP85-384	732	0	21	0	27	0	33	0	44
HOCP00-930	HO95-988	480	2	42	0	27	0	33	0	44
HOCP00-930	HOCP89-846	706	0	21	0	27	0	33	0	44
HOCP00-930	HOCP91-552	243	0	21	0	27	0	33	0	44

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP00-930	HOCP91-552	455	16	71	5	82	1	76	1	94
HOCP00-930	L00-266	496	46	97	14	98	7	97	2	96
HOCP00-930	L02-353	450	13	63	5	83	1	76	0	44
HOCP00-930	L99-233	834	85	98	32	99	21	99	3	96
HOCP00-930	TUCCP77-042	188	15	96	3	93	0	33	0	44
HOCP00-950	HOCP89-846	249	0	21	0	27	0	33	0	44
HOCP00-950	L98-209	244	0	21	0	27	0	33	0	44
HOCP00-950	LCP85-384	360	0	21	0	27	0	33	0	44
HOCP01-517	L98-207	985	43	79	8	77	4	83	3	95
HOCP01-523	L02-316	248	17	93	3	85	2	94	2	99
HOCP01-523	L98-209	491	0	21	0	27	0	33	0	44
HOCP01-523	LCP85-384	470	43	97	7	92	2	87	0	44
HOCP01-529	L99-226	243	0	21	0	27	0	33	0	44
HOCP01-541	HOCP92-618	239	0	21	0	27	0	33	0	44
HOCP01-544	L99-233	202	0	21	0	27	0	33	0	44
HOCP01-553	L99-233	825	41	84	14	94	6	94	1	90
HOCP01-558	HOCP92-618	152	0	21	0	27	0	33	0	44
HOCP01-558	HOCP97-609	252	0	21	0	27	0	33	0	44
HOCP01-558	LCP82-089	225	5	54	1	67	0	33	0	44
HOCP01-561	L97-137	248	10	75	1	61	0	33	0	44
HOCP01-561	L99-226	738	15	52	4	71	1	71	0	44
HOCP01-588	TUCCP77-042	244	0	21	0	27	0	33	0	44
HOCP85-384	HO95-988	221	6	61	0	27	0	33	0	44
HOCP85-845	HO95-988	479	16	67	0	27	0	33	0	44
HOCP85-845	HOCP89-846	239	0	21	0	27	0	33	0	44
HOCP85-845	HOCP92-618	251	0	21	0	27	0	33	0	44
HOCP85-845	LCP82-089	423	18	78	0	27	0	33	0	44
HOCP85-845	LCP85-384	1383	35	59	4	59	1	67	0	44
HOCP89-831	LCP85-384	464	53	99	13	98	7	98	2	98
HOCP89-846	HO95-988	462	0	21	0	27	0	33	0	44
HOCP89-846	HO95-988	233	4	49	0	27	0	33	0	44
HOCP89-846	HOCP85-845	247	0	21	0	27	0	33	0	44
HOCP89-846	HOCP85-845	250	0	21	0	27	0	33	0	44
HOCP89-846	HOCP97-609	252	0	21	0	27	0	33	0	44
HOCP89-846	L02-316	428	4	44	1	56	1	77	0	44
HOCP89-846	LCP81-010	482	18	72	0	27	0	33	0	44
HOCP91-552	04P2	240	0	21	0	27	0	33	0	44
HOCP91-555	L98-209	245	0	21	0	27	0	33	0	44
HOCP91-555	LCP85-384	487	0	21	0	27	0	33	0	44
HOCP92-618	HO95-988	1455	0	21	0	27	0	33	0	44
HOCP92-618	HOCP89-846	122	2	48	0	27	0	33	0	44
HOCP92-618	HOCP97-609	502	0	21	0	27	0	33	0	44
HOCP92-618	LCP85-384	500	0	21	0	27	0	33	0	44
HOCP92-618	LCP85-384	252	0	21	0	27	0	33	0	44
HOCP92-624	04P16	247	10	75	1	61	0	33	0	44
HOCP92-624	HOCP85-845	502	10	52	0	27	0	33	0	44
HOCP92-624	HOCP89-846	126	1	43	1	76	0	33	0	44

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP92-624	HOCP91-552	473	18	74	10	97	6	96	0	44
HOCP92-624	HOCP91-552	205	5	57	0	27	0	33	0	44
HOCP92-624	HOCP96-540	1119	30	61	3	58	0	33	0	44
HOCP92-624	HOCP96-561	498	17	69	7	90	2	83	0	44
HOCP92-624	L00-266	479	0	21	0	27	0	33	0	44
HOCP92-624	L02-316	905	0	21	0	27	0	33	0	44
HOCP92-624	L02-353	253	8	66	0	27	0	33	0	44
HOCP92-624	L92-312	501	12	57	1	55	0	33	0	44
HOCP92-624	L94-428	496	8	48	0	27	0	33	0	44
HOCP92-624	L97-128	218	0	21	0	27	0	33	0	44
HOCP92-624	L98-207	1462	70	82	7	69	2	71	1	88
HOCP92-624	L98-209	842	43	85	4	69	2	77	0	44
HOCP92-624	L99-226	1184	67	87	17	90	8	93	2	92
HOCP92-624	L99-226	482	18	72	5	81	1	73	0	44
HOCP92-624	L99-233	1206	38	66	18	92	2	72	0	44
HOCP92-624	L99-233	1196	57	82	12	81	8	92	1	89
HOCP92-624	LCP82-089	876	20	55	6	74	1	69	0	44
HOCP92-624	LCP85-384	1294	98	95	16	86	4	81	2	91
HOCP92-624	LCP85-384	1844	94	85	22	84	13	93	.	.
HOCP92-648	HOCP89-846	447	0	21	0	27	0	33	0	44
HOCP92-648	HOCP91-552	243	7	63	1	63	0	33	0	44
HOCP92-648	L00-266	480	31	90	1	55	0	33	0	44
HOCP92-648	L02-316	503	8	48	0	27	0	33	0	44
HOCP92-648	L97-137	117	0	21	0	27	0	33	0	44
HOCP92-648	L99-233	457	13	62	0	27	0	33	0	44
HOCP92-648	LCP85-384	174	7	75	2	84	0	33	0	44
HOCP92-648	LCP85-384	256	19	94	2	75	1	82	0	44
HOCP95-951	L02-325	463	11	57	4	79	1	75	1	93
HOCP95-951	L99-233	433	0	21	0	27	0	33	0	44
HOCP96-509	CP77-310	244	3	46	0	27	0	33	0	44
HOCP96-509	L00-266	229	15	91	1	67	0	33	0	44
HOCP96-509	L02-316	245	0	21	0	27	0	33	0	44
HOCP96-509	LCP85-384	471	0	21	0	27	0	33	0	44
HOCP96-540	04P3	679	7	45	0	27	0	33	0	44
HOCP96-540	04P5	966	0	21	0	27	0	33	0	44
HOCP96-540	04P7	1078	0	21	0	27	0	33	0	44
HOCP96-540	HOCP91-552	224	0	21	0	27	0	33	0	44
HOCP96-540	L02-325	471	0	21	0	27	0	33	0	44
HOCP96-540	L99-233	469	0	21	0	27	0	33	0	44
HOCP96-549	HOCP01-517	232	0	21	0	27	0	33	0	44
HOCP96-561	L99-226	242	0	21	0	27	0	33	0	44
HOCP97-609	HO95-988	206	0	21	0	27	0	33	0	44
HOCP97-609	HOCP91-552	343	10	63	1	59	0	33	0	44
HOCP97-609	HOCP92-618	241	6	59	1	63	1	85	1	97
HOCP97-609	LCP85-384	239	0	21	0	27	0	33	0	44
HOCP97-609	LCP85-384	674	0	21	0	27	0	33	.	.
HoCP85-845	HOCP91-552	254	0	21	0	27	0	33	0	44

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HoCP96-540	OP13	221	0	21	0	27	0	33	0	44
L01-281	04P3	484	20	77	3	72	0	33	0	44
L01-283	LCP81-010	415	8	51	1	57	1	78	1	94
L01-299	04P3	233	17	94	3	88	1	89	0	44
L01-299	HOCP91-552	247	11	79	6	97	3	96	1	97
L01-299	L97-128	227	8	71	1	67	0	33	0	44
L01-299	LCP85-384	248	0	21	0	27	0	33	0	44
L02-316	HO95-988	465	0	21	0	27	0	33	0	44
L02-316	HOCP91-552	243	5	53	0	27	0	33	0	44
L02-320	LCP85-384	370	0	21	0	27	0	33	0	44
L02-325	HO95-988	689	0	21	0	27	0	33	0	44
L02-325	HOCP91-552	804	0	21	0	27	0	33	0	44
L02-325	HOCP92-618	468	0	21	0	27	0	33	0	44
L02-325	LCP81-010	221	0	21	0	27	0	33	0	44
L02-336	TUCCP77-042	241	26	98	5	96	4	98	0	44
L02-342	HO95-988	234	12	85	2	78	2	95	0	44
L02-342	HOCP92-618	252	0	21	0	27	0	33	0	44
L02-342	L98-209	237	0	21	0	27	0	33	0	44
L02-353	HOCP91-552	233	16	93	4	94	3	97	0	44
L02-353	HOCP92-618	244	0	21	0	27	0	33	0	44
L02-353	L98-209	236	15	89	1	64	1	86	0	44
L02-353	LCP85-384	195	13	91	4	96	1	90	0	44
L89-113	LCP85-384	249	0	21	0	27	0	33	0	44
L91-281	HOCP85-845	499	0	21	0	27	0	33	0	44
L91-281	L02-325	495	35	93	6	85	1	73	0	44
L91-281	L99-226	404	9	54	2	70	1	79	0	44
L94-426	HOCP89-846	243	10	77	1	63	1	85	0	44
L94-426	L99-233	453	8	51	3	73	0	33	0	44
L94-426	LCP85-384	233	8	69	1	65	0	33	0	44
L94-428	HOCP89-846	464	0	21	0	27	0	33	0	44
L94-428	LCP85-384	249	0	21	0	27	0	33	0	44
L94-432	04P16	225	0	21	0	27	0	33	0	44
L94-432	L02-316	246	9	72	2	77	0	33	0	44
L94-433	TUCCP77-042	474	40	96	7	91	1	74	0	44
L97-128	04P10	466	24	86	6	88	2	89	1	93
L97-128	HOCP85-845	228	2	44	0	27	0	33	0	44
L97-128	HOCP89-846	443	22	84	4	80	0	33	0	44
L97-128	L01-299	242	0	21	0	27	0	33	0	44
L97-128	L91-255	236	0	21	0	27	0	33	0	44
L97-128	L98-209	475	30	89	8	93	2	86	0	44
L97-128	L99-226	231	14	88	3	89	1	89	0	44
L97-128	L99-226	927	34	72	5	71	2	75	1	90
L97-128	L99-233	1356	46	69	17	87	7	91	0	44
L97-128	LCP81-010	453	12	60	0	27	0	33	0	44
L97-128	LCP85-384	941	45	82	6	73	2	74	0	44
L97-128	LCP85-384	367	24	90	4	82	0	33	0	44
L97-137	L99-233	485	24	83	3	72	2	85	0	44

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
L98-197	L99-226	957	0	21	0	27	0	33	0	44
L98-207	HOCP85-845	246	0	21	0	27	0	33	0	44
L98-209	HO95-988	242	0	21	0	27	0	33	0	44
L98-209	HOCP89-846	242	0	21	0	27	0	33	0	44
L99-226	04P3	223	3	46	1	69	0	33	0	44
L99-226	HOCP85-845	453	18	75	1	56	0	33	0	44
L99-226	HOCP89-846	495	0	21	0	27	0	33	0	44
L99-226	LCP85-384	435	0	21	0	27	0	33	0	44
L99-226	LCP85-384	676	21	65	2	59	0	33	0	44
L99-226	LCP85-384	234	16	92	3	87	1	88	0	44
L99-233	HOCP85-845	468	22	81	4	78	3	92	3	98
L99-233	HOCP91-552	417	14	69	3	75	1	78	0	44
L99-233	LCP85-384	226	5	54	1	67	1	90	0	44
LCP81-010	HO95-988	1206	21	49	4	60	3	79	1	89
LCP81-010	HO95-988	241	0	21	0	27	0	33	0	44
LCP81-010	HOCP89-846	760	30	74	3	60	1	70	0	44
LCP81-010	L02-316	225	6	61	3	89	2	95	0	44
LCP81-010	L02-316	218	0	21	0	27	0	33	0	44
LCP81-010	L97-128	244	0	21	0	27	0	33	0	44
LCP81-010	L98-207	793	23	63	9	83	1	69	1	91
LCP81-010	L98-209	241	8	67	0	27	0	33	0	44
LCP81-010	L99-226	468	0	21	0	27	0	33	0	44
LCP81-010	L99-233	320	17	86	4	87	1	82	0	44
LCP81-010	LCP82-089	117	2	49	0	27	0	33	0	44
LCP81-010	LCP85-384	960	5	43	1	54	1	68	0	44
LCP82-089	HOCP85-845	240	0	21	0	27	0	33	0	44
LCP85-384	04P4	676	28	77	6	80	4	91	2	95
LCP86-454	04P7	1132	86	95	22	95	3	80	0	44
N27	LCP85-384	1240	19	47	3	57	1	68	1	88
TUCCP77-042	04P16	226	7	65	1	67	0	33	0	44
US79-010	HO95-988	240	0	21	0	27	0	33	0	44
US79-010	L02-316	235	8	69	1	65	1	87	0	44
US79-010	LCP85-384	248	2	43	0	27	0	33	0	44
US96-002	04P1	202	0	21	0	27	0	33	0	44
US99-002	CP77-310	216	0	21	0	27	0	33	0	44
US99-002	LCP85-384	242	11	79	0	27	0	33	0	44
2005 Crossing Series										
CP83-644	L02-316	930	15	52	3	66	2	68	.	.
HO91-572	HOCP96-540	723	0	25	0	29	0	31	.	.
HO91-572	HOCP96-540	464	0	25	0	29	0	31	.	.
HO95-988	HOCP02-623	122	7	80	1	78	1	90	.	.
HO95-988	HOCP96-540	665	0	25	0	29	0	31	.	.
HOCP00-930	05P4	237	0	25	0	29	0	31	.	.
HOCP00-930	HOCP02-610	974	0	25	0	29	0	31	.	.
HOCP00-930	L99-226	146	0	25	0	29	0	31	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP00-930	LCP82-089	217	0	25	0	29	0	31	.	.
HOCP02-618	L04-425	180	0	25	0	29	0	31	.	.
HOCP02-618	L99-226	910	78	91	16	91	5	84	.	.
HOCP02-618	L99-233	379	76	99	30	99	12	99	.	.
HOCP02-620	L94-426	110	8	86	3	97	1	93	.	.
HOCP02-623	HOCP98-781	173	0	25	0	29	0	31	.	.
HOCP02-652	HOCP02-610	68	0	25	0	29	0	31	.	.
HOCP03-757	L04-425	141	0	25	0	29	0	31	.	.
HOCP89-846	HOCP91-552	153	10	83	4	96	2	96	.	.
HOCP89-846	L02-316	330	0	25	0	29	0	31	.	.
HOCP89-846	L94-426	444	16	69	1	61	0	31	.	.
HOCP91-552	05P1	798	1	50	0	29	0	31	.	.
HOCP91-552	05P2	374	12	64	2	74	2	82	.	.
HOCP91-552	05P3	253	0	25	0	29	0	31	.	.
HOCP91-552	L99-233	1021	0	25	0	29	0	31	.	.
HOCP92-624	HOCP02-610	657	19	63	0	29	0	31	.	.
HOCP92-624	HOCP02-623	537	0	25	0	29	0	31	.	.
HOCP92-624	HOCP89-846	718	0	25	0	29	0	31	.	.
HOCP92-624	HOCP91-552	2620	68	59	6	61	2	64	.	.
HOCP92-624	HOCP96-540	1633	58	69	2	59	1	62	.	.
HOCP92-624	L02-316	214	0	25	0	29	0	31	.	.
HOCP92-624	L99-226	465	39	90	11	94	2	76	.	.
HOCP92-624	L99-233	1060	45	74	9	79	4	74	.	.
HOCP92-624	L99-233	2199	89	71	20	80	6	71	.	.
HOCP92-624	LCP85-384	221	6	61	0	29	0	31	.	.
HOCP92-648	HOCP02-623	168	0	25	0	29	0	31	.	.
HOCP92-648	LCP85-384	216	4	54	2	81	1	79	.	.
HOCP95-951	L99-233	142	27	98	8	98	0	31	.	.
HOCP95-951	L99-233	379	26	84	6	89	5	97	.	.
HOCP96-540	HOCP89-846	1006	0	25	0	29	0	31	.	.
HOCP96-540	L99-226	1565	0	25	0	29	0	31	.	.
HOCP96-540	L99-233	1116	30	61	3	64	2	67	.	.
HOCP96-561	HOCP02-652	204	0	25	0	29	0	31	.	.
HOCP96-561	HOCP98-781	403	0	25	0	29	0	31	.	.
HOCP96-561	L99-226	204	0	25	0	29	0	31	.	.
HOCP96-561	L99-233	449	28	82	3	76	3	88	.	.
L01-299	HOCP89-846	184	13	85	0	29	0	31	.	.
L01-299	HOCP91-552	228	12	79	0	29	0	31	.	.
L01-299	HOCP96-540	203	21	95	1	73	1	81	.	.
L02-316	HOCP96-540	434	0	25	0	29	0	31	.	.
L02-316	HOCP98-781	170	0	25	0	29	0	31	.	.
L02-316	L04-410	77	0	25	0	29	0	31	.	.
L02-316	L99-226	121	0	25	0	29	0	31	.	.
L03-387	L99-226	1589	53	66	5	65	1	63	.	.
L03-387	US01-040	183	4	56	1	75	1	83	.	.
L03-396	HOCP96-540	128	0	25	0	29	0	31	.	.
L03-396	L99-233	159	12	88	4	95	1	86	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
L04-425	HOCP02-610	630	0	25	0	29	0	31	.	.
L91-281	HOCP96-540	654	26	71	5	77	3	77	.	.
L91-281	L01-299	245	20	89	0	29	0	31	.	.
L92-312	L99-226	362	0	25	0	29	0	31	.	.
L94-433	05P3	450	42	93	2	70	1	69	.	.
L94-433	HOCP92-618	735	0	25	0	29	0	31	.	.
L94-433	HOCP96-540	291	0	25	0	29	0	31	.	.
L94-433	L99-226	1368	0	25	0	29	0	31	.	.
L94-433	L99-233	206	9	76	2	82	2	95	.	.
L97-128	HOCP02-618	145	0	25	0	29	0	31	.	.
L97-128	HOCP02-652	101	0	25	0	29	0	31	.	.
L97-128	HOCP89-846	243	18	87	4	90	2	91	.	.
L97-128	HOCP91-552	205	9	76	3	88	1	80	.	.
L97-128	HOCP96-540	542	0	25	0	29	0	31	.	.
L97-128	HOCP96-540	485	55	96	11	92	9	98	.	.
L97-128	L02-316	214	0	25	0	29	0	31	.	.
L97-128	L03-374	418	0	25	0	29	0	31	.	.
L97-128	L04-410	534	0	25	0	29	0	31	.	.
L97-128	L99-226	1063	107	94	25	93	10	94	.	.
L97-128	L99-226	868	37	75	0	29	0	31	.	.
L97-128	L99-233	1693	147	92	17	83	6	73	.	.
L97-128	L99-233	1050	42	71	5	72	3	72	.	.
L97-128	LCP82-089	88	0	25	0	29	0	31	.	.
L97-128	US01-040	217	9	73	1	71	1	78	.	.
L98-209	HOCP91-552	735	14	54	3	66	2	70	.	.
L98-209	LCP82-089	187	0	25	0	29	0	31	.	.
L99-226	05P2	240	28	97	1	67	1	75	.	.
L99-226	HOCP96-540	615	0	25	0	29	0	31	.	.
L99-226	L94-426	312	0	25	0	29	0	31	.	.
L99-233	05P1	293	0	25	0	29	0	31	.	.
L99-233	05P3	337	8	57	0	29	0	31	.	.
LCP81-010	HOCP03-757	656	22	67	1	60	0	31	.	.
LCP81-010	HOCP89-846	273	1	50	0	29	0	31	.	.
LCP81-010	HOCP91-552	346	0	25	0	29	0	31	.	.
LCP81-010	L03-374	434	0	25	0	29	0	31	.	.
LCP81-010	L04-410	1148	31	61	5	70	2	66	.	.
LCP81-010	L99-233	2545	83	66	6	63	3	66	.	.
LCP85-384	HOCP02-610	264	0	25	0	29	0	31	.	.
LCP85-384	HOCP03-757	102	0	25	0	29	0	31	.	.
LCP85-384	L99-226	277	9	64	3	84	2	89	.	.
LCP85-384	LCP82-089	1381	0	25	0	29	0	31	.	.
TUCCP77-042	L99-226	228	11	78	3	86	2	92	.	.
TUCCP77-042	POLY	462	6	51	6	85	3	87	.	.
US01-040	L99-226	935	23	58	4	68	1	65	.	.
US01-040	US01-040	342	0	25	0	29	0	31	.	.
US79-010	HOCP96-540	920	53	81	9	83	5	83	.	.
US79-010	L99-226	721	48	83	10	87	4	85	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
US99-002	HOCP96-540	242	5	55	0	29	0	31	.	.
US99-004	L04-425	659	0	25	0	29	0	31	.	.
US99-004	L99-226	784	0	25	0	29	0	31	.	.
2006 Crossing Series										
CP83-644	HOCP04-836	239	0	31	0	33	.	.	.	.
CP83-644	HOCP89-846	211	20	80	2	80	.	.	.	.
CP83-644	LCP81-010	210	0	31	0	33	.	.	.	.
HO95-988	L99-233	729	56	71	5	77	.	.	.	.
HO95-988	LCP85-384	379	0	31	0	33	.	.	.	.
HOCP00-905	HOCP04-836	981	0	31	0	33	.	.	.	.
HOCP00-930	L04-408	474	44	78	3	76	.	.	.	.
HOCP00-930	L99-233	476	47	83	3	76	.	.	.	.
HOCP00-933	06P3	447	0	31	0	33	.	.	.	.
HOCP00-933	L04-410	433	49	89	5	83	.	.	.	.
HOCP00-933	L92-312	215	0	31	0	33	.	.	.	.
HOCP00-950	HOCP00-930	952	34	63	1	66	.	.	.	.
HOCP00-950	HOCP01-523	377	36	80	5	84	.	.	.	.
HOCP00-950	HOCP04-836	166	0	31	0	33	.	.	.	.
HOCP00-950	HOCP91-552	300	24	73	2	76	.	.	.	.
HOCP00-950	L99-226	82	18	99	4	98	.	.	.	.
HOCP00-950	LCP85-384	157	24	98	3	91	.	.	.	.
HOCP00-950	LCP85-384	193	21	87	1	74	.	.	.	.
HOCP01-523	L99-233	215	28	95	2	80	.	.	.	.
HOCP01-561	L99-233	196	0	31	0	33	.	.	.	.
HOCP01-827	LCP85-384	229	0	31	0	33	.	.	.	.
HOCP02-610	L04-410	1217	0	31	0	33	.	.	.	.
HOCP02-618	HOCP99-825	222	0	31	0	33	.	.	.	.
HOCP02-618	L99-226	408	0	31	0	33	.	.	.	.
HOCP02-618	L99-226	472	46	82	2	70	.	.	.	.
HOCP02-623	HOCP01-523	210	0	31	0	33	.	.	.	.
HOCP02-623	HOCP04-836	236	0	31	0	33	.	.	.	.
HOCP02-623	HOCP91-552	464	36	72	9	92	.	.	.	.
HOCP02-623	HOCP96-540	486	0	31	0	33	.	.	.	.
HOCP02-652	HOCP96-540	237	0	31	0	33	.	.	.	.
HOCP04-809	HOCP04-829	180	13	69	1	75	.	.	.	.
HOCP04-809	L99-233	460	0	31	0	33	.	.	.	.
HOCP04-810	HOCP96-561	201	0	31	0	33	.	.	.	.
HOCP04-824	HOCP96-540	492	0	31	0	33	.	.	.	.
HOCP04-827	HOCP02-623	236	0	31	0	33	.	.	.	.
HOCP04-829	L05-448	141	18	94	3	93	.	.	.	.
HOCP04-843	HOCP04-809	216	0	31	0	33	.	.	.	.
HOCP04-843	L99-233	236	0	31	0	33	.	.	.	.
HOCP04-843	L99-233	657	55	75	12	89	.	.	.	.
HOCP85-845	HOCP96-540	738	0	31	0	33	.	.	.	.
HOCP89-831	HOCP04-836	229	28	92	1	72	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP89-846	L99-233	223	0	31	0	33	.	.	.	.
HOCP89-846	LCP81-010	242	0	31	0	33	.	.	.	.
HOCP91-552	06P1	114	0	31	0	33	.	.	.	.
HOCP91-552	HOCP04-809	625	0	31	0	33	.	.	.	.
HOCP92-624	HOCP04-824	239	0	31	0	33	.	.	.	.
HOCP92-624	HOCP04-836	243	0	31	0	33	.	.	.	.
HOCP92-624	HOCP04-836	252	0	31	0	33	.	.	.	.
HOCP92-624	HOCP91-552	152	0	31	0	33	.	.	.	.
HOCP92-624	HOCP91-552	504	0	31	0	33	.	.	.	.
HOCP92-624	HOCP96-540	1391	152	87	30	94	.	.	.	.
HOCP92-624	HOCP96-540	465	52	89	0	33	.	.	.	.
HOCP92-624	HOCP96-561	493	0	31	0	33	.	.	.	.
HOCP92-624	L01-299	697	85	92	21	96	.	.	.	.
HOCP92-624	L02-316	232	0	31	0	33	.	.	.	.
HOCP92-624	L04-408	186	0	31	0	33	.	.	.	.
HOCP92-624	L04-410	986	0	31	0	33	.	.	.	.
HOCP92-624	L05-445	214	33	98	0	33	.	.	.	.
HOCP92-624	L05-448	1156	0	31	0	33	.	.	.	.
HOCP92-624	L99-233	1338	0	31	0	33	.	.	.	.
HOCP92-624	LCP81-010	240	0	31	0	33	.	.	.	.
HOCP92-624	LCP85-384	486	63	95	8	87	.	.	.	.
HOCP92-624	LCP85-384	457	53	90	5	82	.	.	.	.
HOCP92-624	LCP85-384	242	36	96	17	99	.	.	.	.
HOCP92-624	LCP85-384	230	27	91	7	97	.	.	.	.
HOCP92-648	HOCP02-623	228	0	31	0	33	.	.	.	.
HOCP92-648	HOCP04-824	245	24	82	5	92	.	.	.	.
HOCP92-648	HOCP04-836	500	0	31	0	33	.	.	.	.
HOCP92-648	L04-410	424	0	31	0	33	.	.	.	.
HOCP92-648	L92-312	241	0	31	0	33	.	.	.	.
HOCP92-648	L99-233	472	45	80	2	70	.	.	.	.
HOCP92-648	LCP85-384	486	29	67	2	69	.	.	.	.
HOCP93-749	HOCP02-618	421	0	31	0	33	.	.	.	.
HOCP95-951	HOCP00-905	488	0	31	0	33	.	.	.	.
HOCP95-951	HOCP04-824	416	0	31	0	33	.	.	.	.
HOCP95-951	HOCP91-552	390	35	77	11	96	.	.	.	.
HOCP95-951	HOCP96-522	238	0	31	0	33	.	.	.	.
HOCP95-951	HOCP96-540	695	0	31	0	33	.	.	.	.
HOCP95-951	L01-299	407	0	31	0	33	.	.	.	.
HOCP95-951	L04-410	230	24	85	5	94	.	.	.	.
HOCP95-951	L04-425	180	0	31	0	33	.	.	.	.
HOCP96-540	06P1	419	0	31	0	33	.	.	.	.
HOCP96-540	06P2	1053	0	31	0	33	.	.	.	.
HOCP96-540	HOCP02-618	211	0	31	0	33	.	.	.	.
HOCP96-561	06P1	231	0	31	0	33	.	.	.	.
HOCP96-561	L04-410	231	0	31	0	33	.	.	.	.
HOCP96-561	L05-448	219	27	94	7	97	.	.	.	.
HOCP97-609	HOCP04-807	232	0	31	0	33	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP97-609	L01-283	235	29	94	5	93	.	.	.	.
L01-299	HOCP02-610	380	22	66	5	84	.	.	.	.
L01-299	HOCP04-824	160	16	84	3	91	.	.	.	.
L01-299	HOCP96-540	374	36	81	7	90	.	.	.	.
L01-299	L05-448	194	0	31	0	33	.	.	.	.
L01-299	L99-226	189	0	31	0	33	.	.	.	.
L01-315	L01-299	246	22	76	4	86	.	.	.	.
L01-315	LCP81-010	448	42	79	4	78	.	.	.	.
L02-316	06P2	220	14	67	5	95	.	.	.	.
L02-320	06P2	174	0	31	0	33	.	.	.	.
L02-320	HOCP04-824	203	0	31	0	33	.	.	.	.
L02-320	HOCP96-522	121	0	31	0	33	.	.	.	.
L02-320	L99-226	341	0	31	0	33	.	.	.	.
L03-396	HOCP91-552	209	0	31	0	33	.	.	.	.
L03-396	L04-410	479	0	31	0	33	.	.	.	.
L04-407	HOCP96-540	1176	0	31	0	33	.	.	.	.
L04-407	L99-233	324	0	31	0	33	.	.	.	.
L04-408	HOCP04-807	452	0	31	0	33	.	.	.	.
L04-408	HOCP85-845	232	14	67	0	33	.	.	.	.
L04-408	L05-448	464	0	31	0	33	.	.	.	.
L04-408	L99-233	939	71	71	12	83	.	.	.	.
L04-425	06P1	229	0	31	0	33	.	.	.	.
L04-425	06P3	398	0	31	0	33	.	.	.	.
L04-425	HOCP91-552	450	47	85	8	88	.	.	.	.
L04-425	L02-316	179	0	31	0	33	.	.	.	.
L04-425	L99-233	245	0	31	0	33	.	.	.	.
L05-408	HOCP02-623	229	0	31	0	33	.	.	.	.
L05-445	L99-233	211	0	31	0	33	.	.	.	.
L05-445	LCP85-384	130	0	31	0	33	.	.	.	.
L05-448	06P1	221	18	73	2	79	.	.	.	.
L05-450	06P3	238	0	31	0	33	.	.	.	.
L05-451	06P6	219	0	31	0	33	.	.	.	.
L05-451	HOCP96-522	200	30	97	2	81	.	.	.	.
L05-451	L99-233	428	39	78	6	85	.	.	.	.
L05-460	HOCP04-807	211	0	31	0	33	.	.	.	.
L05-460	HOCP85-845	480	26	65	7	85	.	.	.	.
L05-460	HOCP96-540	693	0	31	0	33	.	.	.	.
L05-460	L04-410	215	0	31	0	33	.	.	.	.
L05-460	L99-226	386	45	91	2	74	.	.	.	.
L05-460	L99-233	147	0	31	0	33	.	.	.	.
L91-281	HOCP89-848	218	0	31	0	33	.	.	.	.
L93-399	HOCP04-836	479	0	31	0	33	.	.	.	.
L94-426	HOCP04-836	201	0	31	0	33	.	.	.	.
L94-426	L99-233	448	30	69	5	82	.	.	.	.
L94-428	HOCP04-824	228	0	31	0	33	.	.	.	.
L94-428	L05-448	1094	0	31	0	33	.	.	.	.
L94-432	L04-410	964	0	31	0	33	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
L94-432	L99-233	466	39	75	2	71	.	.	.	.
L94-433	HOCP00-930	220	8	63	0	33	.	.	.	.
L94-433	HOCP96-540	947	94	83	16	88	.	.	.	.
L94-433	L04-410	1585	79	65	8	73	.	.	.	.
L97-128	HOCP02-623	214	16	70	2	80	.	.	.	.
L97-128	HOCP96-540	244	25	84	15	98	.	.	.	.
L97-128	HOCP96-540	486	0	31	0	33	.	.	.	.
L97-128	L01-283	134	10	70	0	33	.	.	.	.
L97-128	L01-299	429	64	96	7	86	.	.	.	.
L97-128	L04-410	489	0	31	0	33	.	.	.	.
L97-128	L92-312	161	0	31	0	33	.	.	.	.
L98-197	HOCP00-930	227	0	31	0	33	.	.	.	.
L98-197	HOCP04-807	235	0	31	0	33	.	.	.	.
L98-197	HOCP96-540	477	0	31	0	33	.	.	.	.
L98-207	L94-428	301	0	31	0	33	.	.	.	.
L98-207	LCP81-010	444	2	62	1	67	.	.	.	.
L99-226	L04-410	429	0	31	0	33	.	.	.	.
L99-233	HOCP96-540	840	100	92	15	89	.	.	.	.
LCP81-010	HOCP96-540	951	0	31	0	33	.	.	.	.
LCP81-010	HOCP96-561	679	0	31	0	33	.	.	.	.
LCP81-010	L01-283	819	0	31	0	33	.	.	.	.
LCP81-010	L01-299	480	41	75	0	33	.	.	.	.
LCP81-010	L04-410	723	0	31	0	33	.	.	.	.
LCP81-010	L99-226	1129	100	76	1	66	.	.	.	.
LCP81-010	L99-233	713	47	68	3	70	.	.	.	.
LCP81-010	L99-233	969	47	64	2	67	.	.	.	.
LCP82-089	HOCP91-552	228	25	88	2	78	.	.	.	.
LCP82-089	HOCP96-561	202	0	31	0	33	.	.	.	.
LCP82-089	L04-408	239	0	31	0	33	.	.	.	.
LCP82-089	L92-312	229	0	31	0	33	.	.	.	.
LCP85-384	06P3	724	0	31	0	33	.	.	.	.
LCP85-384	HO95-988	860	0	31	0	33	.	.	.	.
LCP85-384	HOCP96-540	1194	0	31	0	33	.	.	.	.
LCP85-384	L02-325	483	39	73	2	69	.	.	.	.
LCP85-384	L92-312	907	0	31	0	33	.	.	.	.
US01-040	HOCP91-552	480	0	31	0	33	.	.	.	.
US01-040	L01-283	228	25	88	1	72	.	.	.	.
US79-010	L99-226	723	79	87	3	69	.	.	.	.
US93-015	HOCP91-552	186	0	31	0	33	.	.	.	.
US96-002	HOCP96-540	244	0	31	0	33	.	.	.	.
US99-002	LCP85-384	210	0	31	0	33	.	.	.	.
US99-004	HO95-988	467	0	31	0	33	.	.	.	.
2007 Crossing Series										
CP79-348	HOCP02-610	950	9	23	.	.	.	.	.	.
CP79-348	L99-226	691	5	19	.	.	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HO91-572	07P2	214	6	61	.	.	.	.	.	.
HO91-572	HOCP96-540	247	8	67	.	.	.	.	.	.
HO95-988	HOCP96-540	1210	24	50	.	.	.	.	.	.
HO95-988	L99-233	235	3	30	.	.	.	.	.	.
HO95-988	L99-233	699	16	54	.	.	.	.	.	.
HO95-988	L99-233	466	7	36	.	.	.	.	.	.
HOCP00-930	07P2	246	5	50	.	.	.	.	.	.
HOCP00-930	HOCP02-618	250	16	94	.	.	.	.	.	.
HOCP00-930	L00-266	1052	35	70	.	.	.	.	.	.
HOCP00-930	L99-233	410	7	43	.	.	.	.	.	.
HOCP00-950	HOCP96-540	457	6	30	.	.	.	.	.	.
HOCP00-950	L06-001	485	34	97	.	.	.	.	.	.
HOCP00-950	L99-233	575	13	54	.	.	.	.	.	.
HOCP01-523	LCP85-384	836	0	7	.	.	.	.	.	.
HOCP02-610	HOCP96-540	948	28	65	.	.	.	.	.	.
HOCP02-618	L05-450	248	12	85	.	.	.	.	.	.
HOCP02-618	L06-001	707	23	70	.	.	.	.	.	.
HOCP02-618	L99-226	214	13	94	.	.	.	.	.	.
HOCP02-620	HOCP02-623	220	3	33	.	.	.	.	.	.
HOCP02-620	L99-226	480	3	17	.	.	.	.	.	.
HOCP02-620	L99-226	229	6	57	.	.	.	.	.	.
HOCP02-623	HOCP04-803	201	3	36	.	.	.	.	.	.
HOCP02-623	L99-226	252	0	7	.	.	.	.	.	.
HOCP04-809	L99-226	243	14	91	.	.	.	.	.	.
HOCP04-809	L99-233	430	8	48	.	.	.	.	.	.
HOCP04-810	TUC95-25	265	9	74	.	.	.	.	.	.
HOCP04-838	TUC95-25	132	6	82	.	.	.	.	.	.
HOCP05-902	L99-226	481	14	63	.	.	.	.	.	.
HOCP85-845	HOCP96-540	226	4	46	.	.	.	.	.	.
HOCP89-831	HOCP96-540	454	8	46	.	.	.	.	.	.
HOCP89-831	LCP85-384	713	42	92	.	.	.	.	.	.
HOCP89-846	L99-233	450	5	26	.	.	.	.	.	.
HOCP91-552	L99-226	930	4	15	.	.	.	.	.	.
HOCP92-624	HOCP02-623	1011	10	24	.	.	.	.	.	.
HOCP92-624	HOCP91-552	1043	32	66	.	.	.	.	.	.
HOCP92-624	HOCP96-561	970	11	26	.	.	.	.	.	.
HOCP92-624	L01-299	237	9	77	.	.	.	.	.	.
HOCP92-624	L01-299	1102	49	81	.	.	.	.	.	.
HOCP92-624	L04-425	955	78	98	.	.	.	.	.	.
HOCP92-624	L99-226	481	16	70	.	.	.	.	.	.
HOCP92-624	L99-233	1281	24	48	.	.	.	.	.	.
HOCP92-624	LCP85-384	1429	69	85	.	.	.	.	.	.
HOCP93-746	L99-233	249	0	7	.	.	.	.	.	.
HOCP95-951	HOCP05-923	210	9	80	.	.	.	.	.	.
HOCP95-951	HOCP96-540	1160	75	95	.	.	.	.	.	.
HOCP95-951	L01-299	858	58	96	.	.	.	.	.	.
HOCP96-540	HOCP00-950	897	0	7	.	.	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
HOCP96-540	HOCP00-950	642	11	43	.	.	.	.	.	.
HOCP96-540	HOCP89-831	448	0	7	.	.	.	.	.	.
HOCP96-540	L02-325	215	8	76	.	.	.	.	.	.
HOCP96-561	L06-001	735	16	52	.	.	.	.	.	.
HOCP96-561	L06-016	239	7	63	.	.	.	.	.	.
HOCP96-561	L99-226	246	10	79	.	.	.	.	.	.
HOCP96-561	LCP85-384	460	7	36	.	.	.	.	.	.
HOCP99-825	L99-233	434	6	33	.	.	.	.	.	.
HoCP00-950	Poly(86,119,	183	10	89	.	.	.	.	.	.
L01-283	L99-226	1199	12	24	.	.	.	.	.	.
L01-283	L99-226	246	21	99	.	.	.	.	.	.
L01-283	LCP85-384	741	0	7	.	.	.	.	.	.
L01-299	HOCP96-540	165	8	85	.	.	.	.	.	.
L01-299	L99-233	244	8	70	.	.	.	.	.	.
L01-299	Poly(55,94)	240	8	70	.	.	.	.	.	.
L02-325	L99-226	1405	23	40	.	.	.	.	.	.
L04-408	HOCP04-803	236	13	89	.	.	.	.	.	.
L04-408	HOCP96-540	1800	48	59	.	.	.	.	.	.
L04-408	TUC95-25	267	12	82	.	.	.	.	.	.
L04-425	L99-226	1172	34	63	.	.	.	.	.	.
L04-434	L01-299	221	17	97	.	.	.	.	.	.
L05-445	L05-450	490	4	21	.	.	.	.	.	.
L05-450	07P2	183	0	7	.	.	.	.	.	.
L05-451	07P1	407	0	7	.	.	.	.	.	.
L05-457	HOCP02-610	245	1	15	.	.	.	.	.	.
L05-457	HOCP91-552	852	11	30	.	.	.	.	.	.
L05-457	HOCP96-540	426	7	40	.	.	.	.	.	.
L05-457	HOCP96-561	245	6	55	.	.	.	.	.	.
L05-457	L01-299	695	12	43	.	.	.	.	.	.
L05-457	L04-425	1096	36	70	.	.	.	.	.	.
L05-457	L04-425	240	8	70	.	.	.	.	.	.
L05-457	L99-226	717	19	57	.	.	.	.	.	.
L05-457	L99-233	240	5	51	.	.	.	.	.	.
L05-457	L99-233	482	13	59	.	.	.	.	.	.
L05-457	L99-233	1036	17	40	.	.	.	.	.	.
L05-457	LCP81-010	248	12	85	.	.	.	.	.	.
L05-459	L99-226	475	24	87	.	.	.	.	.	.
L06-003	L99-233	743	19	57	.	.	.	.	.	.
L06-010	07P2	682	8	27	.	.	.	.	.	.
L06-010	HOCP96-540	1189	57	85	.	.	.	.	.	.
L06-010	L99-226	1053	0	7	.	.	.	.	.	.
L06-010	LCP85-384	251	0	7	.	.	.	.	.	.
L06-010	LCP85-384	655	20	66	.	.	.	.	.	.
L06-025	LCP81-010	236	4	43	.	.	.	.	.	.
L06-026	L99-226	230	10	80	.	.	.	.	.	.
L06-040	HOCP96-540	251	14	91	.	.	.	.	.	.
L91-281	HOCP02-620	199	0	7	.	.	.	.	.	.

Table 6. Continue.

			1 st line		2 nd line		Increase		Assignment	
Female	Male	Survive	No	Rank Percentile	No	Rank Percentile	No	Rank Percentile	No.	Rank Percentile
L91-281	L06-001	936	14	36	.	.	.	.	.	.
L91-281	LCP85-384	220	13	92	.	.	.	.	.	.
L91-281	LCP85-384	183	3	40	.	.	.	.	.	.
L94-428	L06-023	478	13	59	.	.	.	.	.	.
L97-128	HOCP05-923	220	4	46	.	.	.	.	.	.
L97-128	HOCP96-540	1130	60	88	.	.	.	.	.	.
L97-128	HOCP96-540	436	17	78	.	.	.	.	.	.
L97-128	L01-299	247	7	61	.	.	.	.	.	.
L97-128	L04-425	251	0	7	.	.	.	.	.	.
L97-128	L99-233	624	10	40	.	.	.	.	.	.
L97-128	L99-233	1163	8	19	.	.	.	.	.	.
L97-128	L99-233	250	2	21	.	.	.	.	.	.
L98-197	07P2	890	0	7	.	.	.	.	.	.
L98-197	HOCP85-845	244	0	7	.	.	.	.	.	.
L98-197	L99-226	675	0	7	.	.	.	.	.	.
L98-207	L94-428	449	0	7	.	.	.	.	.	.
L98-207	Poly(251,252	710	8	26	.	.	.	.	.	.
L98-209	L99-226	596	0	7	.	.	.	.	.	.
L99-233	L99-226	227	3	30	.	.	.	.	.	.
LCP81-010	HOCP00-950	263	14	88	.	.	.	.	.	.
LCP81-010	HOCP02-620	1191	21	46	.	.	.	.	.	.
LCP81-010	HOCP96-540	970	8	21	.	.	.	.	.	.
LCP81-010	L06-016	193	0	7	.	.	.	.	.	.
LCP81-010	L99-233	1120	6	17	.	.	.	.	.	.
LCP81-010	L99-233	1356	11	21	.	.	.	.	.	.
LCP81-010	LCP85-384	1524	22	33	.	.	.	.	.	.
LCP85-384	HOCP00-950	218	3	33	.	.	.	.	.	.
N27	L01-299	1395	32	54	.	.	.	.	.	.
N27	L99-226	928	1	14	.	.	.	.	.	.
N27	L99-226	1544	59	77	.	.	.	.	.	.
N27	LCP85-384	1209	18	36	.	.	.	.	.	.
TUC89-28	HOCP01-517	141	5	75	.	.	.	.	.	.
TUCCP77-042	Poly(242,249	382	11	63	.	.	.	.	.	.
US79-010	HOCP96-540	1220	5	15	.	.	.	.	.	.
US79-010	L01-299	693	15	52	.	.	.	.	.	.
US79-010	LCP85-384	494	6	27	.	.	.	.	.	.
US99-004	LCP85-384	235	8	74	.	.	.	.	.	.

2009 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFIELD VARIETY TRIALS

Michael Pontif[1], Keith Bischoff[1], Kenneth Gravois[1],
Gert Hawkins[1], and Sonny Viator[2]
[1]Sugar Research Station and [2]Iberia Research Station

Edwis Dufrene and Tom Tew
USDA-ARS Sugarcane Research Unit

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 off-station nurseries, Newton Cane, Inc. (Bunkie), Justin Frederick Farm (Cecilia), Michael Melancon (Cecilia), and Landry Farms (Paincourtville), along with the two infield trial locations at Blackberry Farms (Vacherie) and Sugarland Acres, Inc. (Youngsville). Both the LSU and USDA varieties were planted at each location. The locations, soil types, dates of planting and dates of harvest are listed in Table 1.

The on-station nursery trials were planted in single row (6-foot centers), 16-foot-long plots with 4-foot alleys. The off-station nurseries were planted in single row, 20-foot plots with 4-foot alleys. The infield tests were planted in two-row, 25-foot plots with 5-foot alleys. The experimental design for both nursery and infield tests was a randomized complete block with two replications per location. Five commercial check varieties, HoCP96-540, L99-226, L99-233, HoCP00-950 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 Spectra Cane system to estimate sucrose and fiber content. Cane yield for the nursery tests was estimated as the product of stalk weight and stalk number. Cane yield for the infield tests was determined from

the plot weights and reduced 14 percent to account for extraneous trash. Sugar per acre was calculated as the product of sugar per ton and cane yield.

The 2009 sugarcane crop experienced a wide range of growing conditions. Many parts of the sugarcane growing area in Louisiana experienced a summer drought then above average rainfall beginning in early September continuing through the end of the year. The planting season had above average rainfall but all experiments were planted in a timely manner, except an on-station nursery test was not planted at the Iberia Research Station. Harvest was wet and the crop was lodged. The sugarcane crop did experience freezing temperatures along with a rare snowfall on December 4, 2009. The majority of the Louisiana crop was harvested before the deleterious effects of the hard freezes of early January were experienced. Recommended cultural practices were followed at all test locations.

The leading variety grown in Louisiana in 2009 was HoCP96-540, which occupied 50% of the state's sugarcane acreage. Therefore, HoCP96-540 was used as a standard for comparison and is highlighted in the tables. To adjust for missing data, the statistical analysis calculated least square means (SAS 9 Proc Mixed). Mean separation used least square means probability differences where P=0.05. Varieties that are significantly higher or lower than HoCP96-540 are denoted by a plus (+) or minus (-), respectively, next to the value for each trait.

References:

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

Table 1. 2009 Location, soil texture, and planting and harvest dates for the nursery and infield tests.

					Harvest Date	Varieties	
Series	Location†	Stage	Soil Texture	Planting Date	2009	No. Planted	No. Harvested
2004	Blackberry Farms	Infield	Commerce silt loam	08/12/05	11/03/09	50	1
2004	Newton Cane, Inc.	Nursery	Moreland silt loam	08/25/05	10/28/09	50	1
2005	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/15/06	11/18/09	25	1
2005	Blackberry Farms	Infield	Commerce silt loam	08/16/06	11/03/09	25	1
2005	Newton Cane, Inc.	Nursery	Moreland silt loam	08/22/06	10/29/09	43	2
2005	Justin Frederick Farms	Nursery	Baldwin silty clay	08/24/06	10/07/09	43	2
2005	Landry Farms	Nursery	Commerce silt loam	09/29/06	10/20/09	43	2
2006	Blackberry Farms	Infield	Commerce silt loam	08/17/07	11/03/09	24	2
2006	Sugarland Acres, Inc.	Infield	Coteau silt loam	11/18/09		24	0
2006	Newton Cane, Inc.	Nursery	Moreland silt loam	08/15/07	10/28/09	45	2
2006	Justin Frederick Farms	Nursery	Baldwin silty clay	08/28/07	10/07/09	45	2
2006	Landry Farms	Nursery	Commerce silt loam	08/21/07	11/19/09	45	2
2007	Sugar Research Station	Nursery	Commerce silt loam	10/10/07	11/30/09	33	2
2007	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/07	12/10/09	33	2
2007	Iberia Research Station	Nursery	Baldwin silty clay	10/15/07	11/11/09	33	2
2007	Blackberry Farms	Infield	Commerce silt loam	09/24/08	12/16/09	19	4
2007	Newton Cane, Inc.	Nursery	Moreland silt loam	08/28/08	12/10/09	19	6
2007	Michael Melancon	Nursery	Baldwin silty clay	09/26/08	11/18/09	19	6
2007	Landry Farms	Nursery	Commerce silt loam	09/29/08	11/19/09	19	6
2008	Sugar Research Station	Nursery	Commerce silt loam	10/10/08	12/07/09	21	7
2008	Ardoyne Farm-U.S.D.A	Nursery	Commerce silt loam	10/16/08	12/10/09	21	7
2008	Iberia Research Station	Nursery	Baldwin silty clay	10/17/08	11/11/09	21	7
2008	Blackberry Farms	Infield	Commerce silt loam	08/10/09		11	
2008	Sugarland Acres, Inc.	Infield	Coteau silt loam	08/26/09		11	
2008	Newton Cane, Inc.	Nursery	Moreland silt loam	08/18/09		25	
2008	Michael Melancon	Nursery	Baldwin silty clay	08/12/09		25	
2008	Landry Farms	Nursery	Commerce silt loam	08/19/09		25	
2009	Sugar Research Station	Nursery	Commerce silt loam	10/26/09		35	
2009	Ardoyne Farm– U.S.D.A.	Nursery	Commerce silt loam	11/05/09		35	

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

Table 2. Nursery third-stubble means of the 2004 "HoCP" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2009.

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	5935	28.2 -	209	1.39	40656	11.1
Ho95-988	6254	30.0 -	209	1.64	37026	10.9
HoCP96-540	9133	45.2	203	2.05	43742	10.7
L97-128	7167	34.1	211	1.92	35574	12.9 +
HoCP04-838	8620	42.2	203	1.84	46101	13.8 +

Table 3. Infield third-stubble means of the 2004 "HoCP" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2009.

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	6559	23.7	277 +	1.17	21515	12.1
Ho95-988	8503	34.4	247 -	1.88	18982	12.3
HoCP96-540	8921	34.5	259	1.77	21288	11.8
L97-128	10121	37.6	269 +	1.84	20948	12.7
HoCP04-838	9897	34.8	284 +	1.82	25410	12.8

Table 4. Infield second-stubble means of the 2004 "HoCP" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8349 -	32.8 -	256	1.45	25788	12.5
HoCP96-540	10391	42.8	243	1.99	23595	12.4
L97-128	7705 -	30.3 -	255	2.01	18074 -	13.2
L99-226	8322 -	29.7 -	281	2.12	20835	11.1
HoCP04-838	9834	38.7	256	1.69	24729	14.7

Table 5. Infield second-stubble means of the 2004 "HoCP" assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	8426 -	32.2 -	262	1.48 -	22007	12.6
HoCP96-540	12287	49.7	248	2.09	20721	13.0
L97-128	8411 -	38.2 -	220 -	1.95	18263	13.8 +
L99-226	11898	43.2	276 +	2.20	20457	12.5
HoCP04-838	10071 -	42.3 -	239	1.86	20078	14.2 +

Table 6. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	5661	30.1	188	1.42 -	42471	10.9
HoCP96-540	8504	39.5	215	2.39	33033	12.0
L97-128	8296	37.0	225	2.06	36119	12.8
L99-226	8295	39.9	207	2.34	33941	10.9
HoCP05-902	6534	27.5	238	1.28 -	45375	9.4 -
HoCP05-961	6870	30.2	227	1.66 -	37026	12.2

Table 7. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Baldwin silty clay soil at J. Fredericks Farms in Cecilia, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	4625	32.8	144	1.39	47190 +	11.0
HoCP96-540	1993	15.9	125	1.22	26681	11.2
L97-128	5377	28.2	191 +	1.76 +	32126	12.7
L99-226	5691	33.9	166 +	1.88 +	35756	11.2
HoCP05-902	5088	26.9	189 +	1.30	41564 +	10.7
HoCP05-961	4461	22.7	196 +	1.50	30129	12.5

Table 8. Nursery second-stubble means of the 2005 "HoCP" assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	10279	50.6	204	1.47	69878 +	n/a
HoCP96-540	7991	34.1	234	1.95	35030	n/a
L97-128	13547	55.7	244	2.05	54450 +	n/a
L99-226	9461	46.9	198 -	2.14	43560	n/a
HoCP05-902	13125	53.2	248	1.80	59351 +	n/a
HoCP05-961	13937	53.1	262	1.97	54087 +	n/a

Table 9. Infield second-stubble means of the 2005 "HoCP" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7755	36.4	213	1.72	22158	11.6
Ho95-988	10439	43.3	241	2.40	21099	12.4
HoCP96-540	7445	33.4	223	2.12	19625	10.9
L99-226	9397	42.7	220	2.61	20494	10.4
HoCP05-902	9493	37.1	255	1.81	23519	10.4
HoCP05-961	11060	42.8	259	2.03	21402	11.8

Table 10. Infield second-stubble means of the 2005 "HoCP" assignment series on a Coteau silt loam soil at Sugarland Acres, Inc. in Youngsville, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6831	26.6	257	1.72 -	18415	13.1
Ho95-988	8390	32.1	262	1.88	17394	12.7
HoCP96-540	6533	25.0	259	2.20	11873	12.0
L99-226	8884	31.3	284	2.47	14747	12.2
HoCP05-902	10160	37.3	279	1.68 -	16902	12.9
HoCP05-961	8841	34.0	260	1.75 -	15730	13.3

Table 11. Nursery first-stubble means of the 2006 "HoCP" and "L" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6838 -	37.1 -	185	1.47 -	50639	10.9
Ho95-988	7311 -	39.2 -	188	1.61 -	48824	8.4 -
HoCP96-540	9394	51.2	184	2.01	51002	10.5
L99-226	8382	40.5 -	207	2.08	39023 -	9.8
Ho06-537	6012 -	33.7 -	179	1.60 -	42108 -	9.7 -
Ho06-563	7585 -	41.5 -	184	1.76	47190	13.2 +

Table 12. Nursery first-stubble means of the 2006 “HoCP” and “L” assignment series on a Baldwin silty clay soil at J. Fredericks Farm in Cecilia, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	3581	24.2	146	1.34	36300	10.5
Ho95-988	2903	29.5	101	1.72	33941	8.2
HoCP96-540	2941	22.6	130	1.48	30855	9.1
L99-226	3052	25.3	121	2.09 +	24503	9.5
Ho06-537	3108	20.9	148	1.53	27225	10.4
Ho06-563	3566	29.3	122	1.95 +	30674	13.1 +

Table 13. Nursery first-stubble means of the 2006 “HoCP” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	11768	54.2	216 -	2.06	52635	10.3 -
Ho95-988	18943	74.8	254	2.13	70422	10.9
HoCP96-540	12639	48.8	259	1.96	49913	12.4
L99-226	21260	84.5	252	2.61 +	64614	11.5
Ho06-537	10009	42.6	231 -	1.74	48461	11.9
Ho06-563	15529	64.5	241	2.32 +	55902	14.1

Table 14. Infield plantcane means of the 2006 “HoCP” and 2007 “L” assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	10715	44.1	245	2.81	18226	11.4
L99-226	12415	45.9	271	2.99	16335	10.8
L01-283	11014	42.9	257	2.23 -	21440	11.0
HoCP06-530	12765	55.0	232	2.63	20041	11.8
HoCP06-537	13812	53.9	256	2.62	19511	10.7
HoCP06-563	11582	47.6	244	2.92	20835	13.4
L07-057	12916	52.8	245	2.22 -	19020	12.3
L07-068	12393	49.6	250	1.96 -	23103	13.8

Table 15. Nursery plantcane means of the 2007 "HoCP" and "L" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	4411	21.9	202	2.04	21236	10.8
L99-226	7300	34.6	211	2.60	27044	10.4
L01-283	5513	24.4	226	1.83	25229	10.4
L07-057	9557	43.5	220	2.24	38841	11.0
L07-068	5611	24.1	233 +	1.53	31581	13.4 +
HoCP07-604	6722	29.5	228	1.83	32852	11.9 +
HoCP07-612	4707	26.1	178 -	1.93	26862	10.5
HoCP07-613	5577	27.3	207	2.16	25229	9.0 -
HoCP07-617	4592	20.3	226	1.75	23413	10.6

Table 16. Nursery plantcane means of the 2007 "HoCP" and "L" assignment series on a, Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	12540	57.3	219	3.22	35574	11.3
L99-226	14608	63.9	229	3.33	38297	11.3
L01-283	11104	49.3	226	2.21 -	44831 +	11.1
L07-057	13067	57.5	228	2.43 -	47372 +	12.9
L07-068	13110	60.9	215	2.03 -	60077 +	12.5
HoCP07-604	10018	42.6 -	235	1.87 -	45375 +	11.4
HoCP07-612	9308 -	47.1	197 -	2.49 -	37934	10.5
HoCP07-613	11590	54.2	214	3.10	35030	9.6
HoCP07-617	9462 -	42.8 -	221	2.03 -	42290 +	10.5

Table 17. Nursery plantcane means of the 2007 "HoCP" and "L" assignment series on a, Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	12173	59.9	204	3.73	32126	10.8
L99-226	11322	48.7	235 +	2.63	37934	11.2
L01-283	10097	45.4	223 +	2.43	37389	11.2
L07-057	12540	57.2	220 +	2.04	56265 +	12.3
L07-068	12290	54.6	225 +	2.10	52454 +	12.4
HoCP07-604	11684	48.2	242 +	2.53	38115	12.5
HoCP07-612	12945	60.4	215	2.95	41019 +	10.6
HoCP07-613	12539	55.3	227 +	2.89	38297	10.3
HoCP07-617	10532	44.5	237 +	2.26	39386	11.3

Table 18. Nursery first-stubble means of the 2007 "L" assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	11836	49.5	239	1.86 -	53316	11.1
Ho95-988	16231	65.0	250	2.87	45602	11.4
HoCP96-540	15489	59.7	260	3.09	38796	12.2
L99-226	18389	73.2	251	3.46	42199	12.0
L07-057	13441	56.3	240	2.49	45148	13.2
L07-068	19473	76.2	257	1.99 -	76003 +	13.8

Table 19. Nursery first-stubble means of the 2007 "L" assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	13701	60.0	229	2.17	55358 +	11.4
Ho95-988	13410	54.3	247	2.71	39930	11.4
HoCP96-540	12795	54.5	236	2.58	42426	12.2
L99-226	16454	69.9	236	3.26	42879	11.8
L07-057	11956	52.1	229	2.05	50820	12.0
L07-068	12123	52.6	231	1.78 -	59441 +	13.2 +

Table 20. Nursery first-stubble means of the 2007 "L" assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	11567	49.0 -	236	2.12 -	46736	11.9
Ho95-988	12727	52.6 -	244	2.66 -	39703	10.7 -
HoCP96-540	18261	75.0	243	3.61	41745	12.1
L99-226	16576	68.0	244	3.19	42653	10.8 -
L07-057	14763	63.5	233	2.56 -	50366	13.0
L07-068	13248	56.6 -	234	2.11 -	53769	14.1 +

Table 21. Infield and nursery third-stubble means of the 2004 "HoCP" assignment series across 2 locations (Blackberry and Newton Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6247	25.9	243	1.28 -	31086	11.6
Ho95-988	7378	32.2	228	1.76	28004	11.6
HoCP96-540	9027	39.8	231	1.91	32515	11.2
L97-128	8644	35.8	240	1.88	28261	12.8
HoCP04-838	9258	38.5	243	1.83	35756	13.3

Table 22. Infield and nursery second-stubble means of the 2005 "HoCP" assignment series across 5 locations (Blackberry, Sugarland Acres, Newton, Westfield, and J. Fredericks Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6855	37.8	179	1.42	53180 +	10.9
HoCP96-540	6163	29.8	191	1.85	31581	11.6
L97-128	9073	40.3	220 +	1.96	40898 +	12.8 +
L99-226	7816	40.2	190	2.12	37752	11.1
HoCP05-902	8249	35.9	225 +	1.46	48763 +	10.1 -
HoCP05-961	8423	35.4	228 +	1.71	40414	12.4

Table 23. Nursery first-stubble means of the 2007 "L" assignment series across 3 locations (Newton, Westfield, and J. Fredericks Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	12368	52.8	234	2.05 -	51803 +	11.5
Ho95-988	14123	57.3	247	2.74	41745	11.2 -
HoCP96-540	15515	63.1	246	3.09	40989	12.1
L99-226	17140	70.4	243	3.30	42577	11.6
L07-057	13387	57.3	234	2.36 -	48778 +	12.7
L07-068	14948	61.8	240	1.96 -	63071 +	13.7 +

Table 24. Infield first-stubble means of the 2005 "HoCP" assignment series across 2 locations (Blackberry and U.S.D.A.-Ardoyne Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7778	33.6	236	1.83	25668	12.3
Ho95-988	9527	39.2	245	2.06	27469	12.2
HoCP96-540	7548	32.8	233	2.06	24823	11.4
L99-226	8524	35.3	244	2.39	21894	11.2
HoCP05-902	9279	35.2	266	1.73	26655	11.1
HoCP05-961	9497	37.8	251	1.86	25996	12.7 +

Table 25. Nursery plantcane means of the 2008 "L" assignment series across 3 locations (St. Gabriel, Iberia, and U.S.D.A.- Ardoyne Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	9812	45.6	214	3.01	29947	10.6
L99-226	11627	49.9	230 +	3.15	31914	11.1
L01-283	13356	55.8	238 +	2.84	39098 +	11.6 +
L01-299	12914	58.1	221	2.89	40029 +	11.0
L08-075	10678	46.2	227	2.43 -	36981 +	11.9 +
L08-077	9836	44.6	219	2.59	34334	11.5
L08-086	9292	38.8	238 +	2.79	27527	10.6
L08-088	9813	42.3	231 +	2.72	31006	12.2 +
L08-090	11748	52.5	222	3.10	33577	9.7
L08-092	11355	49.3	228 +	2.70	36149	12.1 +
L08-093	9232	41.1	223	2.01 -	40535 +	10.8

Table 26. Nursery second-stubble means of the 2005 "HoCP" assignment series across 3 locations (Blackberry, Westfield, and Cecilia Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	6855	37.8	179	1.42	53180 +	10.9
HoCP96-540	6163	29.8	191	1.85	31581	11.6
L97-128	9073	40.3	220 +	1.96	40898 +	12.8 +
L99-226	7816	40.2	190	2.12	37752	11.0
HoCP05-902	8249	35.9	225 +	1.46	48763 +	10.0 -
HoCP05-961	8423	35.4	228 +	1.71	40414	12.4

Table 27. Nursery first-stubble means of the 2006 “HoCP” assignment series across 3 locations (Westfield, Newton, J. Fredericks Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
LCP85-384	7396	38.5	182	1.62	46524	10.5
Ho95-988	9719	47.8	181	1.82	51062	9.2 -
HoCP96-540	8325	40.8	191	1.81	43923	10.7
L99-226	10898	50.1	193	2.26 +	42713	10.3
Ho06-537	6376	32.4	186	1.62	39264	10.7
Ho06-563	8893	45.1	182	2.01	44588	13.5 +

Table 28. Infield plantcane means of the 2006 “HoCP” and 2007 “L” assignment series across 2 locations (Blackberry and U.S.D.A.-Ardoyne Farms) in 2009.

Variety	Sugar per Acre	Cane Yield	Sugar Per Ton	Stalk Weight	Stalk Number	Fiber
		(tons/A)	(lbs/ton)	(lbs)	(stalks/A)	(%)
HoCP96-540	8578	37.4	229	2.95	19065	11.1
L99-226	12072	48.8	250	3.03	24977	10.7
L01-283	9574	38.9	246	2.13 -	28016	11.1
Ho06-530	11327	52.7	216	2.63	24790	11.8
Ho06-537	11222	45.6	243	2.53 -	25135	10.1
Ho06-563	10409	46.1	226	2.94	25647	14.1 +
L07-057	11479	50.5	230	2.22 -	24007	12.3
L07-068	10956	47.2	235	1.96 -	28090	13.8 +

2009 LOUISIANA "HoCP" and "Ho" NURSERY AND INFIELD VARIETY TRIALS

E. O. Dufrene, M. J. Duet, T. L. Tew, and W. H. White
USDA-ARS, Sugarcane Research Unit (SRU)
Houma, Louisiana

Three years after selecting in single-stools in the seedling stage, scientists in the SRU's sugarcane breeding program assign "HoCP" or "Ho" numbers to varieties advanced for further testing. These newly assigned varieties are planted in replicated nursery trials at the SRU's Ardoyne Farm in Schriever and the LSU AgCenter's Iberia Research Station in Jeanerette and Sugar Research Station in St. Gabriel. The year after assignment, varieties advanced for further testing are replanted in nursery trials located on three commercial sugarcane farms in Paincourtville, Cecilia, and Bunkie, LA, 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 commercial farms at Vacherie and Youngsville, LA). In addition, two years after assignment, varieties are introduced to primary stations and outfield locations for joint testing by the SRU, LSU AgCenter, and the American Sugar Cane League.

The SRU's nursery test plots were 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 were planted in each test for comparison purposes. In addition to experimental commercial varieties, clones from the SRU'S Recurrent Selection for Borers (RSB) program were included in nursery trials. Yield data collected on RSB clones give breeders needed agronomic information to assist in deciding what crosses should be made with these borer-resistant clones. The year after assignment, varieties from the SRU'S program, combined with varieties from the LSU program, were planted in nurseries on commercial farms. Plot length in these tests was increased to 20 feet.

Nursery test plots were rated for agronomic traits in the spring and summer.. Stalk counts of mature, millable stalks were made in late July or August. A ten-stalk sample was hand-cut from each plot during the harvest season. Samples from USDA nurseries were taken to the Juice and Milling Quality Laboratory at the USDA Ardoyne Farm, where they were weighed to determine stalk weight and processed for sucrose analysis. Brix and pol values were 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 were 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 were advanced for further testing.

Infield variety tests were planted at three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville) two years after assignment. Evaluations on commercial farms are conducted cooperatively with the LSU AgCenter sugarcane variety personnel. Infield tests were planted in a randomized complete block design with two replications, and include a minimum of four of the following commercial varieties (LCP 85-384, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, HoCP 00-950, or L 01-283) used as checks. Plot size in infield tests are two 70-inch wide rows by twenty-four feet long. A

10-stalk sample was hand-cut from each plot just prior to harvesting and sent to the lab at the Ardoyne Farm, where they were weighed and processed by the pre-breaker/press for sucrose and fiber analysis. Brix and pol values were then used to estimate the yield of theoretical recoverable sugar (TRS) per ton of cane. Plots were weighed with a tractor pulled weigh-wagon equipped with electronic load cells mounted in the axles and hitch. The weight of harvested cane in each plot, stalk weights and sucrose analysis were used to estimate sugar per acre, tons of cane per acre, sugar per ton of cane, and number of stalks per acre.

Table 1 lists planting and harvest dates of USDA infield and nursery evaluations. Results of infield and-nursery trials can be found in Tables 2 to 18. 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. 2009 Planting and harvest dates of "HoCP" nursery & infield tests.

					Harvest Dates		
Series	Location[1/]	Soil Texture [2/]	Test type	Planting Date	2007	2008	2009
2004	AFH	Sc	Infield	10/05/06	11/14	11/10	11/09
2004	BLK	Csl	Infield	8/16/06	11/28	10/31	11/03
2005	AFH	Sc	Infield	9/21/07		11/12	11/09
2005	BLK	Csl	Infield	8/17/07		12/03	11/03
2005	SUG	Cosl	Infield	9/10/07		12/12	11/18
2006	AFL	Csl	Nursery	10/25/06	11/19	12/04	10/29
2006	IRS	Bsc	Nursery	11/01/06	11/20	12/09	11/04
2006	STG	Sc	Nursery	11/14/06	--- [3/]	12/05	11/16
2006	AFH	Sc	Infield	10/03/08			11/09
2006	BLK	Csl	Infield	9/24/08			12/16
2007	AFL	Csl	Nursery	10/16/07		12/05	--- [3/]
2007	IRS	Bsc	Nursery	10/15/07		12/09	11/04
2007	STG	Sc	Nursery	10/12/07		12/05	11/16
2007	AFH	Sc	Infield	8/27/09			
2007	BLK	Csl	Infield	8/10/09			
2007	SUG	Cosl	Infield	8/26/09			
2008	AFL	Csl	Nursery	10/31/08			12/11
2008	IRS	Bsc	Nursery	10/29/08			11/13
2008	STG	Sc	Nursery	10/30/08			11/24
2009	AFL	Csl	Nursery	10/22/09			
2009	STG	Sc	Nursery	11/06/09			

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

[2/] Bsc = Baldwin silty clay, Cosl = Coteau silt loam, Csl = Commerce silt loam, Sc = Sharkey clay

[3/] Not harvested.

Table 2. Infield second-stubble means of the 2004 "HoCP" assignment series on a Sharkey clay soil at the Ardoyne Farm in Schriever, Louisiana in 2009.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)	
HoCP 96-540	**8496**	**32.5**	**261**	**1.69**	**38575**	**12.2**	
LCP 85-384	7810	31.3	248	1.61	39275	11.3	-
L 97-128	7543	28.1	270	1.64	34174	13.0	
L 99-226	6907	27.0	259	1.78	29875	11.4	
HoCP 04-838	8054	31.1	260	1.62	39079	13.0	

Table 3. Infield second-stubble means of the 2004 "HoCP" assignment series over three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville, Louisiana) in 2009.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)	
HoCP 96-540	**10392**	**41.6**	**251**	**1.92**	**27630**	**12.5**	
LCP 85-384	8195	32.1 -	255	1.51 -	29023	12.1	
L 97-128	7886	32.2 -	248	1.86	23504	13.3	
L 99-226	9042	33.3 -	272	2.03	23722	11.7	
HoCP 04-838	9320	37.4	252	1.72	27962	14.0	+

Table 4. Infield first-stubble means of the 2005 "Ho" and "HoCP" assignment series on a Sharkey clay soil at the Ardoyne Farm in Schriever, Louisiana in 2009.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)	
HoCP 96-540	**8667**	**39.9**	**217**	**1.86**	**42972**	**11.3**	
LCP 85-384	9553	39.2	244 +	2.22	35273 -	12.3	+
Ho 95-988	9753	42.1	232 +	1.92	43914	11.5	
L 99-226	7291	31.9	228	2.09	30441 -	11.0	
HoCP 05-902	8891	33.6	265 +	1.70	39543	9.8	-
Ho 05-961	8591	36.8	234 +	1.80	40855	13.0	+

Table 5. Infield first-stubble means of the 2005 "Ho" and "HoCP" assignment series over three locations (Ardoyne Farm in Schriever, Blackberry Farms in Vacherie, and Sugarland Acres in Youngsville, Louisiana) in 2009.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre	Fiber	
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)	(%)	
HoCP 96-540	**7548**	**32.8**	**233**	**2.06**	**24823**	**11.4**	
LCP 85-384	7745	33.0	237	1.82	23284	12.3	
Ho 95-988	9527	39.2	245	2.06	27469	12.2	
L 99-226	8524	35.3	244	2.39	21894	11.2	
HoCP 05-902	9316	35.6	266	1.73	26655	11.1	
Ho 05-961	9497	37.8	251	1.86	25996	12.7	+

Table 6. Nursery second-stubble means of the 2006 "Ho" assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, Louisiana in 2009.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton		Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)		(lbs.)	(no.)
HoCP 96-540	**15598**	**63.6**	**246**		**2.50**	**50820**
LCP 85-384	10039	39.3	256		1.79	44694
Ho 95-988	15144	59.4	254		2.71	43787
L 97-128	12869	47.8	268		2.58	36981
Ho 06-537	13116	55.2	230		2.28	47871
Ho 06-563	14371	60.8	236		2.32	51728
Ho 06-9609 [4/]	9632	53.5	180	-	2.61	41064
Ho 06-9610 [4/]	9413	43.4	219		2.23	38569

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 7. Nursery second-stubble means of the 2006 "Ho" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2009.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton		Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)		(lbs.)	(no.)
HoCP 96-540	**10843**	**45.4**	**239**		**2.02**	**44921**
LCP 85-384	10233	41.6	247		1.69	48098
Ho 95-988	10039	36.2	277	+	1.78	41064
L 97-128	12381	49.1	253	+	2.25	43787
Ho 06-537	9328	35.8	262	+	1.58	45375
Ho 06-563	10646	42.0	252		1.82	45375
Ho 06-9609 [4/]	5215	28.8	181	-	1.57	36981
Ho 06-9610 [4/]	7763	32.4	240		1.78	36527

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 8. Nursery second-stubble means of the 2006 "Ho" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2009.

Variety	Sugar/ acre		Tons/ acre		Sugar/ ton		Weight/ stalk		Stalks/ acre
	(lbs.)		(tons)		(lbs.)		(lbs.)		(no.)
HoCP 96-540	**13036**		**56.0**		**232**		**2.35**		**47644**
LCP 85-384	6777		29.0		235		1.75	-	33124
Ho 95-988	11087		45.9		242		1.92	-	47871
L 97-128	7970		31.8		249		2.07		31082
Ho 06-537	10346		41.0		251		1.91	-	42199
Ho 06-563	9328		41.1		227		1.66	-	48778
Ho 06-9609 [4/]	6732		39.8		169	-	1.48	-	53769
Ho 06-9610 [4/]	4869		22.9		214		1.07	-	41745

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 9. Nursery second-stubble means of the 2006 "HoCP" assignment series across locations (Ardoyne Farm in Schriever, Iberia Research Station in Jeanerette, and Sugar Research Station in St. Gabriel) in 2009.

Variety	Sugar/ acre		Tons/ acre		Sugar/ ton		Weight/ stalk		Stalks/ acre
	(lbs.)		(tons)		(lbs.)		(lbs.)		(no.)
HoCP 96-540	13159		55.0		239		2.29		47795
LCP 85-384	9016	-	36.6	-	246		1.74		41972
Ho 95-988	12090		47.2		257	+	2.14		44241
L 97-128	11073		42.9		257	+	2.30		37283
Ho 06-537	10930		44.0		247		1.92		45148
Ho 06-563	11448		47.9		238		1.93		48627
Ho 06-9609 [4/]	7193	-	40.7	-	176	-	1.89		43938
Ho 06-9610 [4/]	7348	-	32.9	-	224		1.69		38947

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 10. Infield plant-cane means of the 2006 "Ho" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, Louisiana in 2009.

Variety	Sugar/ acre		Tons/ acre		Sugar/ ton	Weight/ stalk		Stalks/ acre	Fiber	
	(lbs.)		(tons)		(lbs.)	(lbs.)		(no.)	(%)	
HoCP 96-540	**6441**		**30.8**		**213**	**3.10**		**19905**	**10.8**	
L 99-226	11730	+	51.8	+	229	3.08		33618	10.6	
L 01-283	8134		34.8		234	2.04	-	34592	11.2	
Ho 06-537	8632		37.4		230	2.45	-	30758	9.5	
Ho 06-563	9235	+	44.7	+	208	2.96		30460	14.7	+

Table 11. Infield plant-cane means of the 2006 "Ho" assignment series over two locations (Ardoyne Farm in Schriever and Blackberry Farms in Vacherie, Louisiana) in 2009.

Variety	Sugar/ acre		Tons/ acre	Sugar/ ton		Weight/ stalk		Stalks/ acre	Fiber	
	(lbs.)		(tons)	(lbs.)		(lbs.)		(no.)	(%)	
HoCP 96-540	**8578**		**37.5**	**229**		**2.95**		**19065**	**11.1**	
L 99-226	12072		48.8	250		3.03		24977	10.7	
L 01-283	9574		38.9	246		2.13	-	28016	11.1	
Ho 06-537	11222		45.6	243		2.53	-	25135	10.1	
Ho 06-563	10409		46.1	226		2.94		25647	14.1	+

Table 12. Nursery first-stubble means of the 2007 "Ho" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2009.

Variety	Sugar/ acre		Tons/ acre	Sugar/ ton		Weight/ stalk		Stalks/ acre	
	(lbs.)		(tons)	(lbs.)		(lbs.)		(no.)	
HoCP 96-540	**12931**		**55.0**	**236**		**2.39**		**46283**	
LCP 85-384	12188		48.6	250		1.78		54223	
L 97-128	15815		61.5	258	+	2.63		46736	
L 99-226	14096		52.8	266	+	2.86		36981	
Ho 07-604	16158		63.3	256		2.33		54450	
Ho 07-612	12077		56.2	219		2.42		46056	
Ho 07-613	15217		59.7	254		2.91		41064	
Ho 07-617	18846	+	70.2	269	+	2.28		61710	+
Ho 06-9607 [4/]	11485		46.2	249		2.00		46509	
Ho 06-9608 [4/]	10804		64.8	168	-	2.00		65567	+
Ho 06-9609 [4/]	8746		49.6	175	-	1.77		55584	
Ho 06-9610 [4/]	8067		37.2	215	-	1.59	-	45829	

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 13. Nursery first-stubble means of the 2007 "Ho" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2009.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
HoCP 96-540	**13750**	**58.2**	**236**	**2.56**	**45375**
LCP 85-384	10328	48.2	214	2.09	46509
L 97-128	8276 -	33.3 -	248	2.33	28813
L 99-226	10702	45.9	234	2.75	33578
Ho 07-604	12533	50.9	246	2.04 -	49913
Ho 07-612	8255 -	37.1 -	221	1.87 -	39703
Ho 07-613	13531	53.7	252	2.51	43333
Ho 07-617	9797	39.9 -	245	1.69 -	47190
Ho 06-9607 [4/]	7795 -	32.3 -	240	1.97 -	32897
Ho 06-9608 [4/]	7171 -	41.0	175 -	1.78 -	46283
Ho 06-9609 [4/]	6563 -	38.5 -	169 -	1.84 -	41745
Ho 06-9610 [4/]	3465 -	17.5 -	184 -	1.16 -	27906

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 14. Nursery first-stubble means of the 2007 "Ho" assignment series across locations (Iberia Research Station in Jeanerette, and Sugar Research Station in St. Gabriel) in 2009.

Variety	Sugar/ acre	Tons/ acre	Sugar/ ton	Weight/ stalk	Stalks/ acre
	(lbs.)	(tons)	(lbs.)	(lbs.)	(no.)
HoCP 96-540	**13341**	**56.6**	**236**	**2.47**	**45829**
LCP 85-384	11258	48.4	232	1.94 -	50366
L 97-128	12045	47.4	253	2.48	37775
L 99-226	12399	49.4	250	2.80	35279
Ho 07-604	14345	57.1	251	2.19	52181
Ho 07-612	10166	46.6	220	2.14	42879
Ho 07-613	14374	56.7	253	2.71	42199
Ho 07-617	14322	55.0	257	1.99 -	54450
Ho 06-9607 [4/]	9640	39.2	244	1.98 -	39703
Ho 06-9608 [4/]	8987 -	52.9	171 -	1.89 -	55925
Ho 06-9609 [4/]	7655 -	44.0	172 -	1.80 -	48665
Ho 06-9610 [4/]	5766 -	27.3	199 -	1.37 -	36867

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 15. Nursery plantcane means of the SRU's 2008 "Ho", "HoCP", and "HoL" assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, Louisiana in 2009.

Variety	Sugar/ acre (lbs.)		Tons/ acre (tons)		Sugar/ ton (lbs.)	Weight/ stalk (lbs.)		Stalks/ acre (no.)	
HoCP 96-540	**14706**		**56.9**		**258**	**2.87**		**39703**	
L 99-226	13453		59.4		227	3.21		37661	
L 01-283	14086		48.7		289	2.14	-	45602	
HoCP 08-700	16286		56.2		290	2.56		44014	
HoCP 08-701	15985		65.1		248	3.10		41972	
Ho 08-706	17864		75.5	+	237	3.11		48778	
Ho 08-709	15663		58.3		270	2.23		52181	+
Ho 08-710	12759		49.9		258	2.46		40611	
Ho 08-711	20467	+	73.6	+	278	3.41		43106	
Ho 08-716	13367		53.5		248	3.24		32897	
Ho 08-717	14133		51.7		273	2.01	-	51501	+
HoL 08-718	17056		65.8		260	2.70		48778	
Ho 08-719	12146		43.5		280	2.10	-	42426	
HoL 08-720	17911		64.7		278	2.22		58761	+
HoL 08-722	14089		51.8		270	2.21		45829	
HoL 08-723	19136		70.1		274	3.05		46056	
HoCP 08-724	19496		71.5		273	2.68		53769	+
HoCP 08-726	17519		63.2		277	3.40		37208	
Ho 08-728	16982		59.7		285	2.19		54450	+
HoCP 08-729	17802		71.6		249	2.83		50593	+
Ho 08-730	17777		74.0	+	240	2.82		52635	+
Ho 08-9616 [4/]	10661		41.0		261	2.14	-	38342	
Ho 08-9617 [4/]	12964		52.0		250	2.27		46509	
Ho 08-9618 [4/]	14748		55.7		266	2.53		44014	

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 16. Nursery plantcane means of the SRU's 2008 "Ho", "HoCP", and "HoL" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, Louisiana in 2009.

Variety	Sugar/ acre		Tons/ acre		Sugar/ ton		Weight/ stalk		Stalks/ acre	
	(lbs.)		(tons)		(lbs.)		(lbs.)		(no.)	
HoCP 96-540	**7477**		**29.4**		**256**		**2.59**		**22688**	
L 99-226	9438		37.2		254		2.58		28813	
L 01-283	5294		18.7		282		1.81	-	21099	
HoCP 08-700	11831	+	44.5	+	266		2.39		37661	+
HoCP 08-701	9451		45.2	+	209	-	2.75		32897	+
Ho 08-706	10689	+	41.1		261		2.43		33804	+
Ho 08-709	12142	+	46.1	+	264		2.28		40611	+
Ho 08-710	10150		43.5	+	234		2.42		36073	+
Ho 08-711	10222		42.5	+	241		2.62		32443	+
Ho 08-716	7640		40.2		190	-	2.96	+	27225	
Ho 08-717	10374		46.4	+	225	-	2.09	-	44468	+
HoL 08-718	8214		43.7	+	189	-	2.81		31082	
Ho 08-719	11810	+	45.2	+	261		2.36		38342	+
HoL 08-720	10054		38.7		261		1.93	-	40157	+
HoL 08-722	8926		38.2		234		2.29		33351	+
HoL 08-723	9759		37.3		262		2.38		31309	
HoCP 08-724	10514	+	49.8	+	214	-	2.20	-	45148	+
HoCP 08-726	11582	+	41.0		283		2.52		32670	+
Ho 08-728	13662	+	52.0	+	262		2.47		41518	+
HoCP 08-729	7824		33.0		237		2.12	-	31082	
Ho 08-9616 [4/]	8328		33.5		249		2.03	-	33124	+
Ho 08-9617 [4/]	7900		36.6		216	-	2.28		32216	+
Ho 08-9618 [4/]	8784		36.1		244		2.33		31082	

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 17. Nursery plantcane means of the SRU's 2008 "Ho", "HoCP", and "HoL" assignment series on a Sharkey clay soil at the Sugar Research Station in St. Gabriel, Louisiana in 2009.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
HoCP 96-540	**12080**	**50.7**	**238**	**3.19**	**32216**
L 99-226	17323	60.5	287 +	3.80	31989
L 01-283	9740	38.1	256	2.97	26091
HoCP 08-700	11386	45.1	253	2.36	38569
HoCP 08-701	11008	51.7	212	2.94	34939
Ho 08-706	11227	49.8	226	2.45	40611
Ho 08-709	14640	62.7	234	2.45	51274 +
Ho 08-710	10327	44.1	230	2.35 -	36527
Ho 08-711	15206	70.4	217	3.50	41518
Ho 08-716	7876	45.8	170 -	3.69	24956
Ho 08-717	11761	55.8	211	2.14 -	52181 +
HoL 08-718	9184	45.7	201	2.42	38342
Ho 08-719	13989	57.2	239	2.26 -	50139 +
HoL 08-720	16052	63.3	253	2.15 -	58988 +
HoL 08-722	8165	39.0	210	2.41	32216
HoL 08-723	13357	57.4	233	2.52	44921
HoCP 08-724	11362	57.2	198	3.10	36981
HoCP 08-726	11291	46.9	241	2.83	33124
Ho 08-728	11635	47.7	244	2.27 -	42199
HoCP 08-729	10933	43.9	249	2.63	33578
Ho 08-9616 [4/]	8376	37.8	223	1.96 -	40157
Ho 08-9617 [4/]	8920	47.9	186 -	2.23 -	43106
Ho 08-9618 [4/]	8761	45.4	184 -	2.67	34031

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

Table 18. Nursery plantcane means of the SRU's 2008 "Ho", "HoCP", and "HoL" assignment series across locations (Ardoyne Farm in Schriever, Iberia Research Station in Jeanerette, and Sugar Research Station in St. Gabriel) in 2009.

Variety	Sugar/ acre (lbs.)		Tons/ acre (tons)		Sugar/ ton (lbs.)		Weight/ stalk (lbs.)		Stalks/ acre (no.)	
HoCP 96-540	11421		45.7		251		2.88		31536	
L 99-226	13405		52.3		256		3.20		32821	
L 01-283	9707		35.2		276		2.30	-	30931	
HoCP 08-700	13168		48.6		270		2.43	-	40081	+
HoCP 08-701	12148		54.0		223		2.93		36603	
Ho 08-706	13260		55.5		241		2.66		41064	+
Ho 08-709	14148		55.7		256		2.32	-	48022	+
Ho 08-710	11079		45.8		240		2.41	-	37737	
Ho 08-711	15299	+	62.1	+	245		3.18		39023	+
Ho 08-716	9628		46.5		203	-	3.29		28359	
Ho 08-717	12089		51.3		236		2.08	-	49383	+
HoL 08-718	11485		51.8		216	-	2.64		39401	+
Ho 08-719	12648		48.6		260		2.24	-	43636	+
HoL 08-720	14672	+	55.6		264		2.10	-	52635	+
HoL 08-722	10393		43.0		238		2.30	-	37132	
HoL 08-723	14084		54.9		256		2.65		40762	+
HoCP 08-724	13791		59.5	+	228		2.66		45299	+
HoCP 08-726	13464		50.4		267		2.91		34334	
Ho 08-728	14093		53.1		264		2.31	-	46056	+
HoCP 08-729	12187		49.5		245		2.53		38418	
Ho 08-9616 [4/]	9122		37.4		244		2.04	-	37208	
Ho 08-9617 [4/]	9928		45.5		217		2.26	-	40611	+
Ho 08-9618 [4/]	10764		45.7		231		2.51		36376	

[4/] Varieties from the SRU'S Recurrent Selection for Borers (RSB) program.

2009 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS

David Sexton and Kenneth Gravois
Sugar Research Station

Edwis Dufrene and Mike Duet
USDA-ARS, Sugarcane Research Laboratory

Windell Jackson, Herman Waguespack, Jr. and Nathan Blackwelder
American Sugar Cane League

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 2009 outfield tests. Included are multi-year yield analyses for appropriate test varieties.

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

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

Interpreting one year of yield data can be misleading because varieties may differ in relative performance from year to year. Across location means can likewise be misleading since a variety, experimental or commercial, may not perform consistently at all locations. Multi-year and multi–location testing solves these problems by averaging the inconsistent performances.

The most widely grown variety in Louisiana in 2009 was HoCP96-540, occupying 50% of the state's acreage. Accordingly for comparison, HoCP96-540 is used as the check variety in all comparisons and is highlighted in the tables. To adjust for missing data, the SAS analysis

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

Six experimental varieties representing the 2007 assignment series were introduced to outfield locations for seed increase in 2009 (Table 1). Six experimental and six commercial varieties were planted at 11 outfield locations. Thirty-two tests were harvested in 2009 including eleven plantcane, eleven first-stubble, seven second-stubble, and three third-stubble crops (Table 2).

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

The Louisiana sugar industry was spared of tropical activity in 2009. However, the sugarcane crop lodged badly after heavy rainfall that began in September and lasted through the end of harvest, with only brief relief in mid-November. Harvest conditions were extremely muddy. All tests were harvested before the freezes of early January 2010.

L03-371 was harvested in plantcane through second stubble crops in 2009 and will be considered for release in the spring of 2010. The experimental variety HoCP04-838 was sent from the primary seed increase stations to secondary increase stations. This variety could be released in 2011.

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 2009.

Commercial Varieties		Experimental Varieties		Experimental Varieties Introduced to the Outfield	
HoCP96-540	L01-283	L03-371	HoCP06-537	L07-57	Ho07-604
L99-226	L01-299	HoCP04-838	HoCP06-563	L07-68	Ho07-612
L99-233		HoCP05-902			Ho07-613
HoCP00-950		HoCP05-961			Ho07-617

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

Location	Parish	Plantcane		First-stubble		Second-stubble		Third-stubble	
		2009 Planting Date	2009 Harvest Date	2008 Planting Date	2009 Harvest Date	2007 Planting Date	2009 Harvest Date	2006 Planting Date	2009 Harvest Date	2005 Planting Date
A. Landry	Iberville	*	**	10/07	**	08/27	**	09/07	**	09/15
Allains[1]	St. Mary	11/19	11/05	10/15	11/05	10/05	11/05	10/04	**	09/21
Alma	Pointe Coupee	08/31	11/30	09/29	11/10	10/22	11/10	09/21	10/14	09/16
Bon Secour	St. James	09/03	12/22	09/24	12/23	09/06	12/22	09/26	11/04	09/07
Brunswick	Pointe Coupee	08/27	11/27	09/22	11/27	09/15		*		*
F. Martin	St. Mary	09/04	01/05 [1]	10/13	11/06	09/28		*		*
Glenwood	Assumption	09/02	12/03	10/02	12/03	09/12	10/06	08/16	**	09/13
Lanaux	St. John	09/01	12/10	09/24	12/10	09/11	10/22	08/29	10/22	09/14
Levert-St. John	St. Martin	08/20	12/09	09/23	10/26	09/19	**	08/30	**	09/09
Magnolia	Terrebonne	09/03	11/23	10/17	11/23	09/07	11/23	10/10	**	10/06
Mary	Lafourche	10/21	11/24	10/09	10/09	09/20		*		*
R. Hebert	Iberia	09/22	1/06 [1]	10/13	01/06[1]	09/27	10/08	09/12	**	09/12

* No test planted at this location.

** No test harvested at this location.

[1] Harvested in 2010.

Table 3. Plantcane sugar per acre for five commercial and four experimental varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
HoCP96-540	8009	9202	10272	8495	9680	10885	9094	9239	10641	9514	12054	9735
L99-226	8268	9434	8377	9485	10743	11584	9799	11861 +	11273	10216	12530	1032
L99-233	9593	11372	11618	11848 +	12270 +	13533	11299	13400 +	12236	11776 +	11213	1190 +
HoCP00-950	7792	10421	10186	10835 +	11778 +	13405	11281	11744 +	13117	10784 +	12412	1125 +
L01-283	8124	10151	10273	11985 +	11289	11674	11310	11387	11653	10104	10434	1076 +
L03-371	9709	10980	-------	12466 +	11122	11324	11199	11710 +	11800	11380 +	--------	1129 +
HoCP04-838	8127	10208	10784	12648 +	12354 +	14843	11214	12998 +	11253	12313 +	11931	1169 +
HoCP05-902	6678	9765	9538	11427 +	7990	11466	10493	11338	11577	11210 +	9667	1010
Ho05-961	8993	9509	10898	11822 +	10894	11535	10795	13764 +	12268	11325 +	11760	1123 +

Table 4. Plantcane cane yield for five commercial and four experimental varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)											
HoCP96-540	28.1	34.0	35.0	35.6	36.7	43.7	33.1	38.2	38.6	35.0	39.8	36.2
L99-226	30.7	31.9	30.3	36.8	35.4	42.7	32.1	41.7	36.4	33.8	40.1	35.6
L99-233	36.2	41.0 +	39.7	42.1	41.7	51.7	39.8	49.8 +	43.1 +	42.0 +	38.4	42.5 +
HoCP00-950	27.8	35.9	35.2	36.9	38.9	44.7	35.2	41.9	43.2 +	34.3	40.2	37.6
L01-283	30.0	35.5	37.8	39.7	38.7	44.1	38.6	43.6	38.9	34.1	36.9	38.0
L03-371	36.3 +	37.1	-------	42.4	38.1	42.6	38.4	41.1	40.3	38.0	-------	39.4 +
HoCP04-838	32.5	37.6	40.9	46.3	43.0	56.8	38.9	47.3 +	39.8	42.8 +	42.3	42.6 +
HoCP05-902	21.7	33.9	29.8	39.6	29.3 -	40.6	32.9	37.4	36.9	35.4	30.5	33.5
Ho05-961	31.7	33.9	38.6	41.5	39.0	44.9	37.1	47.9 +	40.8	37.6	39.0	39.3 +

Table 5. Plantcane sugar per ton for five commercial and four experimental varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)											
HoCP96-540	288	271	293	241	264	250	274	241	275	271	303	270
L99-226	269	296	277	258	304	273 +	305 +	285 +	309 +	302 +	310	290 +
L99-233	266	278	292	281 +	295	264	284	269	284	280	291	281 +
HoCP00-950	279	291	291	295 +	304	300 +	320 +	280 +	304 +	315 +	308	299 +
L01-283	274	286	272	303 +	292	263	291	259	300 +	297 +	282	284 +
L03-371	268	296	-------	294 +	292	266	294	285 +	293	299 +	-------	287 +
HoCP04-838	250	271	264	274 +	288	262	289	275 +	283	288 +	284	275
HoCP05-902	310	288	322	291 +	275	283 +	319 +	303 +	313 +	318 +	317	303 +
Ho05-961	285	280	283	285 +	280	257	290	288 +	301 +	301 +	301	286 +

Table 6. Plantcane stalk weight for five commercial and four experimental varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R. Hebert	Brunswick	Mean
	(lbs/tons)											
HoCP96-540	1.70	2.87	2.57	2.66	2.48	2.38	2.59	3.25	2.91	2.83	2.94	2.65
L99-226	2.34 +	3.08	2.99	3.06	2.94 +	3.13 +	3.08	3.76	3.22	3.12	3.13	3.08 +
L99-233	2.61 +	1.94 -	1.75 -	2.07 -	2.14	2.11	1.97	2.20 -	2.52	2.65	2.12 -	2.17 -
HoCP00-950	1.91	2.91	1.96	2.60	2.20	2.31	2.40	2.80	2.72	2.56	2.26 -	2.42 -
L01-283	1.89	2.38 -	2.27	2.24	2.40	2.16	2.26	2.14 -	2.65	2.08 -	2.02 -	2.23 -
L03-371	2.17 +	2.52 -	------	2.76	2.62	2.59	2.21	2.89	2.74	2.41 -	--------	2.55
HoCP04-838	2.13	2.39 -	2.41	2.70	2.50	2.48	2.22	2.42 -	2.68	2.22 -	2.54	2.43
HoCP05-902	1.81	2.24 -	1.8 -	2.24	2.03 -	2.33	2.29	2.22 -	2.23 -	2.62	2.12 -	2.18 -
Ho05-961	2.10	2.46 -	2.13	2.59	2.89 +	2.49	3.47	2.73	2.66	2.41 -	2.28 -	2.56

Table 7. Plantcane stalk number for five commercial and four experimental varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
HoCP96-540	33495	23699	27661	26905	29838	37987	25697	23540	26654	24818	27116	27947
L99-226	26378	20804	20420	24062	24216	26700	20902	22334	23028	21798	26425	23370 -
L99-233	27747	42390 +	45653 +	41462	38900 +	50878	40708 +	45351 +	34347 +	31891 +	36352	39992 +
HoCP00-950	29304	24596	35911	28680	35329	38753	29446	30096 +	31737 +	27132	36114	31554 +
L01-283	32310	29860 +	34699	36169	32296	41322	34710	41260 +	29592	32990 +	36578	34708 +
L03-371	34545	29658 +	-------	31128	29387	32925	34914	28412	29742	31932 +	--------	31405 +
HoCP04-838	30457	31571 +	36332	34459	34970	47582	35332 +	39584 +	29889	38502 +	32992	35606 +
HoCP05-902	24471	30375 +	33495	35253	29476	35198	28886	33963 +	33090 +	27042	28914	30924
Ho05-961	30105	27660	36190	33287	27050	36173	23839	35084 +	30784	31277 +	34122	31416 +

Table 8. First-stubble sugar per acre for two experimental and nine commercial varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
LCP85-384	6224	4626	6134	6237	6749 -	6922	7327 -	7854 -	8202	8176 -	8414	6988 -
Ho95-988	6456	5775	7511	7129	8393	7061	9104	12280	10082	9725	9739 +	8478
HoCP96-540	7101	5675	6459	7543	8856	7049	9456	13097	9040	10053	7841	8379
L97-128	5857	5780	7698	6164	7857	8619	9085	11788	9091	9414	10486 +	8349
L99-226	6056	7012	7672	8855	8528	8014	9916	10930	10318	10610	9211	8829
L99-233	7097	4961	8053 +	8698	8009	6704	8580	10907	11735 +	9477	11643 +	8715
HoCP00-950	6613	6325	8893 +	7263	7187	7441	9031	13257	11221 +	12800 +	10203 +	9112
L01-283	7836	6532	-------	8158	8802	8107	10433	12813	10063	11032	11808 +	9558 +
L01-299	6985	-------	8145 +	8482	9832	9399	10460	13132	11059 +	12260 +	11598 +	10244 +
L03-371	7106	7044	8785 +	8130	8042	7564	9501	13338	9808	9287	8109	8792
HoCP04-838	6934	5891	7910	9238	7311	8903	9330	13069	10354	9836	9481 +	8932

Table 9. First-stubble cane yield for two experimental and nine commercial varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
LCP85-384	24.9	17.6 -	26.0	24.1	28.6 -	33.7	26.1 -	31.2 -	28.4 -	29.1 -	29.0	27.2 -
Ho95-988	26.3	22.9	28.5	27.1	34.0	36.9	31.1	44.0	33.4	34.0	33.5 +	32.0
HoCP96-540	28.8	22.6	27.9	28.4	37.5	38.4	32.9	46.6	33.3	36.6	27.9	32.8
L97-128	22.3 -	20.5	31.6	23.0	29.5 -	35.9	31.8	42.5	31.8	33.6	36.8 +	30.9
L99-226	22.8 -	26.5	28.1	29.6	31.3	39.5	31.8	37.6 -	32.8	34.4	30.6	31.4
L99-233	25.8	19.4	34.3 +	30.5	31.5	35.4	28.6 -	43.2	39.5 +	36.5	39.4 +	33.1
HoCP00-950	22.4 -	21.6	31.8	22.7 -	25.0 -	32.7	28.2 -	43.8	36.4	39.8	32.8	30.7
L01-283	28.4	24.6	-------	27.8	32.4	38.1	35.4	43.3	34.5	37.4	39.0 +	34.1
L01-299	29.3	-------	32.9 +	30.8	39.3	47.5	36.4	49.3	38.9 +	43.3 +	40.2 +	39.1 +
L03-371	27.1	25.9	31.5	28.7	30.8 -	39.3	32.0	45.7	34.1	31.2 -	30.3	32.4
HoCP04-838	27.6	23.9	33.3 +	33.9	28.6 -	42.4	32.9	46.5	38.4 +	34.4	34.0 +	34.2

Table 10. First-stubble sugar per ton for two experimental and nine commercial varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
LCP85-384	250	263	236	258	236	204	281	253	290 +	281	290	258
Ho95-988	247	253	264 +	263	245	192	294	282	302 +	286	292	265
HoCP96-540	247	251	231	264	236	184	287	281	271	276	281	255
L97-128	262	281	243	269	265 +	241 +	286	277	286 +	280	285	270 +
L99-226	265	262	272 +	299 +	273 +	204	312 +	291	315 +	308 +	301 +	282 +
L99-233	274 +	255	233	285	252	190	300	253	296 +	262	296	263
HoCP00-950	295 +	291	280	319 +	288 +	226 +	320 +	303	308 +	322 +	311 +	297 +
L01-283	277 +	266	-------	294 +	272 +	212 +	295	295	292 +	295 +	303 +	280 +
L01-299	239	-------	248	276	251	197	287	267	284 +	283	288	263
L03-371	262	272	279 +	282	260 +	193	298	292	288 +	298 +	266	272 +
HoCP04-838	252	247	238	272	256	208	284	281	270	287	279	261

Table 11. First-stubble stalk weight for two experimental and nine commercial varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
LCP85-384	1.78	1.28 -	1.49 -	1.59 -	1.90	1.87	1.64 -	1.57 -	2.13 -	1.46 -	1.80	1.68 -
Ho95-988	1.78	1.85	2.40	1.90 -	1.85 -	2.10	2.58	2.08 -	2.52	2.33	1.87	2.11
HoCP96-540	2.10	1.75	2.29	2.17	2.26	1.92	2.67	2.71	2.82	2.34	1.89	2.27
L97-128	1.98	1.92	2.31	2.02	2.27	2.06	2.55	2.57	2.68	2.38	2.48 +	2.29
L99-226	2.37	2.34 +	2.66	2.12	2.35	2.21	2.79	2.80	2.95	2.71 +	2.41 +	2.52 +
L99-233	1.65 -	1.47	2.08	1.71 -	1.68 -	1.66 -	1.79 -	1.83 -	2.49	1.81 -	2.04	1.84 -
HoCP00-950	1.37 -	1.74	1.82 -	1.61 -	1.73 -	1.85	1.87 -	2.20	2.22 -	1.86 -	1.93	1.84 -
L01-283	1.38 -	1.63	-------	1.81 -	1.76 -	1.65	2.05 -	1.76 -	2.04 -	1.97 -	2.03	1.81 -
L01-299	1.66	-------	1.93	1.75 -	1.83 -	2.13	1.76 -	2.14 -	2.18 -	1.94 -	2.11	1.95 -
L03-371	2.08	1.95	2.40	2.05	2.25	2.19	2.35	2.55	2.40	2.28	1.76	2.20
HoCP04-838	1.76	1.62	1.77 -	1.86 -	1.86 -	1.84	2.17 -	2.34	2.54	2.11	1.84	1.97 -

Table 12. First-stubble stalk number for two experimental and nine commercial varieties at eleven outfield locations in 2009.

	Heavy						Light					
Variety	Allains	Alma	St. John	Magnolia	F. Martin	Mary	Bon Secour	Glenwood	Lanaux	R.Hebert	Brunswick	Mean
	(lbs/tons)											
LCP85-384	28717	28224	36202 +	30396	30182	36582	32384 +	41021	26637	40350 +	32825	33047 +
Ho95-988	29775	25153	24167	28514	37512	34777	24152	43280	26686	29286	35988	30845
HoCP96-540	27880	26205	24458	26122	33182	39818	24740	34794	23678	31424	29698	29273
L97-128	23255	21464	28128	23011	26498	35375	24935	33200	23792	28370	29828	27078 -
L99-226	19391	22680	21522	27896	26704	36199	22818	27272	22421	25557	25618	25280 -
L99-233	32585	26501	33196	35834 +	37691	42913	32071 +	47511	32739 +	40149 +	38607 +	36345 +
HoCP00-950	32847	24897	35091 +	28347	28964	35792	30191	40155	32765 +	42842 +	34055	33268 +
L01-283	40996 +	30195	-------	31184	37723	46299	34625	50136 +	34355 +	37936	38923 +	38237 +
L01-299	35125	-------	34089 +	35137 +	42686 +	45234	42750 +	47472	36550 +	45139 +	38081 +	40405 +
L03-371	26262	26671	26459	27995	27614	36218	27201	35939	28676	27992	35332	29669
HoCP04-838	31359	29587	37948 +	36843 +	31140	46982	31047	39754	31381	32713	37055	35074 +

Table 13. Second-stubble sugar per acre for one experimental nine commercial varieties at seven outfield locations in 2009.

	Heavy				Light			
Variety	Allains	Alma	Magnolia	Bon Secour	Glenwood	Lanaux	R.Hebert	Mean
				(lbs/tons)				
LCP85-384	5988	3928 -	7221	8443	7263	5625	5789	6322
Ho95-988	6475	5840	7274	9624	7992	6453	7661	7331
HoCP96-540	5952	6063	5856	8377	8293	6267	7213	6860
L97-128	4651	5133	5387	10845 +	11041	7459 +	7902	7488
L99-226	5734	6716	6210	8928	8713	6433	7626	7194
L99-233	7055	5322	6764	10013	8942	7412 +	7534	7578
HoCP00-950	7253	6037	3996	9362	8831		9429	7485
L01-283	7512 +	6129	7371	12075 +	10298	8957 +	7865	8601 +
L01-299	7694 +	6194	7833	12241 +	9404	8057 +	8535	8561 +
L03-371	7273	6140	7012	10262 +	9528	7814 +	8157	8026 +

Table 14. Second-stubble cane yield for one experimental nine commercial varieties at seven outfield locations in 2009.

	Heavy				Light			
Variety	Allains	Alma	Magnolia	Bon Secour	Glenwood	Lanaux	R.Hebert	Mean
				(lbs/tons)				
LCP85-384	21.9	16.9 -	24.2	28.6	39.4	25.6	23.3	25.7
Ho95-988	25.2	23.0	23.3	30.2	39.8	26.5	31.2	28.5
HoCP96-540	23.7	24.7	20.7	29.6	46.5	29.1	29.3	29.1
L97-128	17.1 -	19.4 -	16.8	36.3 -	46.1	29.4	29.7	27.8
L99-226	21.5	26.0	20.2	28.1	39.1	27.0	27.1	27.0
L99-233	26.2	20.6 -	22.0	34.1	45.4	31.8	30.3	30.1
HoCP00-950	23.9	21.4	14.1	29.1	36.8	----------	33.8	26.5
L01-283	28.2	22.8	24.8	38.6 +	47.0	36.3 +	30.9	32.7
L01-299	27.7	24.2	25.6	40.1 +	48.8	38.2 +	34.1	34.1
L03-371	26.6	23.5	22.0	33.0	44.8	34.8 +	31.0	30.8

Table 15.Second-stubble sugar per ton for one experimental nine commercial varieties at seven outfield locations in 2009.

	Heavy			Light			
Variety	Allains	Alma	Magnolia	Bon Secour	Glenwood	Lanaux	R.Hebert	Mean
				(lbs/tons)				
LCP85-384	276	232	299	296	185	219	250	251
Ho95-988	257	253 +	313	318 +	201	243 +	244	261
HoCP96-540	252	246	294	281	176	215	242	244
L97-128	273	265	324	299	239 +	254 +	267	274 +
L99-226	267	258	313	318 +	220 +	240	281	271 +
L99-233	268	258	308	295	197	233	248	258
HoCP00-950	304	282 +	295	322 +	240 +	----------	280	287 +
L01-283	267	268 +	300	313 +	219 +	247 +	254	267
L01-299	277	256	308	305 +	193	211	251	257
L03-371	274	260	319	311 +	212 +	225	262	266

Table 16. Second-stubble stalk weight for one experimental nine commercial varieties at seven outfield locations in 2009.

	Heavy			Light			
Variety	Allains	Alma	Magnolia	Bon Secour	Glenwood	Lanaux	R.Hebert	Mean
				(lbs/tons)				
LCP85-384	1.79	1.28 -	1.75	1.52 -	1.75	1.81	1.56	1.64
Ho95-988	2.06	1.72	1.96	2.05	1.91	2.00	2.09 +	1.97
HoCP96-540	1.69	1.75	1.53	2.30	1.56	2.14	1.70	1.81
L97-128	1.72	1.63	2.06	2.47	2.05	1.99	1.98	1.98
L99-226	1.84	1.94	1.84	2.61	1.75	2.62 +	2.22 +	2.12 +
L99-233	1.77	1.34 -	1.30	2.23	1.50	1.94	1.77	1.69
HoCP00-950	1.38	1.73	1.65	1.95	1.70	----------	1.77	1.70
L01-283	1.74	1.47	1.91	1.80	1.63	1.85	1.68	1.73
L01-299	1.62	1.38	1.88	1.89	1.63	2.06	1.79	1.75
L03-371	1.99	1.63	1.69	2.10	2.03	2.32	1.54	1.88

Table 17. Second-stubble stalk number for one experimental nine commercial varieties at seven outfield locations in 2009.

	Heavy			Light				
Variety	Allains	Alma	Magnolia	Bon Secour	Glenwood	Lanaux	R.Hebert	Mean
				(lbs/tons)				
LCP85-384	24297	26768	27886	37695 +	46157	28612	29889	31615
Ho95-988	24840	26786	23658	29998	41559 -	26629	29465	28996
HoCP96-540	28304	28452	27957	25922	60205	27303	34556	33243
L97-128	20119 -	24147	16236	29430	45460	29790	30095	27897
L99-226	23542	27125	21102	21597	44974	20828	24405	26225 -
L99-233	30224	30863	33536	33262	61336	32936	34504	36666
HoCP00-950	35092	24793	16544	29828	43072 -		39220	31425
L01-283	33043	31002	26966	43067 +	57673	39203 +	37800	38393
L01-299	35548	38444	27004	42918 +	62008	37183 +	38497	40062 +
L03-371	27171	28931	26067	31691	44759	33096	41235	33311

Table 18. Third-stubble sugar per acre for nine commercial varieties at three outfield locations in 2009.

	Heavy	Light		
Variety	Alma	Bon Secour	Lanaux	Mean
		(tons/A)		
LCP85-384	4219 -	7613	5514	5782
Ho95-988	5067 -	9098	4580 -	6248
HoCP96-540	7095	8049	6766	7303
L97-128	7020	8358	7218	7532
L99-226	6699	9425 +	6571	7565
L99-233	6780	9653 +	7136	7865
HoCP00-950	7263	9735 +	7757	8252
L01-283	7302	11154 +	5721	8059
L01-299	8591	11792 +	8769	9717 +

Table 19. Third-stubble cane yield for nine commercial varieties at three outfield locations in 2009.

	Heavy	Light		
Variety	Alma	Bon Secour	Lanaux	Mean
		(tons/A)		
LCP85-384	20.4 -	24.0	17.6 -	20.7 -
Ho95-988	22.3 -	29.7 +	15.9 -	22.6
HoCP96-540	32.4	25.1	23.6	27.0
L97-128	32.5	26.9	22.9	27.4
L99-226	27.7	27.3	19.8	24.9
L99-233	33.0	31.3 +	24.3	29.5
HoCP00-950	30.8	29.4 +	24.1	28.1
L01-283	33.4	33.8 +	19.0	28.8
L01-299	38.6+	36.3 +	26.3	33.7 +

Table 20. Third-stubble sugar per ton for nine commercial varieties at two outfield locations in 2009.

	Heavy	Light		
Variety	Alma	Bon Secour	Lanaux	Mean
		(tons/A)		
LCP85-384	206	317	314 +	279
Ho95-988	228	306	290	275
HoCP96-540	219	320	287	275
L97-128	217	311	315 +	281
L99-226	241 +	346 +	332 +	306
L99-233	206	308	292	269
HoCP00-950	235	331	322 +	296
L01-283	219	330	303	284
L01-299	222	325	332 +	293

Table 21.Third-stubble stalk weight for nine commercial varieties at three outfield locations in 2009.

	Heavy	Light		
Variety	Alma	Bon Secour	Lanaux	Mean
		(tons/A)		
LCP85-384	1.64 -	1.39 -	1.44 -	1.49 -
Ho95-988	1.80 -	1.80	1.54 -	1.71 -
HoCP96-540	2.47	2.15	2.12	2.24
L97-128	2.07 -	2.26	1.91	2.08
L99-226	2.49	2.52	1.93	2.31
L99-233	1.62 -	1.76	1.54 -	1.64 -
HoCP00-950	1.80 -	1.64 -	1.68 -	1.71 -
L01-283	1.49 -	1.74 -	1.75	1.66 -
L01-299	1.91 -	2.48	1.51 -	1.97 -

Table 22. Third-stubble stalk number for nine commercial varieties at three outfield locations in 2008.

	Heavy	Light		
Variety	Alma	Bon Secour	Lanaux	Mean
		(tons/A)		
LCP85-384	24935	34722 +	24688	28115
Ho95-988	24894	33690 +	21065	26550
HoCP96-540	26417	23616	22711	24248
L97-128	31682	23997	24040	26573
L99-226	22554	21915	20471	21646
L99-233	40962	35821 +	32771 +	36518 +
HoCP00-950	34485 +	38153 +	28750	33796 +
L01-283	45843 +	39397 +	21003	35414 +
L01-299	41189 +	29253	35567 +	35336 +

Table 23. Forth Stubble means from one outfield location in 2009: 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	6612	39.3	169	1.64	47738
HoCP91-555	7988 +	39.5	202+	1.63	48804
Ho95-988	8224 +	38.7	213+	1.92	40983
HoCP96-540	5227	34.1	155	1.74	39054
L97-128	8322 +	42.1+	197+	1.97	44090
L99-226	9375 +	40.2	233+	2.37+	33950
L99-233	8216 +	43.4+	190+	1.71	52506
HoCP00-950	9283 +	39.9	233+	1.96	41209
L01-283	10429 +	51.3+	204+	1.64	63369+
L01-299	9246 +	51.4+	180	1.86	57647+

Table 24. Plantcane means from eleven outfield locations in 2009: Allains, Alma, Brunswick, Bon Secour, F. Martin, Glenwood, Lanaux, Magnolia, Mary, R. Hebert and St. John.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
HoCP96-540	9735	36.2	270	2.65	27947
L99-226	10325	35.6	290+	3.08+	23370-
L99-233	11829+	42.3+	281+	2.17-	39926+
HoCP00-950	11251+	37.6	299+	2.42-	31554+
L01-283	10762+	38.0+	284+	2.23-	34708+
L03-371	11300+	39.2+	289+	2.52	31608+
HoCP04-838	11698+	42.6+	275	2.43-	35606+
HoCP05-902	10104	33.5-	303+	2.18-	30924+
Ho05-961	11233+	39.3+	286+	2.56	31416+

Table 25. First-stubble means from eleven outfield locations in 2009: Allains, Alma, Brunswick, Bon Secour, F. Martin, Glenwood, Lanaux, Magnolia, Mary, R. Hebert and St. John.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6988-	27.2-	258	1.68-	33047+
Ho95-988	8478	32.0	265+	2.11-	30845
HoCP96-540	8379	32.8	255	2.27	29273
L97-128	8349	30.8	270+	2.29	27078
L99-226	8829	31.4	282+	2.52+	25280-
L99-233	8715	33.1	263	1.84-	36345+
HoCP00-950	9112+	30.7	297+	1.84-	33268+
L01-283	9468+	33.9	278+	1.81-	38063+
L01-299	9901+	37.9+	262	1.92-	39767+
L03-371	8792	32.4	272+	2.20	29669
HoCP04-838	8932	34.2	261	1.97-	35074+

Table 26. Second-stubble means from seven outfield locations in 2009: Allains, Alma, Bon Secour, Glenwood, 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	6322	25.7-	251	1.64	31615
Ho95-988	7331	28.5	261+	1.97	28996
HoCP96-540	6860	29.1	244	1.81	33243
L97-128	7488	27.8	274+	1.98	27897-
L99-226	7194	27.0	271+	2.12+	26225-
L99-233	7578	30.1	258+	1.69	36666
HoCP00-950	7422	26.8	282+	1.73	31045
L01-283	8601+	32.7+	267+	1.73	38393+
L01-299	8570+	34.1+	257+	1.75	40009+
L03-371	8026+	30.8	266+	1.89	33218

Table 27. Third-stubble means from three outfield locations in 2009: Alma, Bon Secour and Lanaux.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	5782-	20.7-	279	1.49-	28115
Ho95-988	6248	22.6	275	1.71-	26550
HoCP96-540	7303	27.0	275	2.24	24248
L97-128	7532	27.4	281	2.08	26573
L99-226	7565	24.9	306+	2.31	21646
L99-233	7856	29.5	269	1.64-	36518+
HoCP00-950	8252	28.1	296+	1.71-	33796+
L01-283	8059	28.8	284	1.66-	35414+
L01-299	9717+	33.7+	293+	1.97	35336+

Table 28. Combined plantcane means across outfield locations from 2005 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7505-	27.2-	275	1.91-	28958
HoCP95-988	8875-	32.6-	272	2.31-	28426
HoCP96-540	9718	35.2	276	2.48	29205
L97-128	9172-	33.8-	271	2.49	27434-
L99-226	10173+	34.9	291+	2.84+	25098-
L99-233	9929	37.0+	268-	1.98-	38166+
HoCP00-950	10073	34.1	295+	2.21-	31229+
L01-283	9938	35.3	282+	2.16-	33363+
L01-299	9137-	33.6-	271	2.19-	31413+

Table 29. Combined first-stubble means across outfield locations from 2006 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7207-	26.3-	274	1.71-	31446+
HoCP95-988	8437	30.5	277	2.14	28825
HoCP96-540	8708	31.8	275	2.21	29291
L97-128	8303	29.8-	279	2.27	26297-
L99-226	9417+	31.8	296+	2.61+	24844-
L99-233	8663	31.7	274	1.80-	35893+
HoCP00-950	8891	29.5-	301+	1.94-	30587
L01-283	9450+	32.9	288+	1.88-	35477+
L01-299	9706+	35.8+	273	1.90-	37966+

Table 30. Combined second-stubble means across outfield locations from 2007 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6356-	24.8-	259	1.55-	32717
HoCP95-988	7318	27.5	268+	1.90	29188
HoCP96-540	7001	28.0	253	1.84	31141
L97-128	7335	27.2	272+	1.97+	27678-
L99-226	7654+	27.6	280+	2.23+	25290-
L99-233	7820+	30.7+	257	1.65-	38080+
HoCP00-950	7994+	27.9	289+	1.78	31799
L01-283	8329+	30.7+	274+	1.71-	36348+
L01-299	8574+	33.4+	261+	1.73	39494+

Table 31. Combined third-stubble means across outfield locations from 2008 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	5830	20.6	283	1.43-	29043
HoCP95-988	6318	22.6	278	1.64-	27912
HoCP96-540	6479	23.5	281	2.01	23471
L97-128	7499	26.4	288	1.98	27084
L99-226	7813+	25.6	307+	2.21	23322
L99-233	7993+	29.4+	274	1.58-	37756+
HoCP00-950	8157+	27.0	304+	1.68-	32754+
L01-283	8313+	28.3+	295+	1.57-	36901+
L01-299	9466+	32.7+	292	1.82	37021+

Table 32. Combined plantcane means for L03-371 across outfield locations from 2007 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7440-	26.4-	280	1.98-	27097
HoCP95-988	8683-	31.4-	275	2.33-	26981
HoCP96-540	9712	35.5	274	2.61	28015
L97-128	9561	34.5	277	2.58	26826
L99-226	10062	34.7	290+	2.99+	23485-
L99-233	10233+	38.0+	269	2.07-	37677+
HoCP00-950	10352+	34.9	297+	2.32-	30386+
L01-283	10213	36.1	283+	2.25-	32775+
L01-299	9487	34.5	274	2.21-	32729+
L03-371	10357+	35.7	290+	2.45-	29608

Table 33. Combined first-stubble means for L03-371 across outfield locations from 2008 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	6639-	24.8-	270	1.64-	31018
HoCP95-988	7911	29.0-	274	2.06-	28608
HoCP96-540	8397	31.2	270	2.17	29190
L97-128	7964	28.7-	278+	2.21	25933-
L99-226	8729	30.1	291+	2.53+	24243-
L99-233	8356	30.9	272	1.77-	35218+
HoCP00-950	8681	28.9-	301+	1.84-	31428
L01-283	8934	31.4	286+	1.80-	35327+
L01-299	9599+	35.9+	271	1.88-	38401+
L03-371	8596	30.6	283+	2.15	28679

Table 34. Combined plantcane means for HoCP04-838 across outfield locations from 2008 to 2009.

Variety	Sugar per Acre	Cane Yield	Sugar per Ton	Stalk Weight	Stalk Number
	(lbs/A)	(tons/A)	(lbs/ton)	(lbs)	(stalks/A)
LCP85-384	7525-	26.7-	283	2.03-	26035
HoCP95-988	8125-	29.8-	272	2.23-	26522
HoCP96-540	9441	34.1	277	2.66	26236
L97-128	9331	33.6	278	2.63	25680
L99-226	9829	33.6	292+	2.98+	22809-
L99-233	10391+	37.6+	276	2.11-	36391+
HoCP00-950	10120+	33.9	299+	2.30-	29788+
L01-283	9893	34.7	286+	2.25-	31480+
L03-371	10370+	35.4	293+	2.49-	28683+
HoCP04-838	10465+	37.7+	278	2.35-	32426+

SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION

Gert Hawkins and Kenneth Gravois
Sugar Research Station

The Sugar Research Station sucrose laboratory processed 1953 samples during the 2009 harvest season (Table 1). Standard laboratory procedures were used to analyze 597 samples that included 256 sugarcane samples, 221 sweet sorghum samples, and 120 energy cane samples. The juice was extracted via a three-roller mill. Procedures included the use of Octapol® for clarification, and Brix was measured by a refractometer and pol was measured by saccharimeter (Autopol 880). Sucrose percent and theoretical recoverable sugar (lbs/ton of cane) was calculated based on the Brix and pol values. The sucrose laboratory processed samples from August 2009 to January 2010.

A total of 1,356 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, moisture, purity, and theoretical recoverable sugar. Samples that were spectral outliers were automatically sent into a bin and reanalyzed using wet chemistry procedures.

Table 1. Number of sugarcane samples processed at the Sugar Research Station sucrose laboratory during the 2009 harvest season.

Unit/Project Area	Leader	Number of Samples
School of Plant, Environmental, and Soil Sciences	Brenda Tubana	214
	Magdi Selim	6
	Jim Wang	32
Iberia Research Station	Sonny Viator	45
Plant Pathology and Crop Physiology	Jeff Hoy	312
Biological and Agricultural Engineering Dept	Richard Bengston	12
Entomology Department	Gene Reagan	30
LCES	Albert Orgeron	156
Sugar Research Station/Variety Development	Line Trials	394
	Increase	123
	Nursery	222
	Genetics	6
	Energy Cane	140
Contract Services		40
Audubon Sugar Institute (Sweet Sorghum)	Misook Kim	17
Macon Ridge Research Station (Sweet Sorghum)	Wink Alison	60
LCES (Sweet Sorghum)	Jerry Whatley	10
Rice Research Station (Sweet Sorghum)	Dustin Harrell	24
Iberia Research Station (Sweet Sorghum)	Howard Viator	50
Southeast Research Station (Sweet Sorghum)	Kun-Jun Han	60
TOTAL		1953

LAES SUGARCANE TISSUE CULTURE LABORATORY

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

During the 2009-2010 production season, about 21,000sugarcane 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	1,296
HoCP04-838	2,070
HoCP96-540	2,974
HoCP85-845	5,256
HoCP00-950	1,613
L99-226	1,296
L01-283	5,598
Ho02-113	720
TOTAL	20,822

THE 2009 LOUISIANA SUGARCANE VARIETY SURVEY

Benjamin L. Legendre and Kenneth A. Gravois
Audubon Sugar Institute and Sugar Research Station

INTRODUCTION

A sugarcane variety survey was conducted during the summer of 2009 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 (Legendre and Gravois 2009). There were no parish survey reports from Acadia, Cameron or Evangeline Parishes; however, the total area planted to sugarcane in these three parishes was less than 2,000 acres according to USDA-FAS. The information presented in this survey was summarized from the 20 individual parish reports that were submitted. According to USDA-FSA, there were 420,887 total acres planted to sugarcane in Louisiana in 2009. There were 412,327 acres included in this survey or 98 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 91-555, Ho 95-988, HoCP 96-540, L 97-128, L 99-226, L 99-233, HoCP 00-950 and L 01-283, were listed along with "Others" in the survey. The category of others included, but was not limited to, small acreages of CP 70-321, HoCP 85-845, CP 89-2143 and the newly released variety, L 01-299. 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 statewide is shown in Table 1. Statewide, the area planted to sugarcane in 2009 was 420,887 acres (3,558 acres or approximately 1% more than reported in 2008) according to state USDA-FSA records (Willie Cooper, USDA-FAS, personal communications). There was a total of 412,327 acres included in the current survey. Sugarcane was grown by 495 producers (a decrease of 31 producers or 4.1% when compared to the 2008 crop). Of the total area planted to sugarcane, approximately 93.5% or 385,526 acres was available for harvest while the remaining 6.5% or 26,801 acres were used for seed cane purposes.

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 178,262, an increase of 13,210 acres when compared to 2008. This represented approximately 43.2% of the planted area reported in the state (Table 3). The three parishes with the largest acreage of sugarcane in the Bayou

Teche region are Iberia (57,231 acres), St. Mary (40,039 acres) and Vermillion (32,253 acres) (Table 1). The River-Bayou Lafourche region reported 163,271 acres (39.6% of the state's acreage), an increase of 4,298 acres when compared to the 2008 survey. The three parishes with the largest acreage of sugarcane in the River-Bayou Lafourche region are Assumption (41,228 acres), Iberville (35,633 acres) and Lafourche (28,263 acres)(Table 1). The Northern region reported 70,794 acres (17.2% of the state's acreage), up 3,793 acres from what was reported in the 2008 survey. The three parishes with the largest acreage of sugarcane in the Northern region are Pointe Coupee (33,026 acres), West Baton Rouge (14,147 acres) and Rapides (9,656 acres) (Table 1).

The total area planted to sugarcane in Louisiana has remained relatively stable in recent years although there had been a steady decline from 2000 to 2007. At its peak in 2000-2001, there were approximately 500,000 acres planted to sugarcane. Overall, the drop has been approximately 80,000 to 100,000 acres over the last 10-year period. The main reasons for this decline in area were the low return on investment due to low sugar prices (although a rally in sugar prices has taken place during the last six months but was not a contributing factor for the area planted to sugarcane in 2008), moderate to 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 2009 was HoCP 96-540 with 50% of the total area planted to this variety. HoCP 96-540 has retained this first place ranking for the last two years. This was only the second time since 1998 that a variety other than LCP 85-384 held the lead spot. L 97-128 was the second leading variety with 17% followed by L 99-126, LCP 85-384, L 99-233 and Ho 95-988 with 17%, 6%, 6% and 5%, respectively. All other varieties in the survey had each 2% or less of the planted area for 2009.

In 2009, there were 114,627 acres of plant-cane (27.8% of the total area) consisting of predominately four varieties, HoCP 96-540, L 99-226, L99-233 and L 97-128, representing 48%, 21%, 13% and 7%, respectively, of the plant-cane area (Table 2). In 2009, growers expanded two newer varieties, HoCP 00-950, released in the fall of 2007, and L 01-283, released in the fall of 2008, to their maximum extent limited only by the amount of seed cane available for expansion; however, they still represented only 5% and 1%, respectively, of the plant-cane area grown in 2009. There was only a trace of LCP 85-384 grown as plantcane in 2009. There was a total of 131,532 acres or 31.9% of the total area planted to sugarcane grown as the first-stubble crop in 2009. HoCP 96-540, L 97-128, L 99-226 and L 99-233 occupied 52%, 19%, 13% and 7%, respectively, of the first-stubble crop. LCP 85-384 occupied only 1% of the first-stubble crop. All other varieties occupied 5% or less of the first-stubble crop.

There were 121,636 acres or 29.5% of the total area planted to sugarcane grown as second-year stubble in 2009. HoCP 96-540, L 97-128 and Ho 95-988 were the three leading varieties found in second-year stubble with 54%, 25% and 8%, respectively, of the total area. LCP 85-384 occupied only 6% of the second-stubble crop area. There were only 44,532 acres or 10.8% of the total area planted to sugarcane reported as third-

year stubble and older in 2009. This was a significant departure from past years when LCP 85-384 was the leading variety from plant-cane through third-year stubble and older. One of the characteristics of this variety was its excellent stubbling ability; however, in recent years the variety has not performed up to expectations because of common rust limiting production (Hoy 2005). However, the newer varieties do not have the same stubbling ability as did LCP 85-384. HoCP 96-540 occupied 39% of the third-stubble and older crop followed closely by LCP 85-384. This will undoubtedly be the last year in which LCP 85-384 occupies double digit levels for any crop year.

The majority of the Louisiana sugarcane crop has been harvested by cane combines since 2000 when over 70% of the crop was planted to LCP 85-384, 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. Many of the newer varieties are better suited for harvest by the soldier system since they are mostly erect at harvest and less brittle. However, two of the newer varieties, L 99-226 and L 99-233, have a greater tendency to lodge or lay down which lends themselves for harvest by the combine 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 2009 when more acres were replanted in all regions than had been reported in previous years (Table 3). In 2009, 27.8% of the state's acreage was in the plant-cane crop while only 10.8% was in the third- and older stubble crops. However, these percentages would have been more dramatic had weather conditions been more favorable for planting cane in the summer of 2008. Growers had to delay and, in some cases, suspend planting because of wet weather in August followed by extremely dry weather after Hurricane Gustav resulting in very poor stands of plantcane in the spring of 2009. Several thousand acres had to be ploughed out in the spring of 2009 because of insufficient stands of cane. As recently as 2003, the acreage in second- and older stubble was over 50% of the total acreage; now it is only 40.3%.

For the current survey, the Northern region, which has routinely kept older stubble, had only 9.0% in third- and older stubble in 2009 compared to 10.8% and 14.3% in 2008 and 2007, respectively (Table 3). The percentage in plantcane actually decreased in 2009 (27.8%) when compared to 2008 (33.3%) because of the wet weather during the planting season in 2008 and a possible switch to other crops. Wet weather during planting was followed by extremely dry weather for an extended period of time that impacted spring population in 2009 resulting in many fields of plantcane having to be ploughed out. The River-Bayou Lafourche region tends to plant more cane each year than the other regions, with less of its area devoted to stubble crops; however, in 2009 there was actually the lowest total of the three regions in plantcane (23.7%) due to the wet weather during the planting season in 2008. Again this period of wet weather was followed by extremely dry weather which resulted in poor stands in some plantcane fields

in the spring of 2009 that had to be ploughed out. At the same time, there was more area dedicated to third- and older stubble (13.1%) when compared to the other regions. The trend for less stubble and more plantcane was also evident for the Bayou Teche region; the amount of older stubble remained approximately the same in 2009 (9.5%) when compared to 2008 (9.7%). Although the area planted in 2008 was 31.3%, it would have been more had the weather not been so wet.

Sugarcane Distribution by Variety and Crop for the Three Regions. HoCP 96-540 was the leading variety in the plant, first-stubble and second-stubble crops for all regions in 2009; it was also the leading variety in the third- and older stubble crops in the Bayou Teche and Northern Regions; whereas, LCP 85-384 was still the leading variety in the River/Bayou Lafourche region (Tables 4, 5 and 6). Its dominance was less pronounced in the River/Bayou Lafourche region. HoCP 96-540 lead the way in planted acreage with 52%, 40% and 52% 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 less than 1% for all regions. There was also a significant planting of L 99-226 and L 99-233 in all regions with less area planted to L 97-128. L 97-128 has lost favor to many growers because of its lower than expected yield of sugar per ton of cane and its susceptibility to sugarcane smut. The popularity of the older varieties, namely HoCP 85-845 and HoCP 91-555, as well as one of the newer varieties, Ho 95-988, continued to lose favor by growers in all regions. Growers also expanded the newer varieties, HoCP 00-950, L 01-283 and L 01-299 to the maximum extent of their limited seed cane supply.

Variety Trends. For the fifth consecutive year the total acreage planted to LCP 85-384 (released in 1993) 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. In 2009, LCP 85-384 was grown on only 6% of the total acres planted to sugarcane. The one year change for LCP 85-384 between 2008 and 2009 was a negative 16 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, occupied 50% of the state's acreage in 2009, an increase of 6 percentage points from 2008. The acreage of Ho 95-988, released in 2004, and L 97-128, also released in 2004, remained the same in 2009 when compared to 2008 while acreage of L 99-226 (released in 2006), L 99-233 (released in 2006), HoCP 00-950 (released in 2007), increased 6, 4 and 1 percentage points, respectively. The two newest varieties, L 01-283 (released in 2008) and L 01-299 (released in 2009), had less than 1% each of the total acreage planted to sugarcane in 2009.

According to Dufrene et al. (2009), 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 susceptible to rust and leaf scald and moderately susceptible to the sugarcane borer. However, more rust has been seen in HoCP 56-540 in recent years and its resistance may continue to 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 2008, its yield in sugar per acre was less than most varieties in the test for the third-stubble crop (Dufrene et al. 2009). L 97-128 is classified as resistant to mosaic, moderately resistant to leaf scald and rust, susceptible to smut and susceptible to the sugarcane borer. 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.

Both L 99-226 and L 99-233 have superior yield of both cane and sugar per acre. 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 2009. However, growers should be aware that these two varieties have poor stalk cold tolerance. HoCP 00-950 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. However, following the two hurricanes that occurred during the summer of 2008, it was noted that there was a large percentage of broken tops in HoCP 00-950. 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 stubble stunting disease and has exhibited resistance to the sugarcane borer. To date, clean seed companies have been generally unsuccessful in using tissue culture to micro-propagate L 01-283 because it exhibits an unacceptable high level of naturally occurring variants (off-types) L 01-299 was released in 2009 for its excellent stubbling ability, especially in older stubble; however, growers should be aware that this variety was actually dropped from the variety development in 2008 because of its susceptibility to smut and its erratic stands in plantcane. However, because of its superior stubbling ability and erectness, the variety was reconsidered for commercial release. With the release of eight 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 and 2009 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. Through a cooperative agreement with USDA-ARS Sugarcane Field Station, Canal Point, Florida, Louisiana varieties are currently being evaluated for their reaction to orange rust.

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 eight 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, L 01-283 and L 01-299. However, from the most recent variety survey, many growers are concentrating on planting four of these varieties, HoCP 96-540, L99-226 and L 99-233 and to a lesser extent, L 97-128. It is too early to tell whether HoCP 00-950, L 01-283 or L 01-299 will gain acceptance by the industry although many growers have expressed a desire to plant these new varieties. 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 2009. The 2009 sugarcane variety census showed that Louisiana producers continued to switch to the newer varieties, namely HoCP 96-540 (50% of the planted area), L 97-128 (17%), L 99-226 (11%) and L 99-233 (6%) while dramatically decreasing the area planted to LCP 85-384 (91% in 2004 to only 6% in 2009 (Legendre & Gravois, unpublished data), For the most part, growers were very satisfied with the performance of the newer varieties, especially HoCP 96-540, L 97-128 and HoCP 00-950. Although it was expected that cane tonnage would be disappointing in 2009 because of the late planting of the crop in 2008 and the early summer drought, in reality, average cane tonnage exceeded all expectations. In fact, the 35.8-ton average yield per harvested acre was second only to the 37.0-ton average yield obtained in 1999. Undoubtedly, the dry harvest conditions of 2008 and the warmer than average winter helped to establish good stubble cane stands in the spring of 2009.

Weather records showed that the average temperatures across the sugarcane belt were average to above average for every month of the year with the exception of November and December (Louisiana Office of State Climatology). On the other hand,

rainfall was below average for seven months and above average for five months. Rainfall during the period October through December when most of the crop is harvested was over 10 in. above normal which made for a very difficult harvest. Sugar yield at the beginning of the harvest was considerably lower than expected due to the excessive rainfall which increased extraneous matter, to include field soil (mud), in the harvested sugarcane. For every one percent increase in extraneous matter there is a corresponding loss of approximately three pounds of sugar per ton of cane. The situation only worsened in December when rainfall amounts throughout the sugarcane belt exceeded record levels. It was reported that one factory had to cease milling operations because of more than a foot of water inside the mill caused by more than 10 in of rainfall during a six-hour period.

Although rainfall was mostly deficient from January through July, the cane responded to late summer and early fall rains to produce one of the best crops on record, tonnage-wise. For the most part, there was above normal rainfall during the harvest season that reduced the overall quality of harvested cane. With the above normal rainfall in October and the heavier than expected cane tonnage, the cane in many fields was lodged (recumbent). The late growth and lodged conditions lead to later maturity and lower sucrose content at the start of the harvest although the maturity of the crop improved during the harvest. The usage of the chemical ripener glyphosate was, undoubtedly reduced because of the lodged conditions of the crop; however, it was reported by the factories that cane treated with ripener was superior in yield of recoverable sugar per ton of cane than cane not treated with ripener. In many cases, producers that treated cane with ripener on clay (heavy) soils had to delay the harvest in those areas until later in the crop when drier conditions prevailed. The only window of drier weather generally occurred from early to mid November.

Most of the 11 factories processed record cane tonnages during the 2009 harvest which meant that all operated into January 2010. From January 5 through January 14, most weather stations in south Louisiana reported night temperatures below freezing and on January 9 through January 12 the low temperatures recorded were 20°F or below at several reporting stations (Louisiana Office of State Climatology). Fortunately, most of the cane had been harvested by January 12. It was noted that freeze cracks occurred in most cane remaining in the field during this period which would normally mean that significant deterioration in cane quality would have occurred within one week following such a freeze.

Because of the high cost of fertilizer in general, many producers used less nitrogen in 2009 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 even though cane continued to grow into October and ultimately increased the yield of recoverable sugar per ton of cane later in the harvest. Producers also continued to apply less phosphorus and potassium in 2009 due to the high costs. Research data have shown 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.

Although the pricing period is not completed for the 2009 crop, sugar prices have risen sharply in recent months with the average predicted value for raw sugar between $23 and $24/cwt. This is approximately $3/cwt more than paid for the 2008 crop. Molasses prices have remained high and should average about $120/short ton at 79.5 Brix or $0.7018/gal (an increase of $0.023/gal or 4% when compared to the 2008 crop).

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.

REFERENCES

Grisham, M.P., Pan, Y.-B., Legendre, B.L., Godshall, M.A. and Eggleston, G. 2001. Effect of sugarcane yellow leaf virus on sugarcane yield and juice quality. Proc. Int. Soc. Sugar Cane Technol. 24:434-438.

Hoy, J. 2005. Impact of Rust on LCP 85-384. Sugar Bull. 84(1):12-13.

Legendre, B.L. and Gravois, K.A. 2009. The 2008 Louisiana sugarcane variety survey. Sugar Bull. 87(10)17-22.

Dufrene, E.O., Duet, M. J., Blackwelder, N. P., Waguespack, H.L., Jackson, W.R., Sexton, D. R. and Gravois, K.A. 2009. A Report on the 2008 outfield variety tests. Sugar Bull. 87(10):23-26.

Tew, T.L. 1987. New varieties. In: Don J. Heinz (Ed.): Sugarcane Improvements through Breeding. Developments in Crop Science 11, Elsevier, Amsterdam, pp. 559-594.

Table 1. Total area planted to sugarcane in Louisiana by region and parish, 2009.[1,2]

Bayou Teche region		River-Bayou Lafourche region		Northern region	
Parish	**Acres**	**Parish**	**Acres**	**Parish**	**Acres**
Acadia	NAR	Ascension	14,603	Avoyelles	7,147
				Evangeline	NAR
Calcasieu	2,287	Assumption	41,228	Pointe Coupee	33,026
Cameron	NAR				
Iberia	57,231	Iberville	35,633	Rapides	9,656
Jeff Davis	6,490	Lafourche	28,263	St. Landry	6,818
Lafayette	10,705	St. Charles	1,497	West Baton Rouge	14,147
St. Martin	29,257	St. James	23,891		
St. Mary	40,039	St. John	8,560		
Vermilion	32,253	Terrebonne	9,596		
Total	178,262	Total	163,271	Total	70,794
Total all regions: 412,327					

[1] Acreage based on information obtained in variety surveys from 20 parishes by the county agents in 2009

[2] NAR = No acres reported for parish

Table 2. Estimated statewide sugarcane acreage percentage by variety and crop, all regions, 2009.[1]

Variety	Plant-cane	First-stubble	Second-stubble	Third-stubble and older	Total
	----------%----------				
LCP 85-384	<1	1	6	33	6
HoCP 91-555	<1	<1	1	3	1
Ho 95-988	1	5	8	4	5
HoCP 96-540	48	52	54	39	50
L 97-128	7	19	25	14	17
L 99-226	21	13	3	1	11
L 99-233	13	7	2	<1	6
HoCP 00-950	5	2	<1	<1	2
L 01-283	1	<1	0	0	<1
Other	2	2	2	5	2
Total acres	114,627	131,532	121,636	44,532	412,327
Percent of total crop	27.8	31.9	29.5	10.8	

[1] Based on information obtained in variety surveys from 20 parishes by county agents in 2009.

Table 3. Estimated sugarcane distribution by region and crop, 2009.[1]

Crop	Bayou Teche	River-Bayou Lafourche	Northern	State Total
Plant-cane Area (acres) Percent (%)	55,796 31.3	38,695 23.7	19,752 27.9	114,627 27.8
First-stubble Area (acres) Percent (%)	54,548 30.6	54,206 33.2	23,079 32.6	131,532 31.9
Second-stubble Area (acres) Percent (%)	50,983 28.6	48,981 30.0	21,592 30.5	121,636 29.5
Third-stubble and older Area (acres) Percent (%)	16,935 9.5	21,389 13.1	6,371 9.0	44,532 10.8
Total area (acres) Percent (%)	178,262 43.2	163,271 39.6	70,794 17.2	412,327

[1] Based on information obtained in variety surveys from 20 parishes by county agents in 2009.

Table 4. Estimated area planted to sugarcane in percent by variety and crop for the Bayou Teche region, 2009.[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	0	<1	4	29	4
HoCP 91-555	<1	<1	1	1	1
Ho 95-988	1	4	5	8	3
HoCP 96-540	52	56	58	43	54
L 97-128	7	18	25	15	17
L 99-226	23	11	3	1	11
L 99-233	12	7	2	<1	6
HoCP 00-950	2	1	<1	0	1
L 01-283	1	<1	0	0	<1
Others	2	3	2	3	3
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 7 parishes by county agents in 2009.

Table 5. Estimated area planted to sugarcane in percent by variety and crop for the River/Bayou Lafourche region, 2009.[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	<1	2	11	40	9
HoCP 91-555	<1	<1	1	1	<1
Ho 95-988	2	6	8	6	6
HoCP 96-540	40	46	48	36	44
L 97-128	9	20	24	13	18
L 99-226	19	15	4	1	11
L 99-233	18	8	2	1	7
HoCP 00-950	7	2	1	<1	3
L 01-283	4	<1	<1	0	1
Others	1	1	1	2	1
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 8 parishes by county agents in 2009.

Table 6. Estimated area planted to sugarcane in percent by variety and crop for the Northern region, 2009.[1]

Variety	Plant-cane crop (%)	First-stubble crop (%)	Second-stubble crop (%)	Third-stubble crop & older (%)	Total (%)
LCP 85-384	0	<1	2	27	3
HoCP 91-555	0	0	<1	0	<1
Ho 95-988	1	4	14	4	6
HoCP 96-540	52	53	54	50	53
L 97-128	4	20	24	14	16
L 99-226	23	14	3	1	12
L 99-233	9	4	1	<1	4
HoCP 00-950	8	2	<1	0	3
L 01-283	0	0	0	0	0
Others	3	3	2	4	3
Totals	100	100	100	100	100

[1] Based on information obtained in variety surveys from 5 parishes by county agents in 2009.

Table 7. Louisiana sugarcane variety trends, by variety and years, all regions, 2004-2009.[1]

	Area planted to sugarcane by variety and years (%)					
Variety	2005	2006	2007	2008	2009	1 yr. Change[2]
LCP 85-384	89	73	46	22	6	-16
HoCP 85-845	2	1	2	1	<1	-1
HoCP 91-555	4	5	3	2	1	-1
Ho 95-988	<1	2	4	5	5	-0
HoCP 96-540	3	14	31	44	50	+6
L 97-128	1	4	12	17	17	-0
L 99-226	0	0	1	5	11	+6
L 99-233	0	0	<1	2	6	+4
HoCP 00-950	0	0	0	1	2	+1
L 01-283	0	0	0	0	<1	-0
L 01-299	0	0	0	0	<1	-0
Others	<1	<1	1	1	2	+1
Totals	100	100	100	100	100	

[1] Based on annual variety surveys from 21 parishes by county agents, 2005-2009
[2] NC = no change

Figure 1. Parishes in Louisiana where sugarcane is grown.

ARTIFICIAL NEURAL NETWORK MODELS AS A DECISION SUPPORT TOOL FOR SELECTION IN SUGARCANE: A CASE STUDY USING CANE YIELD IN SEEDLING POPULATIONS

Marvellous M. Zhou[1], Collins A. Kimbeng[1], Thomas L. Tew[2],
Kenneth A. Gravois[3] and Keith Bischoff[3]
[1]School of Plant, Environmental and Soil Sciences,
[2]USDA-ARS, Sugarcane Research Unit
[3]Sugar Research Station

ABSTRACT

Artificial neural network (ANN) models are mathematical models based on biological neural networks; they are a supervised learning method and use pattern learning from a training data set which is a sub-sample of the whole data to produce predictions of response variables. We demonstrate the potential of ANN models as a tool for selection in sugarcane. Cane-yield components, namely, stalk number, stalk height, and stalk diameter, were measured on individual seedlings and used as predictor variables to produce a selection decision (reject or select a seedling) based on the ANN model. Compared with the currently used visual method of selection, the difference in cane yield between the mean of the selected and rejected seedlings was greater for seedlings selected by the ANN model (Table 1). The difference increased when similar selection intensity was applied to both selection methods. Compared to the visual method, the ANN model selected fewer seedlings with cane yield lower than the population mean, and rejected fewer seedlings with cane yield higher than the population mean (Table 2). Although the potential of the ANN model as a selection tool in sugarcane is demonstrated using seedling populations, this concept can be expanded and applied to any stage of the program where multiple traits are measured. The ANN model compels the breeder to consider all traits simultaneously when deciding whether to select or reject a clone. This is likely to be more efficient than judging the merits of a clone by considering each trait independently or collectively in a serial manner. Efforts to adapt the ANN model into a selection index are currently underway.

Table 1. Difference between the means of the selected and rejected seedlings expressed as a percent of the rejected seedlings for the seedlings selected using the visual method (Visual) and the artificial neural network model (ANN) for stalk number (Stalks), stalk height (Height), stalk diameter (Diameter) and cane yield (Cane) and the number of seedlings selected (# Selected) for the individual crosses.

Trait	XL01-001		XL01-050		XL01-059		XL01-215		XL01-460	
	Visual	ANN	Visual	ANN	Visual	ANN	Visual	ANN	Visual	ANN
Stalks	89	104	72	76	50	88	71	77	45	60
Height (cm)	-1	-1	9	5	4	9	7	7	0	2
Diameter (cm)	3	6	7	16	2	6	7	6	-14	14
Cane (kg)	104	126	115	166	59	144	119	126	73	100
# Selected	16	21	6	16	10	14	18	18	7	27

Table 2. Number of seedlings that were rejected but that produced higher cane yield than the population mean or selected but produced lower cane yield than population mean by the visual and artificial neural network (ANN) method from two seedling (LSU AgCenter and USDA) populations.

	Rejected but produced higher cane yield than population mean	Selected but produced lower cane yield than the population mean
LSU AgCenter		
Rejected	Visual = 21	Visual = 17
Selected	ANN = 0	ANN = 17
USDA		
Rejected	Visual = 88	Visual = 14
Selected	ANN = 79	ANN = 12

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, Keith Bischoff, and Michael Pontif
Sugar Research Station

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 and 2009 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 and on 12/16/2009 as a first stubble crop. Plots were combine harvested and weighed to determine cane yield (tons/acre). A 15-stalk sample was hand-cut out of each plot and weighed to determine stalk weight (lbs). Afterwards, all 15 stalks were visually analyzed for the presence 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 laboratory to determine sucrose content and fiber content via NIR technology (SpectraCane). Sugar per acre was estimated as the product of sucrose content and cane yield.

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

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

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

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

YIELD AND FIBER CONTENT OF HIGH FIBER SUGARCANE CLONES

Kenneth Gravois, Keith Bischoff and Michael Pontif
Sugar Research Station

Brian Baldwin
Dept. of Plant & Soil Sciences
Mississippi State, MS 39762

In 2008, the LSU AgCenter partnered with Mississippi State University to evaluate high fiber sugarcane clones (energycane). Dr. Brian Baldwin of Mississippi State University is the coordinator of the Sun Grant proposal: "Regional Biomass Feedstock – Herbaceous Bioenergy Crop Field Trial". These trials are located across the southeastern U.S.

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

Standard cultural practices were followed during the 2009 growing seasons. The field trial was harvested on 12/16/2009 as a plantcane crop. Plots were combine harvested and weighed to determine cane yield (tons/acre). A 10-stalk sample was hand-cut out of each plot for a quality analysis. Each sample was then sent to the laboratory to determine Brix and fiber content with NIR technology (SpectraCane).

Data were analyzed with SAS (v9.2) software. Replication was considered a random effect; variety was considered a fixed effect. Least square means were estimated and tested for statistical significance (P=0.05) with the PDIFF option of PROC MIXED.

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

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