

AN OVERVIEW OF 2002 ACTIVITIES IN THE LSU AGCENTER
SUGARCANE VARIETY DEVELOPMENT PROGRAM

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The primary objective of the LSU AgCenter Sugarcane Variety Development Program is to contribute to the profitability of the Louisiana sugarcane industry by developing improved sugarcane varieties.

Sugarcane variety development in the LSU AgCenter is carried out by a team of scientists (Table 1). The LSU AgCenter sugarcane breeding team and the United States Department of Agriculture (USDA) sugarcane breeding team work independently yet cooperatively to produce “L” and “HoCP or Ho” varieties, respectively. The best varieties from the two programs 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 in accordance with the provisions of the “Three-way Agreement of 1978.” After yield data for one crop cycle (plantcane, first stubble, and second stubble) are collected in the outfield, those varieties that show promise are released for commercial production.

Table 1. Members of the LSU AgCenter Sugarcane Variety Development Team in 2002.

Team Member	Budgetary Unit	Responsibility
Kenneth Gravois	Sugar Research Station	Program Leader
Keith Bischoff	Sugar Research Station	Selection
Collins Kimbeng	Agronomy	Molecular Breeding
Gene Reagan	Entomology	Insect Resistance
Jeff Hoy	Plant Pathology & Crop Physiology	Disease Resistance
Jim Griffin	Plant Pathology & Crop Physiology	Herbicide Tolerance
Sonny Viator	Iberia Research Station	Variety Testing
Terry Bacon	Sugar Research Station	Variety Testing
Gert Hawkins	Sugar Research Station	Sucrose Laboratory
Chris LaBorde	Sugar Research Station	Photoperiod and Crossing
Al Orgeron	Sugar Research Station	Outfield Variety Testing
Joel Hebert	St. Gabriel Research Station	Farm Manager

A total of 86,375 seedlings from 248 crosses from the 2001 crossing series were planted in the field in the spring of 2002. A total of 79,719 seedlings survived transplanting. In addition, 6,644 seedlings were planted in a cross appraisal trial. The 92.3% survival was after transplanting in mid-April and reflected the extremely dry conditions after transplanting (Table 3). The majority of the seedlings were from crosses of commercial varieties and elite

experimental varieties. Selection will be carried out in 2003 when these seedlings are in the first stubble crop.

Photoperiod treatments to induce flowering began on May 31 and continued until September 10. Flowering in 2002 was excellent, with 513 crosses being made. Germination tests were conducted in December and January and indicated excellent germination for the 2002 crossing campaign. Seed production for 2002 was 312,768.

In the fall of 2002, individual selection was practiced on 68,214 first stubble seedlings that represented the 2000 crossing series. Family selection (top 90% in 2002) was utilized based on information from the cross appraisal study. Of the 68,214 clones, 4,126 were selected and planted to establish the first-line trials.

Excessive rainfall during the fall of 2002 prevented the planting of the 1999 series from first-line trials to second-line trials. However, the first-line trials were rated in August for advancement and evaluated again in mid-September for lodging, borer damage, diseases, and presence of pith/tube. The remaining 1343 clones from the plant cane first-line trials were sampled for a sucrose analysis in December 2002.

Established procedures were used to advance superior clones of the 1998 crossing series from second-line trials to increase trials (331 clones). These clones were advanced based on adequate stalk population and further evaluated for lodging, borer damage, presence of disease, and the presence of pith/tube.

The best 40 experimental varieties from the 1997 crossing series were assigned permanent variety designations in the fall of 2002. Newly assigned varieties were planted in a replicated nursery trial and a corresponding increase plot at the St. Gabriel Research Station only. "L" and "HoCP or Ho" varieties of the 2002 series were not exchanged between LSU and USDA in the fall of 2002 to plant cooperative infield and nursery tests the following year. Seed exchange will occur in 2003.

Experimental varieties were replanted in infield and off-station nursery tests (12 varieties of the 2001 assignment series), introduced to the outfield tests (five varieties of the 2000 assignment series), and planted in outfield tests (one variety of the 1997 assignment series; one variety of the 1998 assignment series; two varieties of the 1999 assignment series). Breeding personnel assisted Dr. Jeff Hoy and Dr. Gene Reagan to enter experimental varieties in the sugarcane smut and sugarcane borer resistance trials, respectively.

The distribution of "L" and "LCP" experimental clones through stages of testing in 2002 is presented in Table 2. The practice of planting nursery trials at multiple locations allows efficient identification of superior varieties in each assignment series.

Table 2. Number of “L” varieties by assignment series at the most advanced stage of testing in 2002.

Series	Stage of Testing	Number of experimental varieties
L 1997	Outfield - Replanted and harvested as first stubble	1
L 1998	Outfield – Replanted and harvested as plantcane On-station nurseries – 3 rd stubble harvested Off-station nurseries – 2 nd stubble harvested	1
L 1999	Outfield – Planted On-station nurseries - 2 nd stubble harvested Off-station nurseries – 1 st stubble harvested.	2
L 2000	Outfield – Introduced On-station nurseries 1 st stubble harvested Off-station nurseries plantcane harvested	5
L 2001	On-station nurseries plantcane harvested Off-station nurseries planted.	12
L 2002	Assignment – On-station nurseries planted	40

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.

Rainfall for 2002 at the St. Gabriel Research Station is reported in Table 3. Total rainfall for the year was 65.78 inches, which was 116% of normal annual rainfall. After a dry February and wet March, little rain fell in late April through early June. A wet summer hindered early planting, but more normal rainfall in August allowed planting to be done. The big weather story of the year was Tropical Storm Isidore and Hurricane Lily. The sugarcane crop was severely lodged because of these storms. September and October rainfall occurred in extreme excess, preventing planting activities in those months. What planting did occur was done in less than ideal conditions. Harvest was conducted in extremely wet conditions that continued through November and December.

Freezing temperatures during the winter of 2001-2002 contributed to lower than normal levels of sugarcane rust. Pith and leaf scald in experimental varieties were low compared to other years, likely due to more than adequate rainfall during the growing season.

Table 3. 2002 rainfall reported by date at the St. Gabriel Research Station, St. Gabriel, Louisiana.

January	Rain(in.)	%Normal
1	0.31	
2	0.16	
5	1.60	
12	0.85	
19	0.43	
21	0.02	
22	0.03	
24	0.55	
29	0.10	
30	0.01	
31	1.03	
	5.09	106%
February	Rain(in.)	
1	0.12	
5	0.62	
6	0.11	
10	0.02	
13	0.07	
20	0.54	
	1.48	30%
March	Rain(in.)	
1	2.65	
9	0.34	
11	0.08	
12	0.14	
20	0.43	
26	1.70	
31	1.20	
	6.54	142%
April	Rain(in.)	
8	3.73	
11	0.29	
24	0.20	
	4.22	102%
May	Rain(in.)	
13	0.08	
17	0.73	
30	0.14	

31	0.26	%Normal
	1.21	28%
June	Rain(in.)	
3	0.23	
5	0.15	
8	0.02	
16	0.10	
19	2.50	
20	0.90	
23	0.45	
24	0.25	
26	0.80	
27	0.20	
28	0.25	
	5.85	112%
July	Rain(in.)	
5	0.02	
7	0.31	
8	0.17	
9	0.25	
10	0.74	
11	0.21	
12	0.40	
14	0.60	
22	0.53	
23	0.61	
24	0.09	
25	0.07	
26	1.09	
29	1.11	
30	0.28	
	6.48	109%
August	Rain(in.)	
8	0.85	
15	0.42	
16	0.13	
17	0.02	
19	0.26	

31	0.28	
	1.96	35%
September	Rain(in.)	%Normal
3	0.15	
4	0.12	
6	0.10	
8	1.20	
16	2.33	
21	0.48	
22	1.90	
24	0.30	
25	2.90	TS Isidore
26	3.10	
	12.58	283%
October	Rain(in.)	
3	2.85	Hurr. Lily
8	0.09	
9	2.20	
10	0.20	
20	0.20	
22	0.10	
25	1.16	
26	0.31	
27	1.35	
28	0.05	
29	1.68	
	10.19	327%

November	Rain(in.)	
3	0.81	
4	0.27	%Normal
5	0.80	
9	0.10	
10	0.40	
11	0.39	
15	0.53	
19	0.09	
20	0.56	
30	0.28	
	4.23	105%
December	Rain(in.)	
3	0.32	
4	1.05	
9	0.04	
10	0.87	
12	0.38	
19	0.03	
22	0.05	
23	2.30	
24	0.95	
31	1.00	
	6.99	126%
Total 2002	66.82	117%

Data provided by Dr. Richard Bengtson, Department of Biological and Agricultural Engineering.

2002 PHOTOPERIOD AND CROSSING IN THE
LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

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Photoperiod induction and crossing are the first stages in the LSU AgCenter's Sugarcane Variety Development Program. For subsequent stages to be successful, success must first be achieved at crossing. The objective of crossing is to produce not only a large number of seed, but viable "true" seed/fuzz from the most desirable crosses. This seed will then be advanced to the seedling stage of the Sugarcane Variety Development Program.

Cuttings of potential parent varieties used for the 2002 crossing season were planted in the fall of 2001. 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 2002, 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. Three additional applications of dry granular fertilizer (8-24-24, one Tbs/can) were applied to the cans during July, August, and September. A reduced nitrogen ratio makes a higher C:N ratio, which is more desirable for the ease of flowering.

Natural lighting and six light-tight chambers (photoperiod bays) were used to impose 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 12½ 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, 2002, when natural day length was 12½ 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. While in the photoperiod chambers, artificial lighting was used. In addition to artificial lighting, the doors were partially opened to allow natural light to enter the chambers.

Flowering percentage of total stalks was excellent on the photoperiod carts in 2002 (Tables 1-2). Total flowering percentage for the six bays was 73% which was comprised from 1546 stalks. The excellent flowering could possibly be attributed to the cooler summer weather that was experienced in 2002. With an adequate germination rate, this number of tassels is sufficient to meet seed production needs. In 2002, seedlings were produced from varieties that have been and will be important to the Louisiana sugarcane industry. Some of these varieties

include LCP85-384, HOCP91-555, and HOCP96-540. Because of its low pollen quantity, HOCP91-555 was used mainly as a female. LCP 85-384 and HOCP 96-540 were used mainly as males because of their abundance of pollen. The number of polycrosses for the 2002 crossing season was above average as seen in Table 3. This was because of a research project that was in progress during the 2002 crossing season. In a normal year the number will range from 10 to 15 polycrosses.

The flowering season in 2002 began extremely early. Crossing began on September 4 and ended on October 28, 2002. A total of 1,123 tassels of 100 varieties were used to produce 509 total crosses yielding 311,042 viable seed with 237,200 seed produced from biparental crosses (Table 3). The germination of seed from biparental crosses was average (75 viable seed per gram fuzz). The germination rate is one of two components that measure the success of this stage in the crossing program. The other component is photoperiod induction. Close attention was made again in maintaining high relative humidity within the crossing greenhouse. The early flowering had the majority of crosses being made in September when temperatures were relatively high. This accounted for the average germination percentage for the 2002 crossing campaign. Seed production in 2002 was an average year for the LSU AgCenter's Sugarcane Variety Development Program but far exceeded seed requirements.

The parents grown in the crossing greenhouse (carts 7 and 8) were used to make the first approximation of the flowering characteristics of new varieties by comparing the date of tasseling of new varieties to those of known varieties (Tables 4 and 6). Varietal flowering dates were recorded from December 3 through December 17, 2002. The data that was collected will be used to gage photoperiod response for upcoming crossing years.

Table 1. Summary of the 2002 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	26-Jun	34	30-Jul	62	77	Oct 18±10	91	70
1	B	26-Jun	34	30-Jul	62	77	Oct 20±8	98	74
1	C	26-Jun	34	30-Jul	62	77	Oct 19±9	85	65
2	A	16-Jun	34	20-Jul	72	87	Oct 3±9	92	77
2	B	16-Jun	34	20-Jul	72	87	Sept 30±7	83	86
2	C	16-Jun	34	20-Jul	72	87	Oct 3±12	84	70
3	A	30-May	37	6-Jul	87	102	Sept 23±9	85	75
3	B	30-May	37	6-Jul	87	102	Sept 19±10	88	77
3	C	30-May	37	6-Jul	87	102	Sept 21±11	84	73
4	A	30-May	37	6-Jul	87	102	Sept 20±6	77	83
4	B	30-May	37	6-Jul	87	102	Sept 21±9	83	77
4	C	30-May	37	6-Jul	87	102	Sept 24±11	83	64
5	A	4-Jun	36	10-Jul	82	97	Oct 10±12	92	66
5	B	4-Jun	36	10-Jul	82	97	Oct 8±12	83	55
5	C	4-Jun	36	10-Jul	82	97	Oct 10±8	76	53
6	A	30-May	41	10-Jul	82	97	Sept 27±10	91	77
6	B	30-May	41	10-Jul	82	97	Sept 22±11	89	81
6	C	30-May	41	10-Jul	82	97	Sept 23±10	82	82

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§
100	324	291	1546	1123	4.77 ±1.19	3.86 ±1.44	4.79 ±1.76	79 ±10.79

† 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 2002 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
Biparental	436	237,200	544 ± 798	519 ± 768	75 ± 95
Polycross	57	67,607	1186 ± 1777	815 ± 766	127 ± 110
Self	16	6,235	390 ± 506	390 ± 506	54 ± 59
Total	509	311,042	611 ± 971	548 ± 766	81 ± 97

Table 4. Summary of can, variety, and flowering information on bays 7 and 8 under natural photoperiod.

Total Cans	Cans used	Total Varieties		Varieties Flowering		Mean stalks per can	Mean tassels per can†
		Known flowering response	Unknown flowering response	Known flowering response	Unknown flowering response		
108	86	2	78	1	19	4.6±1.0	3.0±1.5

† Based upon cans with tassels.

Table 5. Varietal flowering summary in 2002 in the photoperiod bays.

Variety	Days of Constant Photoperiod	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
CP65-357	35	78±1	4	13	12	92
CP70-321	41	73±1	5	15	4	27
CP73-351	40±1	92±3	3	11	6	55
CP77-405	36±1	71±3	6	11	8	73
CP78-317	34	68±2	7	11	10	91
CP79-318	35	83±2	5	11	10	91
CP79-348	38±1	79±8	7	12	6	50
CP83-644	39	90±1	7	26	19	73
CP89-2143	39±1	.	.	12	.	.
CP89-831	37	98±4	4±1	8	7	88
HO01-566	34	83±2	4±1	10	8	80
HO89-889	39±1	91±5	5±1	4	4	100
HO91-572	34	68±1	7	17	16	94
HO95-988	36	82±2	6	26	23	88
HOCPO0-905	37	73±1	3±1	11	8	73
HOCPO0-920	37	85±4	6±1	7	5	71
HOCPO0-928	36±1	.	.	10	.	.
HOCPO0-939	37	118	.	3	1	33
HOCPO0-950	34	87±1	7	11	11	100
HOCPO1-517	34	89±2	3	11	4	36
HOCPO85-845	36	85±3	3	45	25	56
HOCPO88-739	39±1	87±4	7	20	16	80
HOCPO89-846	34	78±3	3	12	11	92
HOCPO91-552	34	68±2	3	8	8	100
HOCPO91-555	40±1	90±4	7	20	7	35
HOCPO92-618	37	80±1	2	14	12	86
HOCPO92-624	34	77±2	7	29	26	90
HOCPO92-648	35	82±3	7	15	9	60
HOCPO93-746	34	80±4	6	9	6	67
HOCPO93-749	39±1	78±5	7	9	8	89
HOCPO93-754	39±1	98±5	5	9	8	89
HOCPO93-767	37	81±5	5±1	10	4	40
HOCPO94-806	36	83±4	5	5	5	100
HOCPO95-951	37	71±1	4	9	7	78
HOCPO96-509	37	96±4	5±1	21	9	43
HOCPO96-540	36	76±2	3	20	18	90
HOCPO96-561	36	85±2	4	18	16	89
HOCPO97-606	36±1	93±3	6	19	6	32
HOCPO97-609	36	72±1	4	18	18	100
HOCPO97-645	37	82±4	6	10	9	90
HOCPO98-741	36±1	75±2	5	12	12	100
HOCPO98-771	37	99±9	7	5	3	60
HOCPO98-778	34	94	.	8	1	13
HOCPO98-781	34	84±2	4	11	6	55
HOCPO99-804	39±1	73±4	7	8	7	88
HOCPO99-808	35	100±2	7	10	8	80
HOCPO99-815	36±2	107±3	.	7	4	57
HOCPO99-825	39±1	66±1	4	8	7	88
HOCPO99-866	38±1	78±4	5	15	8	53
L00-247	36	79±2	5	17	17	100
L00-249	41	87±1	3±1	17	8	47
L00-257	34	81±4	5	15	7	47
L00-264	36±1	75±4	7	16	9	56
L00-266	37	88±4	5±1	17	7	41

Table 5. Continued

Variety	Days of Constant Photoperiod	Mean Days to Flower	Pollen Rating	Total Stalk Number	Total Flowers	Percent Flowering Stalks
L01-283	41	82	7	9	2	22
L01-291	39±1	79±3	4±1	7	7	100
L01-292	41	83±1	7	7	2	29
L01-296	41	86±1	6	8	4	50
L01-299	38±1	70±1	3	11	11	100
L01-306	41	77	5	11	1	9
L01-312	41	67±3	7	10	5	50
L01-315	38±1	65±1	7	12	12	100
L89-113	39±1	86±3	4	15	7	47
L91-255	35	69±1	4	16	13	81
L91-281	34	76±1	5	17	16	94
L92-312	39±1	84±6	4	12	10	83
L92-321	36	89±5	5	8	5	63
L93-363	35±1	71±1	7	10	9	90
L93-365	35±1	84±1	7	10	9	90
L93-399	41	85±14	6	3	3	100
L94-424	41	83±1	4±1	7	3	43
L94-426	36	74±1	6	28	24	86
L94-428	38	74±2	5	27	18	67
L94-432	38±1	82±3	4	16	14	88
L94-433	37±1	87±2	5	12	9	75
L96-040	36	75±1	4	12	12	100
L96-092	39±1	86±4	7	8	8	100
L97-128	35	72±1	6	37	36	97
L97-137	37±1	108±4	6±1	24	4	17
L98-197	35±1	76±1	6	15	8	53
L98-207	35	73±1	3	35	33	94
L98-209	38	78±1	4	21	21	100
L99-226	38	81±2	4	27	25	93
L99-233	35	70±2	3	20	19	95
LCP81-010	35	74±1	5	30	27	90
LCP82-089	39±1	78±2	3	18	15	83
LCP83-137	40±1	88±4	7	14	13	93
LCP85-313	39±1	77±2	7	12	11	92
LCP85-384	37	77±1	3	158	132	84
LCP86-454	36	80±2	4	27	18	67
LHO83-153	41	75±3	5	12	6	50
N-27	40±1	73±3	7	10	7	70
TucCP77-042	36	88±1	5	24	18	75
US01-039	34	67±2	7	10	3	30
US01-040	36±1	63±1	3	5	5	100
US79-010	36	76±2	5	20	19	95
US80-004	37	74±1	3	12	5	42
US96-002	37	70±2	7	5	3	60
US99-002	34	68±1	7	5	4	80
US99-004	34	69	4	3	2	67

Table 6. Summary of varietal response to natural photoperiod in 2002.

Variety	First Flower Date	Mean Flower Date	Flowers
CP77-310	337	337	4
HOCPO0-917	351	351	1
HOCPO0-921	344	344	1
HOCPO0-930	344	344	2
HOCPO0-933	351	351	2
HOCPO0-938	351	351	1
HOCPO0-960	337	337	3
HOCPO1-517	351	351	3
L01-288	337	342±4	3
L01-289	352	352	4
L01-294	344	344	4
L01-295	337	337	4
L01-298	351	351	1
L01-299	351	351	4
L01-305	337	337	5
L01-307	337	337	5
L01-313	353	353	6
L01-314	344	349±4	4
L01-315	337	337	2
LCP85-384	351	351	3
N-27	337	344±10	2

Table 7. Crosses and seed made in 2002 sorted by cross number.

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL02-001	US01-040	US01-040	361	XL02-029	US96-002	HOCPP9-825	12
XL02-002	CP79-348	US01-040	2503	XL02-030	CP77-405	L91-255	849
XL02-003	L99-233	L99-233	1394	XL02-031	LCP81-010	L91-255	118
XL02-004	L99-233	02P1	1727	XL02-032	HOCPP8-741	L91-255	110
XL02-004	L99-233	02P1	1727	XL02-033	LCP81-010	L99-233	1665
XL02-005	L91-255	02P1	1277	XL02-034	L01-312	L99-233	62
XL02-006	L01-315	LCP85-384	868	XL02-035	L97-128	L99-233	621
XL02-007	CP77-405	LCP85-384	1293	XL02-037	CP79-348	L98-207	2051
XL02-008	L99-233	HOCPP8-741	1055	XL02-038	LCP81-010	L98-207	348
XL02-009	HOCPP2-624	HOCPP8-741	1037	XL02-039	LCP86-454	L98-207	1704
XL02-010	L01-315	HOCPP8-741	1053	XL02-040	L97-128	L98-207	435
XL02-011	HOCPP8-741	HOCPP8-741	219	XL02-041	N-27	LCP85-384	1885
XL02-012	HOCPP2-624	US01-040	828	XL02-042	HOCPP2-624	LCP85-384	0
XL02-013	L97-128	US01-040	132	XL02-043	HOCPP9-804	LCP85-384	12
XL02-014	L01-315	US01-040	467	XL02-044	L94-426	LCP85-384	168
XL02-015	US01-040	US01-040	13	XL02-046	L97-128	LCP85-384	591
XL02-016	HOCPP2-624	L91-255	1472	XL02-047	HOCPP9-804	HOCPP9-825	0
XL02-017	L97-128	L91-255	243	XL02-048	L97-128	HOCPP9-825	164
XL02-018	CP77-405	HOCPP6-540	1213	XL02-049	HOCPP9-866	HOCPP9-866	31
XL02-019	LCP81-010	HOCPP6-540	3195	XL02-050	L01-299	L01-299	25
XL02-020	L01-312	HOCPP6-540	42	XL02-051	N-27	L94-428	466
XL02-021	L01-315	HOCPP6-540	965	XL02-052	HOCPO0-905	L94-428	118
XL02-022	L97-128	HOCPP6-540	811	XL02-053	HOCPP9-804	L94-428	11
XL02-023	US79-010	HOCPP6-540	731	XL02-054	L00-264	L94-428	332
XL02-024	LCP81-010	HOCPP9-825	1394	XL02-055	L01-315	L94-428	286
XL02-025	HOCPP5-951	HOCPP9-825	1901	XL02-056	L97-128	L94-428	473
XL02-026	L01-312	HOCPP9-825	33	XL02-057	HOCPP8-845	HOCPP8-845	213
XL02-027	L01-315	HOCPP9-825	265	XL02-058	L97-128	HOCPP9-951	722
XL02-028	US79-010	HOCPP9-825	215	XL02-059	N-27	HOCPP6-540	1603

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL02-060	HOC94-806	HOC96-540	634	XL02-117	LCP85-384	02P2	1553
XL02-061	LCP85-384	HOC96-540	1961	XL02-118	L92-312	02P2	1530
XL02-062	HOC99-804	HOC97-609	41	XL02-119	LCP85-384	02P3	889
XL02-063	HOC92-648	LCP85-384	241	XL02-120	HOC95-845	02P3	1489
XL02-064	L93-363	LCP85-384	907	XL02-121	US80-004	02P3	51
XL02-065	HOC99-825	LCP85-384	23	XL02-122	HOC90-905	02P3	634
XL02-066	LCP85-384	LCP85-384	1532	XL02-123	LCP82-089	02P3	550
XL02-067	L96-040	LCP85-384	106	XL02-124	L94-426	LCP85-384	309
XL02-068	L98-209	LCP85-384	321	XL02-125	L94-428	LCP85-384	975
XL02-069	LHO83-153	LCP85-384	0	XL02-126	LCP85-384	LCP85-384	769
XL02-070	L94-426	LCP85-384	309	XL02-127	LCP86-454	LCP85-384	2869
XL02-071	HOC92-648	LCP85-384	175	XL02-128	LCP85-384	LCP85-384	1711
XL02-072	HOC93-749	LCP85-384	559	XL02-129	CP78-317	LCP85-384	49
XL02-073	L93-363	LCP85-384	836	XL02-130	HOC98-739	LCP85-384	353
XL02-074	HOC98-741	LCP85-384	1057	XL02-131	HOC93-749	LCP85-384	801
XL02-075	L96-040	LCP85-384	1143	XL02-132	L94-426	LCP85-384	83
XL02-076	L94-426	L01-299	24	XL02-133	HOC93-767	L99-226	1218
XL02-077	LCP85-384	L01-299	163	XL02-134	L00-247	L99-226	551
XL02-078	L98-209	L01-299	549	XL02-135	L99-226	L99-226	545
XL02-079	US79-010	L01-299	255	XL02-136	HOC93-767	HOC97-609	1063
XL02-080	US96-002	L01-299	1496	XL02-137	HOC91-552	HOC97-609	3586
XL02-081	HO95-988	LCP85-384	668	XL02-138	L00-247	HOC97-609	605
XL02-082	L94-426	LCP85-384	16	XL02-139	HO95-988	L94-432	332
XL02-083	HOC99-866	LCP85-384	271	XL02-140	L00-264	L94-432	1128
XL02-084	LCP86-454	LCP85-384	3396	XL02-141	HOC98-739	L98-209	263
XL02-085	L94-428	LCP85-384	272	XL02-142	L93-399	L98-209	1164
XL02-086	HOC90-905	LCP85-384	152	XL02-143	L94-426	L98-209	41
XL02-087	US79-010	LCP85-384	489	XL02-144	L94-428	L98-209	45
XL02-088	HO95-988	HOC96-540	654	XL02-145	HOC91-552	L98-209	2678
XL02-089	L94-426	HOC96-540	419	XL02-146	L00-247	L98-209	498
XL02-090	L94-428	HOC96-540	465	XL02-148	HOC90-905	02P4	652
XL02-091	HOC93-749	HOC96-540	22	XL02-149	LCP85-384	02P4	1106
XL02-092	LCP85-384	HOC96-540	975	XL02-150	LCP85-384	02P4	893
XL02-093	LHO83-153	HOC96-540	147	XL02-151	HOC95-845	02P4	93
XL02-094	L94-426	L99-226	0	XL02-152	L00-247	02P4	681
XL02-095	L93-363	L99-226	252	XL02-153	LCP82-089	02P4	1517
XL02-096	HOC90-905	L99-226	8	XL02-154	CP65-357	LCP85-384	0
XL02-097	LCP85-384	L99-226	1537	XL02-155	CP70-321	LCP85-384	394
XL02-098	L96-040	L99-226	1336	XL02-156	HO95-988	LCP85-384	1036
XL02-099	US96-002	L99-226	26	XL02-157	CP70-321	LCP85-384	294
XL02-100	L94-426	HOC97-609	781	XL02-158	CP78-317	LCP85-384	0
XL02-101	L94-428	HOC97-609	274	XL02-159	CP79-318	LCP85-384	565
XL02-102	HOC93-749	HOC97-609	0	XL02-160	HO95-988	LCP85-384	364
XL02-103	LCP85-384	HOC97-609	2707	XL02-161	L92-321	LCP85-384	129
XL02-104	L96-040	HOC97-609	523	XL02-162	L94-426	LCP85-384	149
XL02-105	L98-209	HOC97-609	1053	XL02-163	HOC97-645	LCP85-384	102
XL02-106	HOC93-749	L00-247	328	XL02-164	CP70-321	L92-312	142
XL02-107	LCP85-384	L00-247	1633	XL02-165	CP78-317	L92-312	470
XL02-108	HO95-988	L98-207	1250	XL02-166	CP79-318	L92-312	1090
XL02-109	L94-426	L98-207	294	XL02-167	LCP81-010	L92-312	1158
XL02-110	L94-428	L98-207	1664	XL02-168	L01-312	L92-312	164
XL02-111	HOC95-845	L98-207	1946	XL02-169	HO95-988	LCP85-384	518
XL02-112	HOC98-741	L98-207	1108	XL02-170	HOC98-739	LCP85-384	47
XL02-113	US79-010	L98-207	596	XL02-171	HOC92-624	LCP85-384	1686
XL02-114	HOC95-951	US80-004	1864	XL02-172	HOC97-645	LCP85-384	193
XL02-115	L92-312	US80-004	368	XL02-173	HO95-988	L94-432	0
XL02-116	HOC95-951	02P2	1436	XL02-174	LCP85-313	L94-432	921

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL02-175	HO95-988	L98-209	332	XL02-233	L94-433	HOCP92-618	514
XL02-176	L93-399	L98-209	1842	XL02-234	LCP81-010	LCP85-384	883
XL02-177	HOCP97-645	L98-209	226	XL02-235	LCP83-137	LCP85-384	478
XL02-178	HOCP92-624	L98-209	2989	XL02-236	LCP83-137	L94-428	84
XL02-179	LCP85-313	L98-209	1239	XL02-237	L00-264	L94-428	174
XL02-180	N-27	L98-209	3557	XL02-238	L01-315	L94-428	93
XL02-181	US79-010	L98-209	69	XL02-239	L94-433	L94-428	523
XL02-182	HO95-988	LCP82-089	701	XL02-240	L98-207	L94-428	341
XL02-183	LCP85-313	LCP82-089	735	XL02-241	N-27	L94-428	72
XL02-184	HOCP00-920	HOCP92-618	599	XL02-242	HOCP92-624	L98-209	306
XL02-186	LCP85-313	HOCP92-618	436	XL02-243	L94-426	L98-209	77
XL02-187	L00-247	HOCP92-618	394	XL02-244	L97-128	L98-209	195
XL02-188	L00-264	HOCP92-618	120	XL02-245	HO95-988	HOCP96-561	45
XL02-189	LH083-153	HOCP92-618	650	XL02-246	HOCP00-920	HOCP96-561	91
XL02-190	HOCP96-561	HOCP00-905	339	XL02-247	HOCP92-624	HOCP96-561	95
XL02-191	L91-255	HOCP00-905	731	XL02-248	HOCP97-645	HOCP96-561	38
XL02-192	L94-428	HOCP00-905	104	XL02-249	L94-426	HOCP96-561	28
XL02-193	LCP85-313	HOCP97-609	366	XL02-250	L96-092	HOCP96-561	132
XL02-194	HOCP97-645	HOCP97-609	0	XL02-251	CP77-405	L98-207	1083
XL02-195	L00-247	HOCP97-609	406	XL02-252	L96-092	L98-207	194
XL02-196	LCP85-313	LCP86-454	297	XL02-253	L97-128	L98-207	34
XL02-197	L00-266	LCP86-454	802	XL02-254	LCP81-010	L00-266	0
XL02-198	L98-197	HOCP99-866	1353	XL02-255	L96-092	L00-266	48
XL02-199	L99-226	HOCP99-866	163	XL02-256	CP77-405	L99-233	551
XL02-200	LCP83-137	LCP86-454	357	XL02-257	HOCP88-739	L99-233	43
XL02-201	L01-315	LCP86-454	822	XL02-258	LCP81-010	L99-233	30
XL02-202	HOCP91-552	02P5	134	XL02-259	N-27	L99-233	79
XL02-203	HOCP97-645	02P5	154	XL02-260	HO95-988	HOCP89-846	41
XL02-204	HOCP95-951	02P5	976	XL02-261	HOCP88-739	HOCP89-846	22
XL02-205	L96-040	02P5	711	XL02-262	HOCP92-624	HOCP89-846	102
XL02-206	LCP83-137	02P5	0	XL02-264	L01-315	HOCP97-609	31
XL02-207	LH083-153	02P5	116	XL02-265	L97-128	HOCP97-609	34
XL02-208	CP65-357	L99-233	268	XL02-266	L98-197	HOCP97-609	8
XL02-209	LCP81-010	L99-233	489	XL02-267	L01-315	HOCP92-618	93
XL02-210	L00-264	L99-233	60	XL02-268	L98-209	HOCP92-618	65
XL02-211	L01-312	L99-233	32	XL02-269	L96-092	HOCP92-618	72
XL02-212	L97-128	L99-233	402	XL02-270	L91-281	HOCP92-618	189
XL02-213	CP65-357	L98-209	215	XL02-271	L93-363	HOCP92-618	0
XL02-214	HOCP98-741	L98-209	1030	XL02-272	L96-040	HOCP92-618	0
XL02-215	HOCP99-866	L98-209	995	XL02-273	L97-128	HOCP92-618	18
XL02-216	LCP81-010	L98-209	1284	XL02-274	TUCCP77-042	HOCP92-618	0
XL02-217	L89-113	L98-209	95	XL02-275	CP77-405	HOCP89-846	54
XL02-218	L97-128	L98-209	130	XL02-276	L93-363	HOCP89-846	75
XL02-219	L99-226	L98-209	154	XL02-277	L93-365	HOCP89-846	47
XL02-220	CP79-348	HOCP96-561	968	XL02-278	L94-426	HOCP89-846	66
XL02-221	CP70-321	HOCP96-561	144	XL02-279	L97-128	HOCP89-846	0
XL02-222	L93-363	HOCP96-561	269	XL02-280	TUCCP77-042	HOCP89-846	8
XL02-223	LCP81-010	HOCP96-561	1887	XL02-281	HOCP91-555	L91-255	95
XL02-224	L00-264	HOCP96-561	457	XL02-282	HOCP97-645	L91-255	297
XL02-225	L01-315	HOCP96-561	298	XL02-283	LCP85-384	L91-255	172
XL02-226	LCP85-384	L92-321	2083	XL02-284	L93-363	L91-255	359
XL02-227	L98-207	L92-321	810	XL02-285	L94-426	L91-255	2727
XL02-228	L97-128	HOCP93-767	274	XL02-286	L93-363	L98-209	306
XL02-229	CP79-348	HOCP92-618	1308	XL02-287	L94-426	L98-209	152
XL02-230	LCP81-010	HOCP92-618	1213	XL02-288	L94-433	L98-209	118
XL02-231	L00-264	HOCP92-618	380	XL02-289	TUCCP77-042	LCP85-384	86
XL02-232	LCP85-384	HOCP92-618	951	XL02-290	HO91-572	LCP85-384	601

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL02-291	L01-306	LCP85-384	286	XL02-348	L01-292	HOCPP97-609	73
XL02-292	L94-426	HOCPP00-920	155	XL02-349	HOCPP85-845	02P6	63
XL02-293	L97-128	HOCPP00-920	9	XL02-350	L01-299	02P6	230
XL02-294	L98-197	HOCPP00-920	449	XL02-351	LCP86-454	02P6	330
XL02-295	CP83-644	L91-255	187	XL02-352	US79-010	02P6	12
XL02-296	HO95-988	L91-255	148	XL02-353	HOCPP85-845	HOCPP85-845	298
XL02-297	HOCPP92-648	L91-255	157	XL02-354	L01-299	L01-299	46
XL02-298	LCP83-137	L91-255	771	XL02-355	LCP85-384	LCP85-384	51
XL02-299	HOCPP97-606	L91-255	61	XL02-356	HOCPP00-920	L99-226	202
XL02-300	L91-281	HOCPP92-618	151	XL02-357	L98-197	L99-226	70
XL02-301	LCP85-313	HOCPP92-618	35	XL02-358	N-27	L99-226	79
XL02-302	L97-128	HOCPP92-618	7	XL02-359	US01-039	L99-226	331
XL02-303	HOCPP88-739	HOCPP89-846	0	XL02-360	TUCCP77-042	L99-226	82
XL02-304	L93-365	HOCPP89-846	0	XL02-361	LCP86-454	02P7	209
XL02-305	LCP85-313	HOCPP89-846	0	XL02-362	LCP82-089	02P7	443
XL02-306	CP83-644	LCP85-384	0	XL02-363	L98-197	02P7	17
XL02-307	L93-365	LCP85-384	0	XL02-364	L94-424	02P7	109
XL02-308	HOCPP96-509	LCP85-384	302	XL02-365	L00-249	02P7	131
XL02-309	L01-283	LCP85-384	86	XL02-366	HOCPP96-509	02P7	373
XL02-310	L94-424	LCP85-384	21	XL02-367	HOCPP85-845	02P7	675
XL02-311	L94-426	LCP85-384	78	XL02-368	CP73-351	02P7	312
XL02-312	US79-010	LCP85-384	290	XL02-369	L98-207	02P7	241
XL02-313	L89-113	HOCPP96-561	89	XL02-370	CP83-644	L96-040	0
XL02-314	L91-281	HOCPP96-561	307	XL02-371	HO95-988	L96-040	35
XL02-315	LCP85-313	HOCPP96-561	75	XL02-372	TUCCP77-042	L96-040	21
XL02-316	L00-257	HOCPP96-561	5	XL02-373	L00-266	CP65-357	124
XL02-317	L97-128	HOCPP96-561	0	XL02-374	L01-292	CP65-357	0
XL02-318	LCP83-137	L94-428	408	XL02-375	L01-296	CP65-357	183
XL02-319	HOCPP97-606	L94-428	0	XL02-376	CP83-644	LCP85-384	121
XL02-320	L00-249	L94-428	36	XL02-377	L97-128	LCP85-384	41
XL02-321	L00-257	L94-428	42	XL02-378	TUCCP77-042	LCP85-384	0
XL02-322	L94-433	L94-428	37	XL02-379	CP83-644	HOCPP96-540	51
XL02-323	LCP85-313	HO89-889	0	XL02-380	L00-257	HOCPP96-540	165
XL02-324	HOCPP98-771	HO89-889	0	XL02-381	TUCCP77-042	HOCPP96-540	0
XL02-325	HOCPP99-804	HO89-889	0	XL02-382	CP83-644	LCP85-384	87
XL02-326	L97-128	HO89-889	5	XL02-383	L97-128	LCP85-384	8
XL02-327	L01-283	L99-233	418	XL02-384	HOCPP93-754	HOCPP89-846	0
XL02-328	L94-426	L99-233	159	XL02-385	HO95-988	HOCPP89-846	0
XL02-329	CP77-405	CP89-831	53	XL02-386	CP83-644	L96-040	10
XL02-330	HOCPP88-739	CP89-831	44	XL02-387	HOCPP93-754	L96-040	0
XL02-331	L91-281	CP89-831	154	XL02-388	HOCPP96-561	L96-040	32
XL02-332	CP83-644	TUCCP77-042	14	XL02-389	HOCPP99-804	L96-040	29
XL02-333	LCP86-454	TUCCP77-042	89	XL02-390	CP83-644	L99-226	94
XL02-334	LCP85-384	TUCCP77-042	54	XL02-391	HOCPP93-754	L99-226	0
XL02-335	L98-197	TUCCP77-042	112	XL02-392	L00-264	L99-226	192
XL02-336	CP83-644	L98-209	17	XL02-393	L98-197	L99-226	25
XL02-337	HOCPP92-648	L98-209	27	XL02-394	CP78-317	HOCPP85-845	181
XL02-338	L93-365	L98-209	34	XL02-395	HO91-572	HOCPP85-845	340
XL02-339	HOCPP91-555	L99-226	433	XL02-396	HOCPP98-741	HOCPP85-845	764
XL02-340	L98-197	L99-226	74	XL02-397	HOCPP98-781	HOCPP85-845	602
XL02-341	LHO83-153	L99-226	298	XL02-398	US79-010	HOCPP85-845	134
XL02-342	HOCPP91-555	HOCPP96-540	154	XL02-399	US99-002	HOCPP85-845	286
XL02-343	LCP85-313	HOCPP96-540	118	XL02-400	CP79-318	L91-255	4289
XL02-344	HOCPP99-804	HOCPP96-540	22	XL02-403	L91-281	L91-255	427
XL02-345	L01-315	HOCPP97-609	7	XL02-404	HOCPP93-746	L91-255	2504
XL02-346	L97-128	HOCPP97-609	37	XL02-405	HOCPP93-754	L91-255	0
XL02-347	US79-010	HOCPP97-609	21	XL02-406	HOCPP98-741	L91-255	742

Cross	Female	Male	Seed	Cross	Female	Male	Seed
XL02-407	HOCP98-771	L91-255	12	XL02-462	L89-113	LCP85-384	394
XL02-408	CP83-644	CP89-831	17	XL02-463	LCP81-010	LCP85-384	3123
XL02-409	HOCP91-555	CP89-831	0	XL02-464	HOCP91-555	HOCP96-540	277
XL02-410	LCP83-137	CP89-831	0	XL02-465	HO91-572	HOCP96-540	89
XL02-411	HOCP88-739	HOCP91-552	173	XL02-466	L98-207	02P9	1529
XL02-412	HO95-988	HOCP91-552	142	XL02-467	LCP82-089	02P9	1235
XL02-413	HOCP94-806	HOCP91-552	770	XL02-468	L91-281	02P9	1340
XL02-414	HOCP91-555	HOCP96-509	112	XL02-469	HO01-566	02P9	586
XL02-415	HOCP96-561	HOCP96-509	233	XL02-470	CP83-644	02P9	3954
XL02-416	L94-433	HOCP96-509	382	XL02-471	HO95-988	L00-266	310
XL02-417	HOCP98-741	L94-432	1425	XL02-472	HOCP92-624	L00-266	2664
XL02-418	L94-426	L94-432	573	XL02-473	HOCP93-749	L00-266	1487
XL02-419	HOCP98-741	L00-249	610	XL02-474	HOCP92-624	L99-226	2868
XL02-420	HOCP98-781	L00-249	306	XL02-475	L91-281	L99-226	1610
XL02-421	LCP81-010	L99-226	4284	XL02-476	LCP81-010	L99-226	3761
XL02-422	LCP83-137	L99-226	423	XL02-477	L97-137	L97-128	62
XL02-423	HOCP98-741	L99-226	654	XL02-478	HOCP00-950	L97-128	196
XL02-424	L98-207	L99-226	2078	XL02-479	HOCP99-808	L97-128	55
XL02-425	L99-233	L99-226	1508	XL02-480	L00-264	L97-128	175
XL02-426	HOCP92-624	L98-209	1512	XL02-481	CP65-357	CP65-357	13
XL02-427	HOCP92-648	L98-209	585	XL02-482	LCP81-010	LCP81-010	425
XL02-428	HOCP93-754	L98-209	88	XL02-483	CP65-357	02P10	614
XL02-429	L93-365	LCP85-384	179	XL02-484	HOCP01-517	02P10	2636
XL02-430	LCP86-454	LCP85-384	5590	XL02-485	HOCP92-624	02P10	2150
XL02-431	L96-092	LCP85-384	999	XL02-486	HOCP99-808	02P10	125
XL02-432	US79-010	LCP85-384	270	XL02-487	L92-312	02P10	359
XL02-433	HOCP98-781	02P8	1502	XL02-488	L98-207	02P10	1258
XL02-434	L94-433	02P8	942	XL02-489	L92-321	LCP85-384	116
XL02-435	LCP82-089	02P8	1181	XL02-490	HOCP99-808	LCP85-384	0
XL02-436	HOCP92-624	02P8	1893	XL02-491	CP89-831	HOCP89-846	621
XL02-437	HOCP93-746	02P8	2331	XL02-492	HO89-889	HOCP89-846	1418
XL02-438	CP89-831	02P8	391	XL02-493	HOCP85-845	HOCP89-846	747
XL02-439	HOCP96-561	02P8	284	XL02-494	HOCP00-950	HOCP89-846	98
XL02-440	L94-428	02P8	774	XL02-495	L96-092	HOCP89-846	25
XL02-441	L93-365	LCP85-384	557	XL02-496	HOCP88-739	L91-281	79
XL02-442	L96-092	LCP85-384	43	XL02-497	HOCP00-950	L91-281	190
XL02-443	TUCCP77-042	LCP85-384	1066	XL02-498	HOCP88-739	L97-137	81
XL02-444	HOCP98-781	LCP85-384	1256	XL02-499	HO95-988	L97-137	16
XL02-445	HOCP00-920	L99-226	770	XL02-500	HOCP00-950	L97-137	167
XL02-446	HOCP96-561	L99-226	748	XL02-501	LCP85-384	HOCP01-517	3211
XL02-447	L94-433	L99-226	1397	XL02-502	HOCP88-739	HOCP01-517	29
XL02-448	TUCCP77-042	L99-226	75	XL02-503	HOCP99-808	HOCP01-517	54
XL02-449	HOCP96-509	L98-207	4369	XL02-504	HOCP97-645	HOCP01-517	0
XL02-450	CP83-644	L99-233	710	XL02-505	HO95-988	HOCP85-845	0
XL02-451	HOCP93-746	L99-233	657	XL02-506	HOCP00-950	HOCP85-845	10
XL02-452	L93-365	L99-233	424	XL02-507	HOCP92-648	HOCP85-845	173
XL02-453	HOCP93-749	L91-255	285	XL02-508	LCP85-384	HOCP85-845	60
XL02-454	L89-113	L91-255	160	XL02-509	HOCP99-866	HOCP85-845	226
XL02-455	L93-365	L91-255	274	XL02-510	LCP86-454	L01-291	231
XL02-456	L93-365	HOCP93-767	117	XL02-511	TUCCP77-042	L01-291	10
XL02-457	HO95-988	HOCP93-767	292	XL02-512	HOCP99-866	L01-291	483
XL02-458	HOCP94-806	HOCP93-767	956	XL02-513	HOCP99-866	HOCP99-866	121
XL02-459	HOCP88-739	LCP85-384	181	XL02-514	LCP85-384	02P11	10984
XL02-460	HOCP92-624	LCP85-384	2377	XL02-515	HOCP85-845	02P11	2737
XL02-461	HOCP93-749	LCP85-384	1313	XL02-516	LCP86-454	02P11	7488

SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER'S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2002

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SUMMARY

In the selection phase of the LSU AgCenter's Sugarcane Variety Development Program, superior clones are advanced through the single stool, first line, second line, and increase stages of the breeding program. In the first stubble crop of the second-line trials, those clones with acceptable breeding or commercial value are assigned a permanent variety number. A total of 93,019 seedlings from 247 crosses were planted in the field in the spring of 2002. The majority of these seedlings are progeny of crosses among commercial and elite experimental varieties. In the fall of 2002, family selection was practiced on the 75,973 stubble seedlings surviving the winter. This selection resulted in the planting of 4,197 eight-foot first-line trial plots. At the same time, superior clones were also selected and advanced through subsequent stages (0 to second line trials, 331 to the increase stage). Assignment of permanent "L02" numbers were given to the 40 best clones of the 1997 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 93,019 seedlings from 247 crosses of the 2001 crossing series were planted to the field in the spring of 2002 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2002, individual selection was practiced on the 75,973 stubble single stools of the 2000 crossing series that survived the winter. The 4,197 clones selected and advanced from the single stools were planted in 8-foot first-line trial plots. Dates of planting and harvesting of all plots in the selection phase of the program can be found in Table 2.

Over 3,000 first-line trial plots of the 1999 crossing series were rated for cane yield and pest resistance in August of 2002 (Table 3). After screening for cane yield rating, acceptable clones were further evaluated for pest resistance (diseases and borer injury) and stalk quality (Table 3). The remaining clones were harvested and analyzed for sucrose content. Because of extremely wet conditions, second-line trial plots were not planted. These clones will be assessed again in first stubble first-line plots and sent directly to the increase stage in 2003.

Stalk counts were made on the 759 plant cane second-line trial plots of the 1998 crossing series in August 2002. Based on these counts and the previously described criteria, 331 clones were planted in 20-foot plots representing the increase stage of the program (Table 4). These clones will be candidates for assignment in 2003. Of the 392 candidates from the first stubble crop of the second-line trials, the best 40 clones from the 1997 crossing series were assigned permanent "L02" numbers (Table 5). These newly assigned "L02" varieties were then planted in a replicated nursery trial at the St. Gabriel Research Station.

The advancement summary of clones from crosses made in 1997 through 2000 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 2002 by the Louisiana, "L," Sugarcane Variety Development Program's personnel.

Crossing series	Crosses		Plants surviving transplanting	Over-wintered plants	Advanced to			
	Progeny test	Selection program			1 st line	2 nd line	Increase	On-station Nurseries (L02 Assignments)
					----- number of clones -----			
X97	75	174	71416	48322	3901	735	392	40
X98	125	193	64467	54794	3012	759	331	
X99		312	74263	46783	3371	0*		
X00	76	211	98371	75973	4197			
X01		247	93019					

* These plots were not planted because of extremely wet conditions in 2002.

Table 2. Dates of seedling and line trials planted or harvested in 2002.

Crossing Series	Test	Crop	Date Planted	Date Harvested
X01	Seedlings	Planted	4/16 - 24/02	
X01	Progeny Test	Planted	4/24/02	
X00	Seedlings	First Stubble	4/16 - 20/01	
X00	First-line Trials	Planted	9/5 - 9/12/02	
X99	First-line Trial	Plant Cane	9/14 - 17/01	12/3 & 12/11/02
X98	First-line Trial	First Stubble	9/7- 14/00	11/24/02
X98	Second-line Trial	Plant Cane	9/26/01	10/15/02
X97	Second-line Trial	First Stubble	9/20/00	10/1/02
X96	Second-line Trial	Second Stubble	9/23/99	10/22/02
X98	Light Soil Increase	Planted	10/17/02	
X97	Light Soil Increase	Plant Cane	10/2/01	12/4/02
X96	Light Soil Increase	First Stubble	9/26/00	11/19/02
X95	Light Soil Increase	Second Stubble	10/5/99	10/6/02
X97	Heavy Soil Increase	Plant Cane	10/2/01	10/31/02
X96	Heavy Soil Increase	First Stubble	9/26/00	11/19/02
X95	Heavy Soil Increase	Second Stubble	10/5/99	10/7/02

Table 3. Numbers of experimental clones dropped for identified faults in the 1999 crossing series first-line trials.

Trait	Fault	
	Frequency	Percent
----- 3371 clones enter first round of evaluation -----		
Initial Selection (Rating)	1565	46.4
----- 1806 clones enter second round of evaluation -----		
Brittle	96	2.8
Rust	2	0.1
Borers	2	0.1
Lodged	123	3.6
Pith / Tube	188	5.6
Short	53	1.6
Diameter	43	1.3
Smut	18	0.5
Other	36	1.1
----- 2126 clones dropped -----		
----- 1245 clones enter third round of evaluation -----		
Sugar/Ton (< 240 lbs)	651	19.3
Clones advanced	594	17.6

Table 4. Number of experimental clones dropped for identified faults in the 1998 crossing series second-line trial prior to advancement to the increase stage.

Trait	Fault	
	Frequency	Percent
----- 759 clones enter first round of evaluation -----		
Stalk count <80 per plot	247	32.5
Lodged	117	15.4
Pith / Tube	9	1.2
Short	13	1.7
Diameter	3	0.4
Smut	4	0.5
Brittle	21	2.8
Leaf Scald	1	0.2
Other	13	1.7
----- 428 clones dropped -----		
Clones advanced to Increase stage	331	43.6

Table 5. Mean yield data of 2002 “L” assignments from first stubble second-line trial plots.

VARIETY	FEMALE	MALE	Sugar Per	Cane	Sugar	Stalk	Stalk
			Acre	Yield	per Ton	Weight	Number
			Lbs/A	Tons/A	Lbs/ton	Lbs	Stalks/A
CP1970-321	CP61-039	CP57-614	7317	40.4	182	1.93	41518
LCP1985-384	CP77-310	CP77-407	6959	49.5	141	1.72	57853
HOC1985-845	CP72-370	CP77-403	6339	38.4	163	1.85	41972
L2002-316	L94-424	LCP85-384	8743	42.1	208	1.67	50366
L2002-317	LCP81-010	LCP85-384	7206	44.5	162	1.52	58534
L2002-319	L94-424	LCP85-384	9628	47.7	202	1.91	49913
L2002-320	L94-424	LCP85-384	8401	53.5	157	1.72	62164
L2002-322	LCP85-336	LCP85-384	8494	44.8	189	1.9	47190
L2002-323	L94-424	LCP85-384	10654	52.2	204	1.84	56719
L2002-324	L94-424	LCP85-384	12148	60.6	201	1.78	68063
L2002-325	L94-424	LCP85-384	11835	70.2	169	2.01	69878
L2002-326	L94-424	LCP85-384	8702	50.8	171	1.93	52635
L2002-327	L94-424	LCP85-384	7164	50.2	143	1.77	56719
L2002-328	L94-424	LCP85-384	9565	51.7	185	2.11	49005
L2002-329	HOC193-746	L94-426	7211	48.8	148	1.75	55811
L2002-332	L91-281	LCP81-010	9935	56.0	177	1.93	58080
L2002-333	HOC192-624	L94-428	9159	53.6	171	1.79	59895
LCP2002-334	HOC190-941	HOC190-941	7786	33.7	231	1.4	48098
L2002-335	L94-426	CP84-772	7521	39.2	192	1.73	45375
L2002-336	HOC188-739	LCP85-384	11683	60.0	195	2.28	52635
LCP2002-337	HOC191-542	CP91-559	8247	52.3	158	1.8	58080
L2002-338	L94-432	L91-255	7302	40.5	180	2.1	38569
L2002-339	LCP85-313	HOC185-845	8512	43.5	196	1.51	57626
L2002-340	LCP81-010	L95-477	7757	44.7	174	1.79	49913
L2002-341	L96-071	LCP82-089	11301	58.6	193	2.35	49913
L2002-342	CP83-644	LCP85-384	8565	61.4	140	2.13	57626
LCP2002-343	LCP85-384	HOC185-845	7712	38.6	200	1.59	48551
LCP2002-344	CP89-845	CP91-534	8722	51.2	170	2.09	49005
LCP2002-345	LCP85-384	HOC185-845	10666	47.0	227	1.48	63525
L2002-346	L88-063	L91-255	9544	47.9	199	1.69	56719
L2002-347	L88-063	L91-255	7370	47.6	155	1.75	54450
L2002-348	HOC193-746	HOC185-845	7945	34.5	230	1.77	39023
L2002-349	HOC193-746	HOC185-845	7291	40.1	182	1.75	45829
L2002-350	HOC192-624	LCP85-384	8673	51.5	168	1.83	56265
L2002-351	L88-063	L91-255	9543	48.8	196	2.15	45375
LCP2002-352	LCP85-384	HOC185-845	8683	54.3	160	1.93	56265
L2002-353	L94-432	L91-255	7384	44.3	167	1.76	50366
L2002-354	L88-063	L91-255	8498	60.2	141	2.39	50366
LCP2002-355	HOC190-941	HOC193-750	7142	40.5	176	1.45	55811
LCP2002-358	HOC191-542	CP91-559	7677	38.7	198	1.69	45829
L2002-359	L93-363	HOC185-845	11744	57.9	203	2.26	51274
L2002-360	HOC192-624	LCP85-384	9434	55.8	169	1.64	68063
L2002-361	HOC192-624	LCP85-384	8091	39.8	203	1.95	40838

Table 6. Advancement summary of crosses in the 1997 through 2000 crossing series.

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
<u>1997 Crossing Series</u>										
CP77-310	HOCP85-845	237	0	14	0	20	0	25	0	43
CP77-310	HOCP92-618	333	26	62	4	64	1	55	0	43
CP77-310	HOCP92-618	246	20	65	3	65	0	25	0	43
CP77-310	US78-020	81	0	14	0	20	0	25	0	43
CP77-407	CP88-769	220	0	14	0	20	0	25	0	43
CP77-407	LCP82-089	105	23	96	6	97	5	98	0	43
CP79-318	CP87-609	243	0	14	0	20	0	25	0	43
CP79-318	CP94-856	241	19	64	0	20	0	25	0	43
CP79-318	HO94-850	335	15	41	3	59	1	55	0	43
CP79-318	HO95-988	341	0	14	0	20	0	25	0	43
CP79-318	HOCP85-845	247	15	48	0	20	0	25	0	43
CP79-318	HOCP92-618	247	19	62	2	49	1	58	0	43
CP79-318	L88-072	238	22	73	2	53	0	25	0	43
CP79-318	US78-020	109	7	52	1	59	0	25	0	43
CP79-348	L91-255	484	21	40	8	70	2	60	0	43
CP80-356	LCP82-089	246	17	55	0	20	0	25	0	43
CP82-550	L91-255	243	19	62	0	20	0	25	0	43
CP83-644	LCP85-384	722	57	64	21	86	10	81	1	90
CP84-1198	TCP87-3388	344	6	32	0	20	0	25	0	43
CP84-722	LCP82-089	240	9	38	0	20	0	25	0	43
CP85-830	US78-020	229	17	58	5	79	0	25	0	43
CP87-626	HOCP95-950	112	0	14	0	20	0	25	0	43
CP88-769	HOCP85-845	111	14	87	0	20	0	25	0	43
CP89-805	LCP85-336	108	0	14	0	20	0	25	0	43
CP89-831	HOCP94-806	243	30	86	4	70	4	85	0	43
CP89-843	LCP86-454	480	11	33	2	45	1	53	0	43
CP89-845	CP91-534	234	20	69	7	86	5	92	1	95
CP94-1996	LHO83-153	244	11	41	2	51	0	25	0	43
HO93-771	HOCP92-678	236	15	52	5	78	4	86	0	43
HO93-771	HOCP93-775	235	23	76	10	94	9	97	0	43
HO93-771	LHO83-153	345	38	82	4	64	2	64	0	43
HO94-850	L95-482	939	39	40	8	55	3	56	0	43
HO95-985	CP88-769	244	20	66	2	51	0	25	0	43
HO95-985	L88-063	111	0	14	0	20	0	25	0	43
HO95-985	L95-461	343	33	75	8	81	4	77	0	43
HO95-985	L96-044	425	0	14	0	20	0	25	0	43
HO95-988	LCP82-089	244	0	14	0	20	0	25	0	43
HOCP85-845	SELF	221	0	14	0	20	0	25	0	43
HOCP85-845	US78-020	250	10	39	0	20	0	25	0	43
HOCP88-739	HO94-850	97	24	98	4	94	1	76	0	43
HOCP88-739	L94-428	108	0	14	0	20	0	25	0	43
HOCP88-739	LCP81-010	194	20	78	3	67	2	76	0	43

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
HOCP88-739	LCP85-384	105	18	94	5	96	4	97	1	98
HOCP89-846	L96-044	106	0	14	0	20	0	25	0	43
HOCP90-923	LHO83-153	465	15	36	5	63	3	67	0	43
HOCP90-941	HOCP92-618	239	0	14	0	20	0	25	0	43
HOCP90-941	HOCP93-750	938	80	69	29	87	11	77	1	88
HOCP90-941	SELF	421	51	84	4	61	2	64	1	91
HOCP91-542	CP91-559	483	40	67	15	88	4	69	2	94
HOCP92-618	HOCP93-775	485	36	58	4	51	2	59	0	43
HOCP92-618	US95-1001	240	0	14	0	20	0	25	0	43
HOCP92-624	CP79-318	110	17	91	0	20	0	25	0	43
HOCP92-624	CP84-772	1348	11	29	3	42	1	50	0	43
HOCP92-624	HOCP85-845	361	39	80	7	76	3	70	0	43
HOCP92-624	HOCP92-618	250	27	80	4	68	3	78	0	43
HOCP92-624	L94-428	808	115	90	7	58	5	66	1	89
HOCP92-624	LCP81-010	493	34	55	6	65	6	78	0	43
HOCP92-624	LCP85-384	245	25	77	2	51	0	25	0	43
HOCP92-624	LCP85-384	1944	238	85	54	85	30	83	2	87
HOCP92-624	LCP85-384	256	33	87	5	77	5	90	1	93
HOCP92-624	US95-1001	341	0	14	0	20	0	25	0	43
HOCP92-631	LHO83-153	503	0	14	0	20	0	25	0	43
HOCP92-648	L90-191	106	14	88	2	74	1	74	0	43
HOCP92-648	L91-255	706	53	60	1	40	1	52	0	43
HOCP92-648	L94-428	230	14	48	2	58	0	25	0	43
HOCP92-648	LCP81-010	232	47	95	9	93	4	87	0	43
HOCP92-648	LCP87-472	493	28	46	4	49	3	65	0	43
HOCP92-648	US90-018	106	0	14	0	20	0	25	0	43
HOCP92-654	HOCP93-752	453	0	14	0	20	0	25	0	43
HOCP93-744	CP77-407	221	0	14	0	20	0	25	0	43
HOCP93-744	HOCP85-845	869	0	14	0	20	0	25	0	43
HOCP93-746	HOCP85-845	1206	111	73	27	80	9	67	2	91
HOCP93-746	L94-426	240	13	44	2	52	1	61	1	95
HOCP93-746	LCP82-089	228	15	53	6	83	6	93	0	43
HOCP93-746	LHO83-153	243	0	14	0	20	0	25	0	43
HOCP93-746	US95-1014	234	23	76	4	71	3	79	0	43
HOCP93-750	HOCP90-941	249	0	14	0	20	0	25	0	43
HOCP93-775	SELF	250	24	75	10	93	4	84	0	43
HOCP93-775	US93-016	245	0	14	0	20	0	25	0	43
HOCP94-806	L91-255	684	0	14	0	20	0	25	0	43
HOCP94-806	L94-428	393	0	14	0	20	0	25	0	43
HOCP95-950	LCP82-089	461	0	14	0	20	0	25	0	43
HOCP96-569	HOCP93-775	487	30	50	6	66	2	58	0	43
L88-063	HOCP92-618	223	0	14	0	20	0	25	0	43
L88-063	L91-255	472	45	74	17	90	12	93	4	97

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L88-072	HOCP85-845	1655	75	41	13	48	6	57	0	43
L88-072	L96-044	240	0	14	0	20	0	25	0	43
L89-113	LHO83-153	236	17	56	2	55	0	25	0	43
L89-136	HOCP85-845	237	29	85	2	53	1	62	0	43
L90-191	LCP82-089	476	27	46	5	62	4	70	0	43
L91-255	HOCP85-845	103	17	93	2	76	0	25	0	43
L91-281	CP87-626	251	22	71	5	77	5	91	0	43
L91-281	LCP81-010	96	26	98	9	99	6	99	1	99
L91-281	LCP84-222	107	15	90	4	91	4	95	0	43
L91-288	HOCP92-618	247	0	14	0	20	0	25	0	43
L92-321	HOCP85-845	234	0	14	0	20	0	25	0	43
L93-363	HOCP85-845	243	20	66	5	78	2	68	1	94
L94-424	LCP85-384	1473	96	52	28	75	21	82	9	96
L94-426	CP84-772	400	97	97	14	90	6	83	1	92
L94-426	L95-477	106	9	69	5	95	4	96	0	43
L94-428	L93-365	109	8	57	3	84	1	72	0	43
L94-428	LCP87-472	108	2	33	1	60	1	73	0	43
L94-432	L91-255	211	19	72	7	89	6	94	2	98
L94-432	LCP81-010	481	19	39	3	47	1	53	0	43
L94-432	LCP86-454	105	23	96	7	98	2	90	0	43
L95-495	CP79-318	232	0	14	0	20	0	25	0	43
L95-495	CP85-830	90	0	14	0	20	0	25	0	43
L95-495	HO95-988	232	20	70	2	56	1	63	0	43
L95-495	HOCP85-845	216	0	14	0	20	0	25	0	43
L96-013	HOCP85-845	243	26	79	4	70	1	59	0	43
L96-024	LCP82-089	465	24	43	10	79	4	71	0	43
L96-044	LCP81-010	104	10	75	0	20	0	25	0	43
L96-048	LCP87-472	242	15	50	1	44	1	60	0	43
L96-051	CP85-830	212	35	93	12	97	4	89	0	43
L96-060	L95-477	611	0	14	0	20	0	25	0	43
L96-060	L96-044	703	0	14	0	20	0	25	0	43
L96-060	LCP82-089	712	0	14	0	20	0	25	0	43
L96-071	LCP82-089	685	51	58	13	75	7	75	1	90
LCP81-010	HOCP85-845	1691	47	35	0	20	0	25	0	43
LCP81-010	HOCP85-845	1405	0	14	0	20	0	25	0	43
LCP81-010	L88-072	456	27	47	2	47	1	54	0	43
LCP81-010	L89-136	110	12	81	2	72	2	88	0	43
LCP81-010	L91-281	1403	51	37	12	56	4	54	0	43
LCP81-010	L94-432	1431	51	37	2	40	1	50	0	43
LCP81-010	L95-477	1064	132	86	25	82	14	81	1	86
LCP81-010	L96-044	105	104	99	8	98	5	98	0	43
LCP81-010	LCP82-089	734	42	46	3	44	0	25	0	43
LCP81-010	LCP85-384	106	9	69	0	20	0	25	0	43

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
LCP81-010	LCP85-384	1057	57	44	24	81	15	82	1	87
LCP81-010	LCP87-472	893	11	31	0	20	0	25	0	43
LCP81-010	US78-020	914	9	30	2	42	1	51	0	43
LCP82-089	HOC94-806	679	0	14	0	20	0	25	0	43
LCP82-089	LCP87-472	321	6	33	1	43	1	56	0	43
LCP85-313	HOC85-845	237	9	38	0	20	0	25	0	43
LCP85-313	HOC85-845	387	35	72	11	85	5	80	1	93
LCP85-313	HOC85-845	234	45	95	9	92	3	79	0	43
LCP85-313	L88-072	112	7	51	2	72	2	87	0	43
LCP85-313	LCP82-089	728	39	44	5	48	1	51	0	43
LCP85-313	LCP85-336	105	20	94	1	61	1	74	0	43
LCP85-336	L96-024	109	0	14	0	20	0	25	0	43
LCP85-336	LCP85-384	842	97	82	27	89	14	85	1	89
LCP85-384	HOC85-845	349	42	83	15	95	12	94	3	97
LCP85-384	US95-1075	461	28	48	4	58	4	71	0	43
LCP86-429	HOC92-618	109	9	67	2	73	2	89	0	43
LCP86-429	L88-072	436	0	14	0	20	0	25	0	43
LCP86-429	L91-255	940	71	61	13	67	6	66	0	43
LCP86-429	L94-428	484	0	14	0	20	0	25	0	43
LCP86-429	L95-477	227	37	92	7	87	2	72	0	43
LCP86-429	LCP85-336	1167	56	43	2	41	0	25	0	43
LCP86-429	LCP85-384	446	59	88	12	83	9	91	0	43
LCP86-429	LCP87-472	236	16	54	2	55	0	25	0	43
RSB90-22	US95-1014	453	11	34	0	20	0	25	0	43
US78-020	HOC85-845	240	18	60	1	45	1	61	0	43
US79-010	HOC94-806	234	32	89	4	71	1	63	0	43
US80-004	LCP84-222	94	7	58	0	20	0	25	0	43
US80-004	LCP87-472	95	15	91	1	62	0	25	0	43
US80-004	US78-020	196	0	14	0	20	0	25	0	43
US90-021	HO94-850	239	19	64	1	45	0	25	0	43
US90-025	US90-020	103	7	54	1	62	0	25	0	43
US90-027	97P2	187	19	77	7	91	7	95	0	43
US90-027	L95-477	230	0	14	0	20	0	25	0	43
US90-20	HOC92-678	236	0	14	0	20	0	25	0	43
US90-25	US92-11	241	2	29	0	20	0	25	0	43
US92-11	CP88-757	232	0	14	0	20	0	25	0	43
US93-16	HOC93-750	464	49	79	11	82	8	87	0	43
US95-1036	RSB90-24	248	0	14	0	20	0	25	0	43
US96-1	HO93-769	245	29	83	4	68	2	68	0	43
US96-1	SELF	242	0	14	0	20	0	25	0	43
US96-2	HOC93-775	484	14	35	0	20	0	25	0	43
US96-2	LCP86-454	360	25	55	1	43	0	25	0	43
US96-2	LHO83-153	250	4	31	0	20	0	25	0	43

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
US96-6	HO94-851	219	0	14	0	20	0	25	0	43
US96-6	SELF	246	0	14	0	20	0	25	0	43
<u>1998 Crossing Series</u>										
CP65-357	98P1	234	20	76	0	14	0	22	.	.
CP78-357	HOCP92-624	448	43	84	11	80	5	85	.	.
CP78-357	HOCP96-561	351	24	64	7	71	3	77	.	.
CP79-318	98P3	85	9	86	3	92	0	22	.	.
CP79-318	HOCP85-845	461	7	25	1	30	1	47	.	.
CP79-318	HOCP89-846	207	14	64	1	41	0	22	.	.
CP79-318	HOCP94-836	351	5	24	0	14	0	22	.	.
CP79-318	HOCP95-947	79	0	11	0	14	0	22	.	.
CP79-318	L95-495	593	44	68	2	34	2	50	.	.
CP79-318	LCP82-089	187	16	77	1	43	1	63	.	.
CP79-318	LCP82-089	242	36	96	9	93	2	73	.	.
CP79-318	LCP85-384	251	34	95	16	98	9	98	.	.
CP79-348	US96-006	657	25	41	2	33	0	22	.	.
CP82-550	L96-045	62	0	11	0	14	0	22	.	.
CP83-644	CP79-318	211	9	44	1	40	0	22	.	.
CP83-644	HO94-856	231	0	11	0	14	0	22	.	.
CP83-644	HOCP85-845	964	27	32	3	34	3	49	.	.
CP83-644	HOCP92-624	245	29	90	9	93	4	92	.	.
CP83-644	HOCP95-947	237	0	11	0	14	0	22	.	.
CP83-644	HOCP96-538	246	29	90	5	72	2	69	.	.
CP83-644	L89-113	93	0	11	0	14	0	22	.	.
CP83-644	L95-477	1616	107	62	49	90	26	92	.	.
CP83-644	L95-495	540	0	11	0	14	0	22	.	.
CP83-644	L96-044	225	0	11	0	14	0	22	.	.
CP83-644	LCP81-010	1306	51	42	18	63	6	60	.	.
CP83-644	LCP81-010	232	7	34	2	48	1	58	.	.
CP83-644	LCP82-089	1328	80	56	34	82	20	90	.	.
CP83-644	US80-004	101	8	72	0	14	0	22	.	.
CP85-803	L89-113	221	21	83	9	96	2	80	.	.
HO95-985	HOCP85-845	250	28	88	5	71	1	52	.	.
HO95-985	HOCP85-845	397	7	26	2	42	2	63	.	.
HO95-985	L96-040	227	37	98	6	85	0	22	.	.
HO95-985	LCP81-010	452	9	28	3	44	2	60	.	.
HO95-985	LCP81-010	340	21	57	3	49	1	49	.	.
HO95-985	LCP82-089	238	12	48	3	58	0	22	.	.
HO95-985	LCP85-384	106	12	88	7	98	2	95	.	.
HO95-988	HOCP85-845	250	6	30	1	36	0	22	.	.
HO95-988	L89-113	230	17	68	6	83	4	93	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
HO95-988	L94-426	105	14	94	4	95	2	95	.	.
HO95-988	L95-495	109	7	59	1	52	0	22	.	.
HO96-566	HOC92-624	240	22	82	4	65	2	74	.	.
HO96-566	HOC96-538	394	48	92	5	58	4	84	.	.
HOC92-618	LCP81-010	689	0	11	0	14	0	22	.	.
HOC92-624	HO96-565	91	3	36	0	14	0	22	.	.
HOC92-624	HOC85-845	249	20	73	10	95	3	87	.	.
HOC92-624	HOC85-845	944	71	69	22	78	8	76	.	.
HOC92-624	HOC96-509	103	10	85	3	86	0	22	.	.
HOC92-624	L89-113	427	32	69	10	79	3	68	.	.
HOC92-624	L96-040	241	35	96	9	94	7	98	.	.
HOC92-624	L96-045	643	22	38	7	55	6	82	.	.
HOC92-624	L96-045	240	19	72	1	38	1	55	.	.
HOC92-624	L97-121	220	17	71	3	62	0	22	.	.
HOC92-624	LCP85-384	344	24	65	10	86	8	96	.	.
HOC92-624	LCP85-384	1146	69	56	30	84	7	66	.	.
HOC92-648	L96-040	234	15	59	5	76	1	58	.	.
HOC92-648	L97-121	1179	16	24	2	29	1	46	.	.
HOC92-648	L97-133	242	16	62	1	38	1	55	.	.
HOC92-648	LCP81-010	564	29	49	3	43	2	51	.	.
HOC92-648	LCP82-089	92	7	70	2	76	1	85	.	.
HOC92-654	98P3	621	0	11	0	14	0	22	.	.
HOC92-654	HOC85-845	473	0	11	0	14	0	22	.	.
HOC92-654	L94-426	1215	0	11	0	14	0	22	.	.
HOC92-654	L96-083	480	0	11	0	14	0	22	.	.
HOC94-836	HOC95-998	1135	0	11	0	14	0	22	.	.
HOC96-500	L89-113	543	20	39	11	72	2	52	.	.
HOC96-500	LCP81-010	497	17	38	2	36	0	22	.	.
HOC96-500	LCP81-010	470	30	59	8	66	3	67	.	.
HOC96-500	LCP85-384	901	47	50	12	61	6	68	.	.
HOC96-515	HO96-565	227	14	57	4	68	1	59	.	.
HOC96-519	HOC95-998	591	42	66	15	82	7	87	.	.
HOC96-519	HOC96-538	333	9	31	1	33	0	22	.	.
HOC96-522	HOC95-947	236	9	41	1	38	1	56	.	.
HOC96-522	LCP82-089	508	24	46	8	65	3	65	.	.
HOC96-538	CP78-317	226	0	11	0	14	0	22	.	.
HOC96-538	HOC85-845	455	0	11	0	14	0	22	.	.
HOC96-538	HOC92-624	233	0	11	0	14	0	22	.	.
HOC96-538	LCP82-089	1074	45	44	20	69	9	74	.	.
HOC96-546	HOC85-845	395	19	47	1	31	0	22	.	.
HOC96-546	L96-044	665	0	11	0	14	0	22	.	.
HOC96-561	L96-045	85	0	11	0	14	0	22	.	.
L89-113	LCP82-089	713	27	41	10	63	6	75	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L89-163	HOCP94-836	111	6	51	0	14	0	22	.	.
L89-163	HOCP95-947	430	60	95	13	89	4	81	.	.
L89-163	LCP81-010	1296	14	23	2	28	1	45	.	.
L91-255	HOCP96-561	650	0	11	0	14	0	22	.	.
L91-255	L89-113	384	0	11	0	14	0	22	.	.
L91-255	LCP85-384	533	35	62	9	66	6	86	.	.
L94-428	LCP86-454	234	0	11	0	14	0	22	.	.
L95-461	HO94-856	500	52	85	15	88	3	65	.	.
L95-461	HOCP92-624	244	8	36	3	57	0	22	.	.
L95-461	HOCP94-836	247	7	32	1	36	1	53	.	.
L95-495	CP78-2114	93	5	51	0	14	0	22	.	.
L95-495	HO96-565	220	13	55	2	51	0	22	.	.
L95-495	HOCP85-845	374	0	11	0	14	0	22	.	.
L95-495	HOCP96-500	224	0	11	0	14	0	22	.	.
L95-495	L89-113	414	45	87	13	90	4	82	.	.
L95-495	L96-045	196	0	11	0	14	0	22	.	.
L95-495	L96-083	77	10	93	1	61	0	22	.	.
L96-040	L96-044	694	58	75	12	67	7	84	.	.
L96-040	L97-149	229	0	11	0	14	0	22	.	.
L96-040	LCP82-089	567	67	90	17	88	9	91	.	.
L96-040	US96-006	245	22	81	5	73	2	70	.	.
L96-045	HOCP85-845	108	8	68	2	69	1	80	.	.
L96-060	HOCP95-998	227	0	11	0	14	0	22	.	.
L96-060	L95-495	349	6	26	1	32	0	22	.	.
L96-060	LCP82-089	344	14	43	3	49	3	78	.	.
L96-072	HOCP85-845	234	12	49	2	47	0	22	.	.
L96-072	HOCP89-846	100	0	11	0	14	0	22	.	.
L96-072	LCP82-089	392	32	74	13	91	5	88	.	.
L96-078	HOCP95-947	107	9	75	1	53	0	22	.	.
L97-104	L97-146	444	29	60	4	50	1	48	.	.
L97-104	LCP82-089	241	21	79	6	81	3	88	.	.
L97-113	L96-044	97	3	34	2	74	0	22	.	.
L97-113	LCP81-010	244	1	23	0	14	0	22	.	.
L97-121	HOCP92-624	101	17	98	7	99	4	99	.	.
L97-121	HOCP96-561	882	40	45	8	51	5	64	.	.
L97-121	LCP81-010	237	26	87	5	75	2	76	.	.
L97-128	HOCP95-998	235	8	38	0	14	0	22	.	.
L97-128	LCP81-010	899	17	27	6	45	2	47	.	.
L97-146	LCP85-384	219	18	74	9	96	3	90	.	.
L97-149	LCP81-010	225	0	11	0	14	0	22	.	.
LCP81-010	HOCP96-550	235	8	38	3	59	1	57	.	.
LCP81-010	L95-495	225	5	29	0	14	0	22	.	.
LCP81-010	L97-149	343	24	65	6	68	3	79	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
LCP81-010	LCP82-089	1194	4	22	2	29	1	46	.	.
LCP82-089	HOC96-527	427	0	11	0	14	0	22	.	.
LCP82-089	L89-113	746	0	11	0	14	0	22	.	.
LCP82-089	LCP86-454	166	0	11	0	14	0	22	.	.
LCP85-384	CP78-2114	314	23	66	6	70	2	66	.	.
LCP85-384	L96-045	221	28	92	6	85	4	94	.	.
LCP85-384	LCP82-089	1223	192	97	28	77	10	71	.	.
LCP85-384	LCP82-089	237	40	99	7	87	5	96	.	.
LCP85-384	LCP86-454	211	7	36	2	53	1	61	.	.
LCP86-429	L94-428	753	16	28	2	31	0	22	.	.
LCP87-492	CP78-2114	203	26	93	7	92	2	83	.	.
MISC	98P2	231	13	52	3	61	2	77	.	.
MISC	CP78-317	245	21	77	2	46	1	53	.	.
MISC	HOC85-845	600	35	54	14	78	8	89	.	.
MISC	HOC92-624	404	35	79	10	80	7	93	.	.
MISC	HOC96-500	219	19	79	2	51	0	22	.	.
MISC	L89-113	486	25	49	5	54	4	72	.	.
MISC	L89-163	251	23	82	1	36	0	22	.	.
MISC	L94-426	243	23	83	11	97	6	97	.	.
MISC	L95-495	198	8	42	3	64	0	22	.	.
MISC	L96-044	229	13	53	5	77	2	79	.	.
MISC	L96-045	243	29	91	5	74	1	54	.	.
MISC	L97-146	241	14	54	2	46	2	73	.	.
MISC	LCP81-010	101	9	80	0	14	0	22	.	.
MISC	LCP85-384	243	16	62	3	57	2	72	.	.
MISC	LCP86-454	214	5	30	1	40	1	61	.	.
US77-017	HOC85-845	235	7	34	3	59	1	57	.	.
US77-017	HOC92-624	247	20	73	3	56	0	22	.	.
US93-015	CP78-2114	228	0	11	0	14	0	22	.	.
US93-015	L96-044	252	0	11	0	14	0	22	.	.
US93-016	CP78-2114	203	12	55	1	42	1	62	.	.
US93-016	L95-495	583	28	47	5	48	2	50	.	.
US93-016	L96-045	247	11	45	3	56	2	69	.	.
US93-016	LCP86-454	38	1	31	1	84	0	22	.	.
US96-006	CP78-2114	234	0	11	0	14	0	22	.	.
US96-006	L97-121	241	0	11	0	14	0	22	.	.
US96-006	L97-155	102	0	11	0	14	0	22	.	.
US96-006	US96-006	206	18	79	1	42	0	22	.	.
<u>1999 Crossing Series</u>										
CP65-357	L95-482	407	16	50	.	.	.	.	.	.
CP65-357	LCP85-384	94	20	99	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
CP65-357	LCP85-384	190	24	95	.	.	.	.	.	.
CP70-321	LCP82-089	176	3	31	.	.	.	.	.	.
CP72-370	HO95-988	469	24	62	.	.	.	.	.	.
CP77-405	HOCP92-618	185	0	12	.	.	.	.	.	.
CP77-405	HOCP95-931	178	0	12	.	.	.	.	.	.
CP77-405	HOCP97-621	393	17	56	.	.	.	.	.	.
CP77-405	L90-191	197	0	12	.	.	.	.	.	.
CP77-405	L94-426	207	1	25	.	.	.	.	.	.
CP77-405	L94-428	377	0	12	.	.	.	.	.	.
CP77-405	L94-428	354	0	12	.	.	.	.	.	.
CP77-405	L96-040	377	0	12	.	.	.	.	.	.
CP77-405	LCP85-384	176	0	12	.	.	.	.	.	.
CP77-405	US90-018	182	0	12	.	.	.	.	.	.
CP78-357	HOCP92-618	207	23	92	.	.	.	.	.	.
CP78-357	L94-432	1106	75	73	.	.	.	.	.	.
CP78-357	L96-030	214	21	91	.	.	.	.	.	.
CP78-357	US90-018	188	6	42	.	.	.	.	.	.
CP79-318	HO95-988	375	0	12	.	.	.	.	.	.
CP79-318	HOCP94-806	232	2	26	.	.	.	.	.	.
CP79-318	HOCP95-931	162	0	12	.	.	.	.	.	.
CP79-318	L97-137	544	20	47	.	.	.	.	.	.
CP79-318	LCP81-010	214	0	12	.	.	.	.	.	.
CP79-318	LCP85-384	698	32	58	.	.	.	.	.	.
CP79-318	LCP85-384	407	17	55	.	.	.	.	.	.
CP79-318	LCP85-384	161	28	98	.	.	.	.	.	.
CP79-348	HOCP92-618	211	0	12	.	.	.	.	.	.
CP79-348	L94-426	1079	18	31	.	.	.	.	.	.
CP82-550	LCP81-010	84	3	45	.	.	.	.	.	.
CP83-644	HOCP97-621	93	2	35	.	.	.	.	.	.
CP83-644	L91-255	194	14	75	.	.	.	.	.	.
CP83-644	L91-255	399	27	73	.	.	.	.	.	.
CP83-644	L96-030	64	12	99	.	.	.	.	.	.
CP83-644	L96-040	140	11	81	.	.	.	.	.	.
CP83-644	L96-063	435	33	77	.	.	.	.	.	.
CP83-644	L98-207	141	7	61	.	.	.	.	.	.
CP83-644	LCP81-010	384	16	55	.	.	.	.	.	.
CP83-644	LCP82-089	347	23	71	.	.	.	.	.	.
CP83-644	LCP85-384	398	0	12	.	.	.	.	.	.
CP88-702	HOCP92-618	179	6	43	.	.	.	.	.	.
CP88-702	L94-428	243	7	39	.	.	.	.	.	.
CP88-702	LCP86-454	86	2	37	.	.	.	.	.	.
CP89-879	HOCP92-618	213	9	55	.	.	.	.	.	.
CP89-879	L91-255	347	24	74	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
CP89-879	L94-426	212	6	38	.	.	.	.	.	.
CP89-879	L94-428	413	51	95	.	.	.	.	.	.
CP89-879	L94-428	148	0	12	.	.	.	.	.	.
CP89-879	L96-030	221	18	81	.	.	.	.	.	.
CP89-879	LCP81-010	237	12	62	.	.	.	.	.	.
CP89-879	LCP81-010	210	4	32	.	.	.	.	.	.
HO89-889	LCP85-384	730	42	67	.	.	.	.	.	.
HO95-985	CP77-405	232	18	79	.	.	.	.	.	.
HO95-985	HOCP85-845	163	9	65	.	.	.	.	.	.
HO95-985	HOCP95-931	190	3	31	.	.	.	.	.	.
HO95-985	L91-255	376	29	78	.	.	.	.	.	.
HO95-985	L94-426	200	15	76	.	.	.	.	.	.
HO95-985	L94-428	190	10	64	.	.	.	.	.	.
HO95-985	L98-209	236	12	62	.	.	.	.	.	.
HO95-985	LCP85-384	168	27	98	.	.	.	.	.	.
HO95-988	LCP82-089	181	0	12	.	.	.	.	.	.
HO96-565	HOCP92-618	206	14	73	.	.	.	.	.	.
HO96-565	LCP85-384	152	21	96	.	.	.	.	.	.
HOCP85-845	99P3	194	0	12	.	.	.	.	.	.
HOCP85-845	L97-137	209	18	83	.	.	.	.	.	.
HOCP89-846	L94-428	374	20	64	.	.	.	.	.	.
HOCP92-618	LCP85-384	218	9	53	.	.	.	.	.	.
HOCP92-624	99P4	170	7	53	.	.	.	.	.	.
HOCP92-624	HO89-889	431	53	95	.	.	.	.	.	.
HOCP92-624	HOCP85-845	238	15	69	.	.	.	.	.	.
HOCP92-624	HOCP92-618	83	3	45	.	.	.	.	.	.
HOCP92-624	HOCP95-931	206	0	12	.	.	.	.	.	.
HOCP92-624	L75-056	453	0	12	.	.	.	.	.	.
HOCP92-624	L91-255	366	35	90	.	.	.	.	.	.
HOCP92-624	L94-426	185	12	70	.	.	.	.	.	.
HOCP92-624	L94-428	168	9	64	.	.	.	.	.	.
HOCP92-624	L95-482	433	16	47	.	.	.	.	.	.
HOCP92-624	L97-137	407	23	66	.	.	.	.	.	.
HOCP92-624	LCP81-010	789	17	35	.	.	.	.	.	.
HOCP92-624	LCP85-384	86	7	81	.	.	.	.	.	.
HOCP92-624	LCP86-454	634	48	77	.	.	.	.	.	.
HOCP92-648	HOCP95-931	233	37	97	.	.	.	.	.	.
HOCP92-648	HOCP96-509	362	0	12	.	.	.	.	.	.
HOCP92-648	L91-255	204	7	43	.	.	.	.	.	.
HOCP92-648	L96-063	359	27	76	.	.	.	.	.	.
HOCP92-648	LCP85-384	625	64	91	.	.	.	.	.	.
HOCP92-648	LCP85-384	627	29	58	.	.	.	.	.	.
HOCP92-648	US90-018	219	9	53	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
HOCP94-806	HOCP85-845	453	34	76	.	.	.	.	.	.
HOCP94-806	HOCP92-618	389	34	84	.	.	.	.	.	.
HOCP94-806	HOCP97-621	91	1	27	.	.	.	.	.	.
HOCP94-806	HOCP97-621	420	36	83	.	.	.	.	.	.
HOCP95-931	L75-056	638	35	65	.	.	.	.	.	.
HOCP96-509	HO89-889	170	7	53	.	.	.	.	.	.
HOCP96-509	HOCP92-618	227	5	35	.	.	.	.	.	.
HOCP96-509	L75-056	460	56	94	.	.	.	.	.	.
HOCP96-509	L94-428	204	8	50	.	.	.	.	.	.
HOCP96-509	L94-432	352	10	38	.	.	.	.	.	.
HOCP96-509	L95-482	151	14	87	.	.	.	.	.	.
HOCP96-509	L97-117	523	44	82	.	.	.	.	.	.
HOCP96-509	LCP85-384	351	7	34	.	.	.	.	.	.
HOCP96-518	LCP85-384	306	0	12	.	.	.	.	.	.
HOCP96-519	L94-428	213	1	25	.	.	.	.	.	.
HOCP96-519	LCP86-454	239	0	12	.	.	.	.	.	.
HOCP96-522	HO95-988	392	19	59	.	.	.	.	.	.
HOCP96-522	HOCP92-618	83	0	12	.	.	.	.	.	.
HOCP96-522	L91-255	76	7	86	.	.	.	.	.	.
HOCP96-522	L95-482	332	5	30	.	.	.	.	.	.
HOCP96-522	L96-026	215	0	12	.	.	.	.	.	.
HOCP96-522	L98-209	155	9	67	.	.	.	.	.	.
HOCP96-522	LCP82-089	325	14	56	.	.	.	.	.	.
HOCP96-522	LCP85-384	219	21	90	.	.	.	.	.	.
HOCP96-522	LCP85-384	1031	71	74	.	.	.	.	.	.
HOCP96-522	US96-001	203	32	97	.	.	.	.	.	.
HOCP96-525	L94-428	394	0	12	.	.	.	.	.	.
HOCP96-525	L94-432	344	0	12	.	.	.	.	.	.
HOCP96-525	LCP85-384	460	0	12	.	.	.	.	.	.
HOCP97-609	HOCP85-845	224	19	83	.	.	.	.	.	.
HOCP97-609	HOCP97-621	431	40	87	.	.	.	.	.	.
HOCP97-609	L94-426	140	0	12	.	.	.	.	.	.
HOCP97-609	LCP86-454	211	15	75	.	.	.	.	.	.
HOCP97-620	LCP81-030	355	28	81	.	.	.	.	.	.
HOCP97-621	HOCP85-845	389	0	12	.	.	.	.	.	.
HOCP97-621	LCP85-384	1086	40	47	.	.	.	.	.	.
HOCP97-641	HOCP94-806	234	11	59	.	.	.	.	.	.
HOCP97-646	L75-056	361	7	32	.	.	.	.	.	.
HOCP97-646	L95-482	170	2	28	.	.	.	.	.	.
HOCP97-670	L94-432	229	13	66	.	.	.	.	.	.
HOCP97-670	L94-432	173	19	92	.	.	.	.	.	.
HOCP97-697	L94-426	194	7	45	.	.	.	.	.	.
L75-056	L98-207	243	19	79	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L89-113	HO95-988	388	26	72	.	.	.	.	.	.
L89-113	HOCP85-845	178	6	43	.	.	.	.	.	.
L89-113	HOCP92-618	435	17	50	.	.	.	.	.	.
L89-113	L91-255	399	0	12	.	.	.	.	.	.
L89-113	L94-428	462	0	12	.	.	.	.	.	.
L89-113	L94-428	423	17	51	.	.	.	.	.	.
L89-113	L94-432	366	0	12	.	.	.	.	.	.
L89-113	LCP82-089	197	4	34	.	.	.	.	.	.
L90-191	HOCP94-806	85	3	44	.	.	.	.	.	.
L90-191	LCP82-089	222	0	12	.	.	.	.	.	.
L91-255	HO89-889	375	6	31	.	.	.	.	.	.
L91-255	HOCP95-931	167	5	40	.	.	.	.	.	.
L91-255	L94-428	195	3	30	.	.	.	.	.	.
L91-255	LCP82-089	413	0	12	.	.	.	.	.	.
L91-255	LCP82-089	359	28	79	.	.	.	.	.	.
L91-255	LCP85-384	646	79	94	.	.	.	.	.	.
L91-255	US90-018	207	5	37	.	.	.	.	.	.
L94-426	HOCP85-845	175	5	39	.	.	.	.	.	.
L94-426	LCP82-089	224	3	29	.	.	.	.	.	.
L94-426	LCP85-384	225	17	77	.	.	.	.	.	.
L94-428	LCP86-454	150	0	12	.	.	.	.	.	.
L94-432	CP78-357	326	28	83	.	.	.	.	.	.
L94-432	HO95-988	176	0	12	.	.	.	.	.	.
L94-432	HOCP85-845	183	7	49	.	.	.	.	.	.
L94-432	HOCP92-618	407	0	12	.	.	.	.	.	.
L94-432	HOCP97-621	323	14	56	.	.	.	.	.	.
L94-432	HOCP97-670	221	0	12	.	.	.	.	.	.
L94-432	L91-255	203	8	50	.	.	.	.	.	.
L94-432	L98-209	342	23	72	.	.	.	.	.	.
L94-432	LCP85-384	690	64	87	.	.	.	.	.	.
L94-432	US93-015	189	7	47	.	.	.	.	.	.
L95-482	LCP82-089	542	13	37	.	.	.	.	.	.
L96-026	CP83-644	158	0	12	.	.	.	.	.	.
L96-026	HO95-988	504	33	70	.	.	.	.	.	.
L96-026	HOCP85-845	198	0	12	.	.	.	.	.	.
L96-026	HOCP85-845	302	12	51	.	.	.	.	.	.
L96-026	HOCP97-670	421	28	72	.	.	.	.	.	.
L96-026	L91-255	340	11	42	.	.	.	.	.	.
L96-026	LCP81-010	237	0	12	.	.	.	.	.	.
L96-026	LCP82-089	190	0	12	.	.	.	.	.	.
L96-030	HO95-988	193	18	87	.	.	.	.	.	.
L96-030	HOCP96-525	208	9	56	.	.	.	.	.	.
L96-040	HOCP95-931	404	0	12	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L96-040	L94-426	206	7	43	.	.	.	.	.	.
L96-092	HOC96-525	160	0	12	.	.	.	.	.	.
L97-113	HOC96-525	167	24	97	.	.	.	.	.	.
L97-113	L91-255	188	0	12	.	.	.	.	.	.
L97-113	LCP81-010	205	16	79	.	.	.	.	.	.
L97-113	US96-005	425	5	28	.	.	.	.	.	.
L97-117	L94-432	197	0	12	.	.	.	.	.	.
L97-121	L94-428	231	3	29	.	.	.	.	.	.
L97-121	L94-432	158	18	93	.	.	.	.	.	.
L97-121	US90-018	227	9	51	.	.	.	.	.	.
L97-128	HO95-988	420	37	85	.	.	.	.	.	.
L97-128	L91-255	473	0	12	.	.	.	.	.	.
L97-128	LCP85-384	859	0	12	.	.	.	.	.	.
L97-137	US96-001	194	6	41	.	.	.	.	.	.
L97-142	HO95-988	390	0	12	.	.	.	.	.	.
L97-142	HO95-988	215	0	12	.	.	.	.	.	.
L97-142	LCP82-089	195	0	12	.	.	.	.	.	.
L97-143	L94-428	166	6	45	.	.	.	.	.	.
L97-147	L94-432	165	15	86	.	.	.	.	.	.
L98-191	HOC97-621	87	10	93	.	.	.	.	.	.
L98-207	HOC96-525	200	6	40	.	.	.	.	.	.
L98-207	HOC92-618	329	17	63	.	.	.	.	.	.
L98-207	L94-428	372	0	12	.	.	.	.	.	.
L98-207	L94-432	816	41	61	.	.	.	.	.	.
L98-207	LCP81-010	379	24	69	.	.	.	.	.	.
LCP81-010	HOC95-931	208	0	12	.	.	.	.	.	.
LCP81-010	HOC97-621	402	8	34	.	.	.	.	.	.
LCP81-010	L91-255	417	24	67	.	.	.	.	.	.
LCP81-010	L94-432	1029	0	12	.	.	.	.	.	.
LCP81-010	LCP81-030	208	0	12	.	.	.	.	.	.
LCP81-010	LCP85-384	1113	110	91	.	.	.	.	.	.
LCP81-010	LCP85-384	1564	64	53	.	.	.	.	.	.
LCP81-030	L94-432	112	0	12	.	.	.	.	.	.
LCP82-089	HOC97-621	182	11	68	.	.	.	.	.	.
LCP85-384	99P3	387	37	90	.	.	.	.	.	.
LCP86-454	99P4	238	7	39	.	.	.	.	.	.
LCP86-454	HO95-988	599	13	35	.	.	.	.	.	.
LCP86-454	L96-040	146	0	12	.	.	.	.	.	.
LCP86-454	LCP85-384	207	19	86	.	.	.	.	.	.
LCP86-454	LCP85-384	1098	103	88	.	.	.	.	.	.
LHO83-153	LCP82-089	192	10	63	.	.	.	.	.	.
LHO83-153	LCP85-384	189	18	89	.	.	.	.	.	.
US79-010	HOC96-525	348	20	66	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
US79-010	HOCP92-618	219	14	70	.	.	.	.	.	.
US79-010	L94-426	206	0	12	.	.	.	.	.	.
US79-010	LCP85-384	186	9	59	.	.	.	.	.	.
US79-010	LCP86-454	439	56	96	.	.	.	.	.	.
US80-004	HOCP92-618	71	1	29	.	.	.	.	.	.
US80-004	L94-428	188	7	47	.	.	.	.	.	.
US90-018	HOCP85-845	409	2	25	.	.	.	.	.	.
US90-018	L94-428	364	13	45	.	.	.	.	.	.
US90-018	L94-428	515	12	37	.	.	.	.	.	.
US90-021	LCP81-010	179	11	69	.	.	.	.	.	.
US90-021	LCP81-030	206	0	12	.	.	.	.	.	.
US93-016	L94-426	192	9	59	.	.	.	.	.	.
US93-016	L94-428	267	0	12	.	.	.	.	.	.
US93-016	L94-428	205	10	60	.	.	.	.	.	.
US93-016	LCP85-384	101	2	34	.	.	.	.	.	.
US93-016	LCP85-384	181	2	27	.	.	.	.	.	.
US96-001	US90-018	340	30	85	.	.	.	.	.	.
US96-005	L94-428	379	15	51	.	.	.	.	.	.
<u>2000 Crossing Series</u>										
CP65-357	L91-255	429	30	79	.	.	.	.	.	.
CP65-357	LCP85-384	984	40	53	.	.	.	.	.	.
CP77-405	L96-040	249	8	42	.	.	.	.	.	.
CP77-405	L98-197	242	16	77	.	.	.	.	.	.
CP77-405	L98-209	483	7	18	.	.	.	.	.	.
CP77-405	LCP85-384	940	20	29	.	.	.	.	.	.
CP78-317	L98-209	496	14	37	.	.	.	.	.	.
CP78-317	L99-229	245	22	91	.	.	.	.	.	.
CP78-317	LCP85-384	493	21	55	.	.	.	.	.	.
CP79-318	HOCP92-618	251	8	42	.	.	.	.	.	.
CP79-318	L96-040	243	16	77	.	.	.	.	.	.
CP79-318	L98-207	254	10	50	.	.	.	.	.	.
CP79-318	L98-209	249	5	27	.	.	.	.	.	.
CP79-318	L99-233	962	18	25	.	.	.	.	.	.
CP79-318	LCP85-384	727	9	18	.	.	.	.	.	.
CP83-644	HOCP97-609	251	10	51	.	.	.	.	.	.
CP89-846	LCP85-384	249	12	61	.	.	.	.	.	.
HO91-572	L94-428	250	2	16	.	.	.	.	.	.
HO91-572	LCP85-384	688	41	72	.	.	.	.	.	.
HO91-572	LCP87-492	244	0	6	.	.	.	.	.	.
HO95-988	HOCP85-845	241	11	59	.	.	.	.	.	.
HO95-988	HOCP96-561	249	5	27	.	.	.	.	.	.
HO95-988	L90-191	227	14	74	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
HO95-988	L94-433	426	27	75	.	.	.	.	.	.
HO95-988	L96-040	480	0	6	.	.	.	.	.	.
HO95-988	L98-207	733	31	54	.	.	.	.	.	.
HO95-988	L98-209	247	6	31	.	.	.	.	.	.
HO95-988	LCP85-384	1047	77	82	.	.	.	.	.	.
HOC95-845	HOC92-624	241	15	74	.	.	.	.	.	.
HOC95-845	HOC96-540	507	21	53	.	.	.	.	.	.
HOC95-845	L89-113	254	1	14	.	.	.	.	.	.
HOC95-845	L91-255	220	5	30	.	.	.	.	.	.
HOC95-845	L98-209	470	0	6	.	.	.	.	.	.
HOC95-845	LCP85-384	2348	129	68	.	.	.	.	.	.
HOC91-522	US80-004	194	14	81	.	.	.	.	.	.
HOC91-552	L90-191	182	3	21	.	.	.	.	.	.
HOC91-552	L91-255	476	34	80	.	.	.	.	.	.
HOC91-552	L94-432	211	9	55	.	.	.	.	.	.
HOC91-552	L99-233	912	26	39	.	.	.	.	.	.
HOC92-618	HOC96-540	697	63	91	.	.	.	.	.	.
HOC92-618	L99-233	245	3	18	.	.	.	.	.	.
HOC92-624	HOC95-845	477	16	45	.	.	.	.	.	.
HOC92-624	HOC92-618	251	17	79	.	.	.	.	.	.
HOC92-624	HOC96-522	241	9	47	.	.	.	.	.	.
HOC92-624	HOC96-540	977	82	88	.	.	.	.	.	.
HOC92-624	HOC96-561	473	2	14	.	.	.	.	.	.
HOC92-624	HOC97-601	249	11	56	.	.	.	.	.	.
HOC92-624	HOC97-609	498	46	92	.	.	.	.	.	.
HOC92-624	HOC97-621	486	14	39	.	.	.	.	.	.
HOC92-624	L89-113	735	44	72	.	.	.	.	.	.
HOC92-624	L91-255	1185	106	90	.	.	.	.	.	.
HOC92-624	L91-281	239	29	98	.	.	.	.	.	.
HOC92-624	L98-197	483	40	87	.	.	.	.	.	.
HOC92-624	L98-209	236	8	45	.	.	.	.	.	.
HOC92-624	L99-226	239	8	43	.	.	.	.	.	.
HOC92-624	LCP85-384	2371	110	59	.	.	.	.	.	.
HOC92-624	LCP85-384	715	32	57	.	.	.	.	.	.
HOC92-624	LCP86-454	665	26	50	.	.	.	.	.	.
HOC92-624	US80-004	252	7	37	.	.	.	.	.	.
HOC92-648	HOC95-845	243	6	33	.	.	.	.	.	.
HOC92-648	HOC92-624	228	8	46	.	.	.	.	.	.
HOC92-648	L91-281	246	23	92	.	.	.	.	.	.
HOC92-648	L93-363	238	7	39	.	.	.	.	.	.
HOC92-648	L96-040	230	15	76	.	.	.	.	.	.
HOC92-648	L98-209	238	2	16	.	.	.	.	.	.
HOC92-648	LCP85-384	700	34	62	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
HOCP94-867	L99-226	227	36	99	.	.	.	.	.	.
HOCP95-950	LCP85-384	482	10	29	.	.	.	.	.	.
HOCP95-951	HOCP96-540	247	0	6	.	.	.	.	.	.
HOCP95-951	LCP85-384	732	24	43	.	.	.	.	.	.
HOCP96-522	CP78-317	501	20	51	.	.	.	.	.	.
HOCP96-522	HOCP96-561	453	38	88	.	.	.	.	.	.
HOCP96-522	L91-255	498	28	70	.	.	.	.	.	.
HOCP96-522	L94-432	223	9	51	.	.	.	.	.	.
HOCP96-522	LCP85-384	973	78	86	.	.	.	.	.	.
HOCP96-522	LCP85-384	615	0	6	.	.	.	.	.	.
HOCP96-540	HOCP85-845	222	10	57	.	.	.	.	.	.
HOCP96-540	HOCP91-552	232	26	95	.	.	.	.	.	.
HOCP96-540	HOCP92-624	245	0	6	.	.	.	.	.	.
HOCP96-540	L91-281	398	0	6	.	.	.	.	.	.
HOCP96-540	L92-312	248	0	6	.	.	.	.	.	.
HOCP96-540	L94-433	243	0	6	.	.	.	.	.	.
HOCP96-540	L99-229	219	0	6	.	.	.	.	.	.
HOCP96-540	US96-001	216	0	6	.	.	.	.	.	.
HOCP96-561	HOCP92-624	244	21	89	.	.	.	.	.	.
HOCP96-561	L99-229	251	19	84	.	.	.	.	.	.
HOCP96-561	L99-233	776	26	45	.	.	.	.	.	.
HOCP97-601	HOCP92-618	245	11	57	.	.	.	.	.	.
HOCP97-606	LCP85-384	486	9	25	.	.	.	.	.	.
HOCP97-609	HOCP85-845	229	6	34	.	.	.	.	.	.
HOCP97-609	HOCP92-624	469	0	6	.	.	.	.	.	.
HOCP97-609	HOCP97-621	215	13	72	.	.	.	.	.	.
HOCP97-609	L91-255	483	19	50	.	.	.	.	.	.
HOCP97-609	LCP81-010	235	1	14	.	.	.	.	.	.
HOCP97-609	LCP85-384	227	9	51	.	.	.	.	.	.
HOCP97-621	HOCP96-540	249	0	6	.	.	.	.	.	.
HOCP97-621	LCP85-384	946	26	36	.	.	.	.	.	.
HOCP97-645	L98-197	234	12	65	.	.	.	.	.	.
HOCP97-645	L99-226	469	37	85	.	.	.	.	.	.
HOCP98-743	L98-209	675	0	6	.	.	.	.	.	.
HOCP98-743	L99-226	236	0	6	.	.	.	.	.	.
HOCP98-776	HOCP97-621	240	16	78	.	.	.	.	.	.
HOCP98-776	L91-281	250	4	21	.	.	.	.	.	.
HOCP98-776	LCP81-010	711	15	29	.	.	.	.	.	.
L89-113	L96-040	230	32	99	.	.	.	.	.	.
L89-113	LCP85-384	482	32	77	.	.	.	.	.	.
L90-191	LCP85-384	239	18	83	.	.	.	.	.	.
L90-191	US96-001	236	0	6	.	.	.	.	.	.
L91-255	HOCP85-845	481	12	33	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L91-255	L96-040	447	0	6	.	.	.	.	.	.
L91-255	LCP85-384	710	36	65	.	.	.	.	.	.
L91-281	L91-255	242	18	82	.	.	.	.	.	.
L91-281	L96-040	247	4	21	.	.	.	.	.	.
L91-281	L98-197	476	17	47	.	.	.	.	.	.
L91-281	L98-209	461	35	84	.	.	.	.	.	.
L91-281	L99-237	238	23	93	.	.	.	.	.	.
L91-281	LCP85-384	1205	60	63	.	.	.	.	.	.
L93-363	HOCP92-618	239	0	6	.	.	.	.	.	.
L93-363	L96-040	477	24	63	.	.	.	.	.	.
L93-363	LCP85-384	243	7	39	.	.	.	.	.	.
L93-399	HOCP85-845	489	24	62	.	.	.	.	.	.
L93-399	HOCP91-552	237	12	65	.	.	.	.	.	.
L93-399	L99-226	233	6	34	.	.	.	.	.	.
L94-426	L96-040	248	7	37	.	.	.	.	.	.
L94-426	L98-209	249	11	56	.	.	.	.	.	.
L94-426	L99-224	234	13	70	.	.	.	.	.	.
L94-426	L99-233	234	9	48	.	.	.	.	.	.
L94-426	LCP85-384	947	25	34	.	.	.	.	.	.
L94-426	LCP86-454	237	19	86	.	.	.	.	.	.
L94-428	HOCP97-601	472	16	45	.	.	.	.	.	.
L94-428	L91-281	241	32	98	.	.	.	.	.	.
L94-428	L94-433	234	18	85	.	.	.	.	.	.
L94-428	L99-226	226	12	67	.	.	.	.	.	.
L94-428	LCP81-010	675	16	31	.	.	.	.	.	.
L94-428	LCP85-384	712	39	68	.	.	.	.	.	.
L94-432	HOCP85-845	244	5	27	.	.	.	.	.	.
L96-040	HOCP98-776	471	0	6	.	.	.	.	.	.
L96-040	LCP81-010	242	15	74	.	.	.	.	.	.
L96-040	LCP85-384	1193	36	41	.	.	.	.	.	.
L97-128	HOCP85-845	237	2	16	.	.	.	.	.	.
L97-128	HOCP92-618	237	15	75	.	.	.	.	.	.
L97-128	L91-281	993	119	97	.	.	.	.	.	.
L97-128	L93-363	479	52	94	.	.	.	.	.	.
L97-128	L99-229	471	53	96	.	.	.	.	.	.
L97-128	L99-233	199	22	95	.	.	.	.	.	.
L97-128	LCP81-010	699	33	60	.	.	.	.	.	.
L97-128	LCP87-492	468	40	89	.	.	.	.	.	.
L97-128	US80-004	236	12	65	.	.	.	.	.	.
L97-128	US96-001	476	32	78	.	.	.	.	.	.
L98-158	L99-233	225	11	62	.	.	.	.	.	.
L98-197	HOCP96-522	204	0	6	.	.	.	.	.	.
L98-197	US99-002	225	0	6	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
L98-198	HOCP97-621	445	26	71	.	.	.	.	.	.
L98-198	US79-010	474	35	82	.	.	.	.	.	.
L98-207	CP79-318	702	11	21	.	.	.	.	.	.
L98-207	L92-312	250	25	93	.	.	.	.	.	.
L98-209	L94-428	238	0	6	.	.	.	.	.	.
L98-209	L99-233	476	9	25	.	.	.	.	.	.
L98-209	LCP85-384	461	0	6	.	.	.	.	.	.
L99-224	L99-226	240	14	71	.	.	.	.	.	.
L99-224	L99-233	234	8	45	.	.	.	.	.	.
L99-226	HOCP96-522	231	23	93	.	.	.	.	.	.
L99-226	L99-233	711	14	27	.	.	.	.	.	.
L99-226	LCP85-384	688	0	6	.	.	.	.	.	.
L99-229	LCP81-010	240	11	59	.	.	.	.	.	.
L99-229	LCP85-384	474	19	51	.	.	.	.	.	.
L99-233	LCP85-384	838	52	74	.	.	.	.	.	.
LCP81-010	CP78-317	458	1	13	.	.	.	.	.	.
LCP81-010	HOCP85-845	439	8	24	.	.	.	.	.	.
LCP81-010	HOCP96-561	186	7	48	.	.	.	.	.	.
LCP81-010	HOCP97-609	475	11	30	.	.	.	.	.	.
LCP81-010	HOCP97-621	229	4	23	.	.	.	.	.	.
LCP81-010	L92-312	243	13	67	.	.	.	.	.	.
LCP81-010	L94-428	239	13	67	.	.	.	.	.	.
LCP81-010	L96-040	239	6	33	.	.	.	.	.	.
LCP81-010	L98-207	705	12	23	.	.	.	.	.	.
LCP81-010	L99-233	817	13	21	.	.	.	.	.	.
LCP81-010	LCP85-384	1687	122	81	.	.	.	.	.	.
LCP81-010	US96-001	236	7	41	.	.	.	.	.	.
LCP81-010	US99-002	221	11	63	.	.	.	.	.	.
LCP81-030	HOCP85-845	249	7	37	.	.	.	.	.	.
LCP85-384	CP79-318	243	0	6	.	.	.	.	.	.
LCP85-384	HOCP92-624	236	0	6	.	.	.	.	.	.
LCP85-384	HOCP96-540	720	53	82	.	.	.	.	.	.
LCP85-384	L93-363	224	18	86	.	.	.	.	.	.
LCP85-384	L94-433	712	21	39	.	.	.	.	.	.
LCP85-384	L99-226	757	0	6	.	.	.	.	.	.
LCP85-384	LCP86-454	943	18	25	.	.	.	.	.	.
LCP86-454	L99-226	710	26	47	.	.	.	.	.	.
LCP86-454	L99-234	252	6	31	.	.	.	.	.	.
LCP86-454	LCP85-384	1861	157	88	.	.	.	.	.	.
LCP87-492	HOCP97-609	241	29	97	.	.	.	.	.	.
LCP87-492	L89-113	219	6	36	.	.	.	.	.	.
LCP87-492	L91-281	487	25	65	.	.	.	.	.	.
LCP87-492	L94-432	224	0	6	.	.	.	.	.	.

Table 6. Continued

Female	Male	Survive	1 st Line		2 nd Line		Increase		Assignment	
			No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l	No.	Rank Pcnt'l
LCP87-492	L98-209	481	8	23	.	.	.	.	.	.
LCP87-492	L99-233	446	41	92	.	.	.	.	.	.
TucCP77-042	LCP85-384	716	82	96	.	.	.	.	.	.
US79-010	HOCP96-540	237	13	68	.	.	.	.	.	.
US79-010	L98-209	236	13	68	.	.	.	.	.	.
US79-010	LCP85-384	700	19	36	.	.	.	.	.	.
US79-010	LCP87-492	246	4	21	.	.	.	.	.	.
US80-004	LCP85-384	664	7	17	.	.	.	.	.	.
US92-010	L91-281	201	9	57	.	.	.	.	.	.
US96-001	LCP85-384	948	15	21	.	.	.	.	.	.
US96-002	L94-432	221	3	18	.	.	.	.	.	.
US96-002	LCP85-384	468	19	53	.	.	.	.	.	.

Table. 7. Plant weight and rank summary statistics from the 2001 crossing series plant cane cross appraisal test at the St. Gabriel Research Station in 2002.

Female		Male		Plant Weight		Female		Male		Plant Weight	
		Kg/Plant	Pcnt'l			Kg/Plant	Pcnt'l			Kg/Plant	Pcnt'l
L99-224	L99-233	9.36	98	HOC91-552	L99-233	5.94	42				
L98-198	US79-010	8.35	97	HOC95-950	L99-237	5.93	40				
LCP87-492	L91-255	8.25	96	L94-426	L99-233	5.81	39				
L99-224	US79-010	8.18	94	L90-191	US96-001	5.81	38				
US79-010	L94-428	8.17	93	CP78-317	L99-229	5.77	36				
LCP86-454	L99-234	8.05	92	HOC98-776	L89-113	5.67	35				
L99-224	LCP81-010	7.99	90	L98-207	00P5	5.66	34				
L93-399	L99-224	7.82	89	HOC96-561	HOC98-648	5.66	32				
L99-224	L91-255	7.81	88	LCP81-010	L99-234	5.62	31				
L98-207	L99-233	7.75	86	HOC98-741	HOC97-609	5.58	30				
US92-010	L91-281	7.51	85	US96-001	L99-226	5.51	28				
L99-229	L90-191	7.51	84	L99-237	HOC98-648	5.49	27				
LCP87-492	L99-233	7.43	82	L98-158	US79-010	5.42	26				
HOC98-776	HOC85-845	7.40	81	L99-229	LCP85-384	5.32	25				
L97-128	L99-229	7.31	80	L99-237	HOC85-845	5.32	23				
US79-010	L99-234	7.29	78	L99-226	L99-233	5.11	22				
L94-432	L99-224	7.28	77	HOC96-561	L99-229	5.06	21				
L98-209	L99-233	7.12	76	L99-226	HOC96-540	4.98	19				
HOC98-717	LCP85-384	7.12	75	HOC98-776	L96-040	4.97	18				
CP79-318	HOC85-845	7.11	73	L97-128	LCP85-384	4.74	17				
HOC97-645	L99-226	6.89	72	US79-010	L96-040	4.68	15				
TUCCP77-042	HOC92-618	6.85	71	HOC92-618	L99-233	4.68	14				
HOC96-522	L99-226	6.81	69	L91-281	L99-237	4.66	13				
HOC98-717	L91-255	6.79	68	L96-040	HOC98-776	4.53	11				
HOC96-561	HOC85-845	6.78	67	HOC98-776	HOC97-621	4.47	10				
HOC98-776	LCP81-010	6.66	65	HOC98-776	L91-281	4.47	9				
HOC92-624	US80-004	6.63	64	LCP85-384	L99-226	4.42	7				
L99-229	LCP81-010	6.48	63	HOC94-867	L99-226	4.36	6				
L93-399	L99-226	6.46	61	HOC98-743	L98-209	3.52	5				
HOC92-648	HOC97-609	6.31	60	L98-197	HOC96-522	2.91	3				
L94-428	L99-226	6.26	59	HOC98-743	US96-001	2.74	2				
HOC97-645	L98-197	6.26	57	HOC98-743	L99-226	2.67	1				
US96-002	L99-226	6.25	56								
HOC92-624	L99-229	6.19	55								
L99-245	HOC85-845	6.18	53								
HOC92-624	L99-226	6.18	52								
CP79-318	L99-233	6.13	51								
L99-224	L99-226	6.12	50								
L99-226	LCP85-384	6.10	48								
HOC96-561	L99-233	6.07	47								
HOC98-741	HOC85-845	6.07	46								
L93-399	L99-233	6.04	44								
HOC97-606	L89-113	6.00	43								

2002 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM
NURSERY AND INFIELD VARIETY TRIALS

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

One objective of the nursery and infield stages is to identify and select varieties that will perform well across the range of environments a commercial variety will encounter in Louisiana. Nursery tests are initially planted at three on-station locations (USDA-ARS - Ardoyne Farm, Iberia Research Station, and St. Gabriel Research Station) during the year of assignment, and four to five additional and different off-station locations are planted the year after assignment. In 2002, only one on-station (and corresponding seed increase) was planted at the St. Gabriel Research Station because of the extended rainy period experienced in the fall of 2002. The three off-station nurseries -- Blake Newton Farm, Danny Stoute, and Westfield (Joel Landry Farms) -- along with the two infield trial locations of Blackberry and Sugarland farms were planted with both the LSU and USDA varieties. 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 5-foot alleys. The infield tests were planted in two-row, 25-foot plots with 5-foot alleys. The experimental design for both nursery and infield tests was a randomized complete block with two replications per location. Three commercial check varieties, LCP 85-384, HOCP91-555, and, HOCP 85-845 were planted in tests for comparison.

A combine harvester/weigh wagon system was used to cut and weigh plots for the infield tests. This system worked extremely well, with the immediate benefit of the amount of labor required for the collection of the data being reduced. The accuracy of data collection was improved because of the absence of internal sugarcane jams in the combine harvester (soldier harvesters frequently jam), the absence of errors in topper height adjustment between plots, and the minimization of errors in terms of sugarcane missed and not weighed. In contrast for 2002, the prolonged wet soil conditions reduced accuracy because of the accumulation of mud in the plot weights from the combine-harvested tests. The infield variety trials are also important for screening experimental varieties for suitability to mechanical combine harvesting.

Millable stalk counts for both nursery and infield tests were made in late July and August. During the harvest season, 10-stalk samples were harvested by hand and stripped of leaves for the nursery tests. A 15-stalk sample was taken for the infield tests and sent to the USDA Ardoyne Farm and analyzed using the pre-breaker press. Samples from the nursery tests were weighed and milled at the sucrose laboratory in St. Gabriel to obtain a juice sample for analysis. Brix and pol readings were used to estimate theoretical recoverable sugar per ton as estimated by the Winter-Carp formula as reported by Gravois and Milligan (1992). 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 reduce 14 percent to account for extraneous trash. Sugar per acre was calculated as the product of sugar per ton and cane yield.

The 2002 sugarcane crop experienced extreme conditions throughout the growing season. Spring and early summer were rather dry. The fall brought Tropical Storm Isidore and Hurricane Lili, which dropped over 7 inches of rain accompanied by winds in excess of 50 mph over eight days in late September and early October. This resulted in extremely lodged cane and muddy conditions for the remainder of the growing season. All locations were harvested before the first freeze, which occurred in mid-January. Recommended cultural practices were followed at all test locations.

LCP85-384 has been the leading variety in Louisiana since 1998. Approximately, 80% of Louisiana's harvested sugarcane acreage was in LCP85-384 for 2002. For comparison, LC85-384 is highlighted in the tables. To adjust for missing data, the statistical analysis calculated least square means (SAS 8.01 Proc Mixed). Mean separation used least square means probability differences where $P=0.05$. Varieties that are significantly higher or lower than LCP85-384 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. 2002 Location, soil texture, and planting and harvest dates for the nursery and infield tests.

Series	Location†	Stage	Soil Texture‡	Planting Date	Harvest Dates			Varieties	
					2000	2001	2002	No. Planted	No. Harvested
1998	Ardoyne*	Nursery	Csl	10/15/98	11/01	10/18	10/23	53	1
1998	Iberia**	Nursery	Bsc	10/14/98	11/01	10/18	10/25	53	1
1998	Blackberry	Infield	Csl	08/24/99	11/30	12/04	11/15	65	5
1998	Gonsoulin	Nursery	Psl	08/13/99	11/30	11/07	10/02	44	2
1998	Stoute	Nursery	Bsc	08/20/99	11/15	10/06	10/02	13	1
1998	Westfield	Nursery	Csl	08/17/99	12/16	11/13	10/23	44	2
1999	Ardoyne	Nursery	Csl	10/20/99	11/20	11/19	10/23	34	2
1999	Iberia	Nursery	Bsc	10/19/99	11/30	10/25	10/25	34	2
1999	St. Gabriel	Nursery	Sc	10/18/99	11/15	10/18	10/08	34	2
1999	Blackberry	Infield	Csl	08/17/00		12/04	11/15	39	4
1999	Newton	Nursery	Mosl	08/24/00		11/12	11/14	39	4
1999	Stoute	Nursery	Bsc	08/18/00		11/15	10/25	16	2
1999	Sugarland	Infield	Cosl	08/23/00		12/06	12/11	39	4
1999	Westfield	Nursery	Csl	08/21/00		10/18	11/07	39	4
2000	Ardoyne	Nursery	Csl	10/12/00		11/19	12/06	33	2
2000	Iberia	Nursery	Bsc	10/13/00		11/19	12/02	33	2
2000	St. Gabriel	Nursery	Sc	10/12/00		12/09	11/21	33	2
2000	Blackberry	Infield	Csl	08/21/01			11/15	48	13
2000	Newton	Nursery	Mosl	08/24/01			11/14	48	13
2000	Sugarland	Infield	Cosl	08/22/01			12/11	47	13
2000	Westfield	Nursery	Csl	09/18/01			11/07	48	13
2001	Ardoyne	Nursery	Csl	10/18/01			12/06	37	11
2001	Iberia	Nursery	Bsc	10/22/01			12/12	37	9
2001	St. Gabriel	Nursery	Sc	10/09/01			11/21	37	11
2001	Blackberry	Infield	Csl	08/27/02				38	
2001	Newton	Nursery	Mosl	08/21/02				38	
2001	Stoute	Nursery	Bsc	08/22/02				12	
2001	Sugarland	Infield	Cosl	08/09/02				38	
2001	Westfield	Nursery	Csl	08/29/02				38	
2002	St. Gabriel	Nursery	Sc	11/01/02				38	

* Harvest date in 1999 was 12/07.

** Harvest date in 1999 was 12/06.

† Ardoyne-U.S.D.A. Ardoyne Farm (Terrebonne), Blackberry Farm (Vacherie), Gonsoulin-R. Gonsoulin Farm (Iberia), Iberia-Iberia Research Station (Iberia), Newton-Blake Newton Farm (Avoyelles), St. Gabriel-Saint Gabriel Research Station (Iberville), Stoute-D. Stoute Farm (St. Martin), Sugarland Farm (Youngsville), Westfield-Westfield Plantation (Assumption).

‡ Bsc-Baldwin silty clay, Csl-Commerce silt loam, Cosl-Coteau silt loam, Sc-Sharkey clay, Mosl-Moreland silt loam, Psl-Patou silt loam.

Table 2. 2002 Nursery third-stubble means of the 1998 “L” assignment series in light soil at Ardoyne Farm, Chacahoula, LA.

Variety	Sugar per Acre		Cane Yield		Sugar Per Ton	Stalk Weight		Stalk Number
	(lbs/A)		(tons/A)		(lbs/ton)	(lbs)		(stalks/A)
CP70-321	5721	-	28.1	-	204	1.80		31309 -
LCP85-384	12224		53.8		227	1.40		77138
HoCP85-845	7925	-	32.8	-	241	1.54		42653 -
L98-209	10486		44.8		235	1.73		51954 -

Table 3. 2002 Nursery third-stubble means of the 1998 “L” assignment series in heavy soil at Iberia Research Station, Jeanerette, LA.

Variety	Sugar per Acre		Cane Yield		Sugar Per Ton	Stalk Weight		Stalk Number
	(lbs/A)		(tons/A)		(lbs/ton)	(lbs)		(stalks/A)
CP70-321	7801	-	43.2	-	181	2.31	+	37434 -
LCP85-384	12372		60.5		205	1.69		71466
HoCP85-845	10755		49.7		216	1.99		49913 -
L98-209	11643		53.6		217	1.82		58988 -

Table 4. 2002 Infield second-stubble means of the 1998 “HOCP” and “L” assignment series in light soil at Blackberry Farm, Vacherie, LA†.

Variety	Sugar per Acre		Cane Yield		Sugar Per Ton	Stalk Weight		Stalk Number
	(lbs/A)		(tons/A)		(lbs/ton)	(lbs)		(stalks/A)
CP70-321	8134	-	29.5	-	262	2.17		26239 -
TucCP77-042	11169		46.7		239	2.87	+	32741 -
LCP85-384	13095		53.7		248	1.85		58042
HoCP85-845	13048		49.5		264	2.36		42643
HoCP96-540	10172	-	43.5	-	234	2.04		43112
L97-128	13804	+	53.0		262	2.44	+	43913
L98-207	10380	-	42.6	-	246	1.54		56958
L98-209	8378	-	32.5	-	259	1.96		32770 -

† Harvested with combine harvester.

Table 5. 2002 Nursery second-stubble means of the 1998 “L” assignment series in light soil at Gonsoulin Farm, New Iberia, LA.

Variety	Sugar per Acre		Cane Yield		Sugar Per Ton	Stalk Weight		Stalk Number
	(lbs/A)		(tons/A)		(lbs/ton)	(lbs)		(stalks/A)
CP70-321	10556		59.3		177	2.78	+	42653 -
TucCP77-042	8575		46.8		184	2.61	+	35937 -
LCP85-384	8458		51.4		165	1.79		57354
HoCP85-845	7497		38.8		193	2.04		37752 -
L98-209	10687		54.0		198	2.19	+	49731

Table 6. 2002 Nursery second-stubble means of the 1998 “L” assignment series in heavy soil at Danny Stoute’s Farm, Cecilia, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	8026	-	30.1	-	266	-	1.44		41927	-
LCP85-384	11389		39.3		290		1.38		57173	
HoCP85-845	7149	-	28.3	-	252	-	1.59		35937	-
L98-209	9049		35.6		254	-	1.34		52998	-

Table 7. 2002 Nursery second-stubble means of the 1998 “L” assignment series in heavy soil at Westfield, Paincourtville, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	11040		47.8		230		2.08		45920	-
TucCP77-042	16011		80.2		199		2.63		61166	
LCP85-384	14673		64.4		228		1.87		68970	
HoCP85-845	11689		51.4		228		2.04		51002	-
L98-209	12719		60.1		213		1.87		64070	

Table 8. 2002 Nursery second-stubble means of the 1999 “L” assignment series in light soil at Ardoyne Farm, Chacahoula, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	9122		41.6		219		2.25	+	36981	-
LCP85-384	9955		42.4		235		1.37		62391	
HoCP85-845	9074		36.0		252		1.65		43787	-
L99-226	15871	+	68.0	+	234		2.63	+	51728	
L99-233	11266		50.3	+	225		1.81	+	55811	

Table 9. 2002 Nursery second-stubble means of the 1999 “L” assignment series in heavy soil at Iberia Research Station, Jeanerette, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	9314		47.7		196		2.35	+	40611	-
LCP85-384	9248		45.8		202		1.50		61937	
HoCP85-845	9067		41.3		220		2.13	+	38796	-
L99-226	14930	+	66.6	+	224		2.66	+	50139	
L99-233	10678		54.1	+	199		1.83	+	58988	

Table 10. 2002 Nursery second-stubble means of the 1999 “L” assignment series in heavy soil at Sugar Research Station, St. Gabriel, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	
CP70-321	4230	24.1	174	1.68	28359	-
LCP85-384	5246	33.1	160	1.32	49913	
HoCP85-845	3564	20.4	173	1.61	25410	-
L99-226	6615	35.4	189	1.81	39023	
L99-233	5168	30.2	171	1.40	42879	

Table 11. 2002 Infield first-stubble means of the 1999 “HOCP” and “L” assignment series in light soil at Blackberry Farm, Vacherie, LA†.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	9174	-	37.7		243		1.98		38282	-
LCP85-384	12085		48.9		256		1.91		56396	
HoCP85-845	10255		37.7		272		1.99		38023	-
L99-226	12792		43.2		296	+	2.99	+	29032	-
L99-233	11754		44.4		267		1.66		53735	
HoCP99-825	8640	-	31.7	-	272		2.17		29458	-
HoCP99-866	12142		45.5		261		2.58	+	37304	-

† Harvested with combine harvester.

Table 12. 2002 Nursery first-stubble means of the 1999 “HOCP” and “L” assignment series in light soil at Newton Farm, Bunkie, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	10096		47.0		215		2.66		35393	-
LCP85-384	14767		67.6		218		2.36		56628	
HoCP85-845	8811	-	40.2	-	219		2.28		35574	-
L99-226	15787		62.4		253	+	2.93		42653	-
L99-233	13691		58.3		235		1.94		60258	
HoCP99-825	12020		51.0		235		2.70		37752	-
HoCP99-866	11929		55.1		216		3.17	+	34848	-

Table 13. 2002 Nursery first-stubble means of the 1999 “L” assignment series in heavy soil at Danny Stoute’s Farm, Cecilia, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
CP70-321	10058		46.0		220		2.76	+	33396	
LCP85-384	9302		41.5		221		1.94		42752	
HoCP85-845	6914		30.9		224		2.01		30674	
L99-226	16963	+	77.1	+	219		3.16	+	48824	
L99-233	15388	+	69.2	+	223		2.27		60803	+

Table 14. 2002 Infield first-stubble means of the 1999 “HOCP” and “L” assignment series in light soil at Sugarland Farm, Youngsville, LA†.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	10889	41.5	266	2.69 +	30277
LCP85-384	10324	39.5	261	1.79	44059
HoCP85-845	12151	47.6	256	2.14 +	44324
L99-226	11521	39.2	292 +	2.71 +	29529
L99-233	7803	29.3	271	1.89	31223
HoCP99-825	9918	37.5	264	2.78 +	26996 -
HoCP99-866	11221	41.3	272	2.63 +	31520

† Harvested with combine harvester.

Table 15. 2002 Nursery first-stubble means of the 1999 “HOCP” and “L” assignment series in heavy soil at Westfield, Paincourtville, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	11049	44.1	250	2.17 +	40656
LCP85-384	10506	43.7	240	1.75	50094
HoCP85-845	11363	44.5	255	2.10	42471
L99-226	15551	57.2	271 +	2.65 +	43016
L99-233	14109	55.6	255	1.68	66248 +
HoCP99-825	12088	48.6	249	2.29 +	42471
HoCP99-866	13502	61.4	221	2.71 +	45012

Table 16. 2002 Nursery first-stubble means of the 2000 “L” assignment series in light soil at Ardoyne Farm, Chacahoula, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	11188 -	43.7 -	256	2.25	39023 -
LCP85-384	18809	70.5	267	2.25	62844
HoCP85-845	12779 -	47.3 -	270	2.39	39476 -
L00-247	8814 -	40.6 -	218 -	1.63 -	51501
L00-266	14260 -	53.2 -	268	2.36	45148

Table 17. 2002 Nursery first-stubble means of the 2000 “L” assignment series in heavy soil at Iberia Research Station, Jeanerette, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	9136	37.9	242	2.07	36754 -
LCP85-384	15290	69.7	222	2.23	62391
HoCP85-845	14462	58.4	247	2.96	39023 -
L00-247	12957	56.5	228	1.83	61483
L00-266	13707	55.2	249	2.07	53316

Table 18. 2002 Nursery first-stubble means of the 2000 “L” assignment series in heavy soil at Sugar Research Station, St.Gabriel, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	10831	42.6	254	2.09	41064 -
LCP85-384	13856	58.7	236	2.04	57626
HoCP85-845	12316	47.1	262	2.12	44694 -
L00-247	8141	45.4	179	1.54	58988
L00-266	16444	62.9	263	2.01	62391

Table 19. 2002 Infield plant cane means of the 2000 “HOCP” and “L” assignment series in light soil at Blackberry Farm, Vacherie, LA†.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	9202	39.6	233	2.44	32579
HoCP85-845	8594	37.3	230	2.43	30778
HoCP91-555	10173	41.1	248	2.44	33652
L00-247	11896 +	55.9 +	213	1.81 -	63327 +
L00-266	9168	41.0	223	2.23	36914
HoCP00-905	9512	37.9	250	2.15	35690
HoCP00-927	8076	35.0	231	2.40	29258
HoCP00-930	9915	41.5	238	2.33	35559
HoCP00-933	11582	50.5	229	2.48	40930
HoCP00-934	9260	41.2	224	2.62	31602
HoCP00-939	10495	46.6	226	2.47	38110
HoCP00-942	11775 +	48.2	245	2.41	39974
HoCP00-945	9850	43.3	229	2.26	38558
HoCP00-950	13287 +	50.2	265 +	2.59	38798
HoCP00-951	9623	42.7	225	2.11	40585
Ho00-960	9206	47.1	195 -	3.11 +	30302

† Harvested with combine harvester.

Table 20. 2002 Nursery plant cane means of the 2000 “HOCP” and “L” assignment series in light soil at Newton Farm, Bunkie, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	
LCP85-384	10878	46.6	233	2.17	42834	
HoCP85-845	9640	40.3	239	2.42	33215	-
HoCP91-555	9324	40.7	229	2.00	40656	
L00-247	9470	39.9	238	1.85	42471	
L00-266	10777	51.3	211	2.10	48642	+
HoCP00-905	11387	50.3	225	2.29	44105	
HoCP00-927	9952	44.9	221	2.19	40838	
HoCP00-930	10790	45.6	236	2.45	37208	-
HoCP00-933	10547	53.7	196	2.24	48098	+
HoCP00-934	12123	55.7	218	2.91	38297	
HoCP00-939	10728	47.5	226	2.54	37571	-
HoCP00-942	10959	44.3	248	2.46	36300	-
HoCP00-945	7525	36.3	208	2.30	31581	-
HoCP00-950	14095	55.1	255	2.45	44831	
HoCP00-951	9073	43.8	207	2.12	41382	
Ho00-960	11056	60.5	181	2.72	44467	

Table 21. 2002 Infield plant cane means of the 2000 “HOCP” and “L” assignment series in light soil at Sugarland Farm, Youngsville, LA†.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	
LCP85-384	9040	35.7	252	2.43	29634	
HoCP85-845	7866	32.7	239	2.38	27516	
HoCP91-555	7915	32.7	237	2.24	29080	
L00-247	7785	37.3	209	1.68	44315	+
L00-266	10479	42.0	249	2.37	35410	
HoCP00-905	9543	41.1	232	2.62	31959	
HoCP00-927	11093	44.2	251	2.47	35811	
HoCP00-930	9737	36.9	263	2.52	29539	
HoCP00-933	7937	33.4	237	2.42	27822	
HoCP00-934	8115	33.3	244	2.47	27221	
HoCP00-939	11852	49.9	238	2.17	46404	+
HoCP00-942	11854	45.5	260	2.65	34459	
HoCP00-945	8467	31.8	266	2.22	28607	
HoCP00-950	9724	33.9	286	2.24	30108	
HoCP00-951	7316	27.7	264	1.90	30674	
Ho00-960	7063	35.9	197	2.14	33709	

† Harvested with combine harvester.

Table 22. 2002 Nursery plant cane means of the 2000 “HOCP” and “L” assignment series in heavy soil at Westfield, Paincourtville, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
LCP85-384	9518		48.4		199		1.63		59351	
HoCP85-845	7589		34.7	-	220		2.24	+	31218	-
HoCP91-555	14177	+	60.7		232	+	2.23	+	54087	
L00-247	10538		50.4		209		1.75		58806	
L00-266	10960		48.4		226		1.91		50639	
HoCP00-905	11527		49.6		232	+	1.98		50276	
HoCP00-927	12462		55.3		225		2.27	+	48824	
HoCP00-930	14290	+	58.4		245	+	2.54	+	46101	-
HoCP00-933	9956		49.1		202		2.31	+	42471	-
HoCP00-934	10429		48.2		217		2.75	+	35030	-
HoCP00-939	12298		51.9		237	+	2.31	+	45012	-
HoCP00-942	9893		40.6		244	+	2.28	+	35574	-
HoCP00-945	10158		44.9		226		2.28	+	39386	-
HoCP00-950	15482	+	63.2	+	244	+	2.42	+	52091	
HoCP00-951	10198		49.5		206		1.86		53361	
Ho00-960	9325		48.8		190		2.31	+	42108	-

Table 23. 2002 Nursery plant cane means of the 2001 “L” assignment series in light soil at Ardoyne Farm, Chacahoula, LA.

Variety	Sugar per Acre (lbs/A)		Cane Yield (tons/A)		Sugar Per Ton (lbs/ton)		Stalk Weight (lbs)		Stalk Number (stalks/A)	
LCP85-384	14099		56.2		250		2.30		49005	
HOCP85-845	15408		63.2		244		3.05	+	41745	
HOCP91-555	13006		50.1		259		2.13		47190	
L01-280	12824		50.0		255		2.30		43787	
L01-281	15246		58.9		257		2.96	+	40611	
L01-283	15255		58.1		263		2.47		47190	
L01-290	9688		42.8		226	-	2.17		39703	
L01-292	16085		61.8		260		3.08	+	40157	
L01-296	13600		47.3		287	+	2.83		34031	
L01-299	11601		43.3		268	+	2.49		35393	
L01-300	13379		56.7		235		2.82		40157	
L01-306	10237		45.2		226	-	2.31		39476	
L01-312	11991		52.8		227	-	1.73		61256	
L01-315	11638		48.6		240		2.11		46282	

Table 24. 2002 Nursery plant cane means of the 2001 “L” assignment series in heavy soil at Iberia Research Station, Jeanerette, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	8536	34.2	250	2.18	31309
HOCP85-845	8205	35.6	231	2.69	26318
HOCP91-555	10637	42.0	253	2.34	36073
L01-280	7664	33.5	229	2.06	32443
L01-281	9580	42.5	225	2.47	34712
L01-283	7248	30.8	233	2.51	24503
L01-290	5061	23.7	210	2.09	22688
L01-292	8125	33.7	241	2.66	25410
L01-299	6311	25.0	253	2.17	22914
L01-300	8063	38.3	210	2.89	26544
L01-306	7353	33.4	220	2.53	26771
L01-312	7228	32.7	222	1.80	36073
L01-315	7891	39.2	201	2.23	35619

† L01-296 was not harvested because of excessive broken stalks.

Table 25. 2002 Nursery plant cane means of the 2001 “L” assignment series in heavy soil at Sugar Research Station, St. Gabriel, LA.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	13062	57.2	228	2.13	53543
HOCP85-845	11317	54.0	210	2.67	40611
HOCP91-555	15042	60.4	249	2.46	49005
L01-280	12078	50.9	237	2.30	44468
L01-281	13863	62.0	223	2.88	43106
L01-283	9868	46.3	201	2.31	39249
L01-290	11914	61.1	196	2.33	52408
L01-292	13639	57.6	237	2.90	39930
L01-296	10936	41.9	261	2.53	32897
L01-299	11386	49.2	232	2.78	35393
L01-300	12640	60.1	210	3.07	39249
L01-306	9041	39.5	230	2.43	32670
L01-312	11075	49.1	226	2.41	40838
L01-315	8793	43.7	201	1.76	49912

Table 26. 2002 Nursery third-stubble means of the 1998 “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	6761	35.7	193	2.05	34372
LCP85-384	12298	57.2	216	1.55	74302
HOCP85-845	9340	41.3	229	1.76	46282
L98-209	11065	49.2	226	1.77	55471

Table 27. 2002 Infield and Nursery second-stubble means of the 1998 “HOCP” and “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	9504	42.2	234	2.12 +	39730 -
TucCP77-042	11548	54.6	218	2.55 +	43008 -
LCP85-384	11904	52.2	233	1.72	60385
HOCP85-845	9846	42.0	234	2.01	41833 -
HOCP96-540	10000	47.3	211	1.86	50229
L97-128	13633	56.8	238	2.26 +	51029
L98-207	10208	46.5	222	1.36	64074
L98-209	10208	45.6	231	1.84	49892 -

Table 28. 2002 Nursery second-stubble means of the 1999 “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	7556	37.8	196	2.09 +	35317 -
LCP85-384	8149	40.4	199	1.40	58080
HOCP85-845	7235	32.6	215	1.80 +	35998 -
L99-226	12472 +	56.7 +	216	2.37 +	46963 -
L99-233	9037	44.8	198	1.68	52559

Table 29. 2002 Infield and Nursery first-stubble means of the 1999 “HOCP” and “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	10238	43.1	238	2.43 +	35780 -
LCP85-384	11313	48.0	239	1.95	49549
HOCP85-845	9899	40.2	245	2.10	38213 -
L99-226	14691 +	56.4 +	266 +	2.90 +	38632 -
L99-233	12984	52.4	250	1.88	55346
HOCP99-825	10659	43.0	249	2.52 +	34134 -
HOCP99-866	12163	51.9	236	2.80 +	36899 -

Table 30. 2002 Nursery first-stubble means of the 2000 “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	10385 -	41.4 -	250	2.14	38947 -
LCP85-384	15985	66.3	241	2.17	60954
HOCP85-845	13186	50.9 -	259	2.49	41064 -
L00-247	9971 -	47.5 -	209 -	1.66 -	57324
L00-266	14804	57.1	260	2.15	53618

Table 31. 2002 Infield and Nursery plant cane means of the 2000 “HOCP” and “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	
LCP85-384	9660	42.6	229	2.17	41099	
HoCP85-845	8422	36.3	232	2.37	30682	-
HoCP91-555	10397	43.8	236	2.23	39369	
L00-247	9922	45.9	217	1.77	52230	+
L00-266	10346	45.7	227	2.15	42901	
HoCP00-905	10492	44.7	235	2.26	40507	
HoCP00-927	10396	44.9	232	2.33	38683	
HoCP00-930	11183	45.6	246	2.46	37102	+
HoCP00-933	10006	46.7	216	2.36	39830	
HoCP00-934	9982	44.6	226	2.68	33037	-
HoCP00-939	11146	48.1	232	2.37	40819	
HoCP00-942	11120	44.6	249	2.45	36577	+
HoCP00-945	9000	39.1	232	2.26	34533	
HoCP00-950	13147	50.6	262	2.42	41457	+
HoCP00-951	9052	40.9	226	2.00	41500	
Ho00-960	9162	48.1	191	2.57	37647	+

Table 32. 2002 Nursery plant cane means of the 2001 “L” assignment series across locations.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar Per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)	
LCP85-384	11899	49.2	243	2.20	44619	
HoCP85-845	11643	50.9	228	2.80	36224	-
HoCP91-555	12895	50.8	254	2.31	44089	
L01-280	10856	44.8	240	2.22	40233	
L01-281	12897	54.5	235	2.77	39476	+
L01-283	10911	45.6	232	2.40	37585	
L01-290	9065	43.9	211	2.21	39408	-
L01-292	12616	51.0	246	2.88	35166	-
L01-296	10778	38.6	272	2.66	28968	-
L01-299	9766	39.1	251	2.48	31233	-
L01-300	11360	51.7	219	2.93	35317	-
L01-306	8877	39.4	225	2.42	32973	-
L01-312	10098	44.9	225	1.98	46056	
L01-315	9441	43.9	214	2.03	43938	

2002 LOUISIANA "HoCP" NURSERY VARIETY TRIALS ^{1/}

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The USDA sugarcane breeding program nursery testing stage begins in the fifth year after crossing. It is at this time that superior varieties in the first stubble of second-line trials are assigned permanent "HoCP" or "Ho" numbers. Because a major objective of the sugarcane breeding program is to select varieties that give consistent yields across a range of environmental conditions, nursery yield trials are normally planted in three different regions of the Louisiana sugarcane industry.

USDA nursery tests are customarily planted the year of assignment at Ardoyne Farm near Chacahoula, Iberia Research Station in Jeanerette, and St. Gabriel Research Station in St. Gabriel. Plots in these two-replication tests are one row wide (6 feet) and 16 feet long with a 4-foot alley between plots. At least three commercial varieties (including CP 70-321, HoCP 85-845, LCP 85-384, and/or HoCP 91-555) are included in each replication as controls. Varieties from the USDA program advanced for further testing in the year following assignment are combined with varieties from the LSU program and replanted in two nurseries and two infield tests on commercial farms. Plot length in these two-replication nursery tests have been increased to 20 feet, with a 4-foot alley between plots.

Nursery plots are rated for stand (population) and vigor in both the spring (May) and summer (August). Stalk counts representing mature millable stalks are made in July or August. A 10-stalk sample is hand-cut from each plot during the harvest season. Samples from USDA nurseries are taken to the Juice and Milling Quality Laboratory at Ardoyne Farm, where they are weighed and processed for sucrose analysis. Combined nurseries are taken to the Juice Laboratory at either Ardoyne Farm or St. Gabriel. Brix, pol, and fiber content are then used to estimate the yield of theoretical recoverable sugar (TRS) per ton of cane. Results from these analyses, along with mature millable stalk counts, are used to calculate yield of sugar per acre, yield of cane per acre, mean stalk weight, and number of stalks per acre. Varieties with adequate yields (both tonnage and sugar per ton) and disease and insect resistance are advanced for further testing.

Varieties from the 1999 through the 2001 HoCP and Ho series were harvested from nursery trials in 2002. Because of excessive rainfall and poor field conditions, the 2002 HoCP and Ho assignment series were planted only at one location in 2002. Varieties from the 2001 HoCP and Ho series were combined with varieties from the 2001 LSU series and replanted on four commercial farms (two nursery trials and two infield trials). Test locations, planting dates, and harvest dates of HoCP and Ho series nursery tests can be found in Table 1.

^{1/} HoCP Varieties selected at Houma (Ho), LA, from seed produced at Canal Point (CP), FL, from Louisiana parents.

Statistical analysis were conducted for each test and for each series using PROC MIXED procedures in SAS (version 8.02). For purposes of comparison, LCP 85-384 is highlighted in each table. Yield estimates which are significantly higher or lower (P=0.05) than estimates for LCP 85-384 are noted with a "+" or "-", respectively. Results from trials harvested in 2002, along with combined analyses where applicable, can be found in Tables 2 to 13.

Table 1. 2002 Planting and harvest dates of "HoCP" nursery tests.

Series	Location ^{2/}	Soil Texture ^{3/}	Planting Date	Harvest Dates		
				2000	2001	2002
1999	AFL	Csl	10/20/99	11/27	10/31	10/11
1999	IRS	Bsc	10/19/99	11/29	10/23	11/01
1999	STG	Csl	10/21/99	11/28	11/08	12/13
2000	AFL	Csl	10/27/00		11/21	10/31
2000	IRS	Bsc	10/31/00		11/26	11/01
2000	STG	Csl	10/30/00		12/07	12/13
2001	AFL	Csl	10/18/01			12/06
2001	IRS	Bsc	10/23/01			12/11
2001	STG	Csl	10/19/01			12/13
2002	AFL	Csl	11/8/02			

^{2/} AFL = Ardoyne Farm Light soil in Chacahoula, IRS = Iberia Research Station in Jeanerette, STG = St. Gabriel Research Station in St. Gabriel.

^{3/} Bsc = Baldwin silty clay, Csl = Commerce silt loam

Table 2. Means of the 1999 HoCP series second-stubble nursery variety trial on a Commerce silt loam soil at Ardoyne Farm in Chacahoula, LA in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	8475	42.3	199	2.34 +	36300
LCP 85-384	10631	53.1	200	1.62	65794
HoCP 85-845	10920	47.2	231 +	1.76	53769
HoCP 99-825	12494	54.9	227 +	2.33 +	47190
HoCP 99-866	8889	48.2	184	1.84	52181

Table 3. Means of the 1999 HoCP series second-stubble nursery variety trial on a Baldwin silty clay soil at Iberia Research Station in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	11779	53.4	221	2.39+	44694
LCP 85-384	15361	64.6	238	1.86	69651
HoCP 85-845	9930	42.0 -	236	1.98	42653
HoCP 99-825	12548	53.3	236	2.34+	45602
HoCP 99-866	11763	53.7	220	2.51+	43106

Table 4. Means of the 1999 HoCP series second-stubble nursery variety trial on a Sharkey clay soil at St. Gabriel Research Station in St. Gabriel, LA, in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	13327	46.8	285	2.54	36981
LCP 85-384	16025	53.7	298	1.67	64206
HoCP 85-845	10832	35.7	303	1.86	38342
HoCP 99-825	15464	49.7	312	2.06	48778
HoCP 99-866	13839	45.7	304	2.65	34485

Table 5. Combined means of the 1999 HoCP series second-stubble nursery variety trials in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	11194 -	47.5 -	235	2.42	39325 -
LCP 85-384	14005	57.1	245	1.71	66550
HoCP 85-845	10561 -	41.7 -	257	1.86	44921 -
HoCP 99-825	13502	52.6	259	2.24	47190 -
HoCP 99-866	11497	49.2-	236	2.33	43258 -

Table 6. Means of the 2000 HoCP and Ho series first-stubble nursery variety trial on a Commerce silt loam soil at Ardoyne Farm in Chacahoula, LA, in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	12100	53.2	226	2.72 +	39023
LCP 85-384	14643	62.8	233	1.94	64886
HoCP 85-845	12127	48.6	250	2.32	41745
HoCP 00-905	13943	59.8	233	2.05	58307
HoCP 00-927	11830	49.1	241	1.85	53316
HoCP 00-930	11266	46.7 -	241	2.01	46283
HoCP 00-933	12658	58.7	215	2.12	55358
HoCP 00-934	12175	56.3	216	2.38 +	47417
HoCP 00-939	13725	60.7	227	2.28	53316
HoCP 00-942	9614	40.8 -	235	1.73	47190
HoCP 00-945	10824	45.5 -	238	1.78	50820
HoCP 00-950	12769	46.9 -	271 +	1.83	51274
HoCP 00-951	11228	46.8 -	238	1.57	59441
Ho 00-960	12368	59.7	207 -	2.32	51954

Table 7. Means of the 2000 HoCP and Ho series first-stubble nursery variety trial on a Baldwin silty clay soil at Iberia Research Station in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	10654	57.8 +	183	2.62	44241
LCP 85-384	14258	73.9	191	2.20	67155
HoCP 85-845	10886	55.0 -	197	2.59	42426
HoCP 00-905	10337	52.6 -	197	2.03	51954
HoCP 00-927	15756	74.0	213	2.49	59441
HoCP 00-930	11511	58.2 -	198	2.18	53543
HoCP 00-933	11176	62.8	177	2.51	50139
HoCP 00-934	8999	54.4 -	165	2.24	49005
HoCP 00-939	11758	59.5	197	2.37	50366
HoCP 00-942	13829	61.8	224	2.26	54677
HoCP 00-945	9974	55.7 -	178	2.57	43106
HoCP 00-950	10395	51.4 -	202	1.87	55131
HoCP 00-951	8959	51.3 -	175	1.69 -	61029
Ho 00-960	9741	62.9	155	2.62	48098

Table 8. Means of the 2000 HoCP and Ho series first-stubble nursery variety trial on a Commerce silt loam soil at St. Gabriel Research Station in St. Gabriel, LA, in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	10248	39.1 -	263	2.26	34939
LCP 85-384	16593	61.5	270	1.98	62391
HoCP 85-845	10780	39.9 -	271	2.06	39023
HoCP 00-905	11744	43.5 -	270	1.76	49686
HoCP 00-927	12393	47.6	259	1.80	52862
HoCP 00-930	14025	49.2	285	2.14	46056
HoCP 00-933	16459	65.0	255	2.25	58080
HoCP 00-934	12399	46.8	267	2.18	42879
HoCP 00-939	11493	44.7 -	258	1.96	45375
HoCP 00-942	13781	45.8	300	1.83	49686
HoCP 00-945	11487	41.5 -	277	1.80	46056
HoCP 00-950	16980	56.4	302	2.30	49232
HoCP 00-951	10868	43.7 -	249	1.43 -	61483
Ho 00-960	9122	41.7 -	217 -	2.11	39476

Table 9. Combined means of the 2000 HoCP and Ho series first-stubble nursery variety trials in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
CP 70-321	11001 -	50.0 -	224	2.53	39401 -
LCP 85-384	15164	66.1	231	2.04	64811
HoCP 85-845	11264 -	47.8 -	239	2.32	41064 -
HoCP 00-905	12008 -	52.0 -	233	1.94	53316 -
HoCP 00-927	13326	56.9	238	2.04	55206 -
HoCP 00-930	12267	51.4 -	241	2.11	48627 -
HoCP 00-933	13431	62.2	216	2.29	54526 -
HoCP 00-934	11191 -	52.5 -	216	2.26	46434 -
HoCP 00-939	12325	54.9 -	227	2.20	49686 -
HoCP 00-942	12408	49.5 -	253 +	1.94	50518 -
HoCP 00-945	10762 -	47.6 -	231	2.05	46661 -
HoCP 00-950	13381	51.6 -	258 +	2.00	51879 -
HoCP 00-951	10352 -	47.3 -	221	1.56	60651
Ho 00-960	10410 -	54.8 -	193 -	2.35	46509 -

Table 10. Means of the the 2001 HoCP and Ho series plant-cane nursery variety trial on a Commerce silt loam soil at Ardoyne Farm in Chacahoula, LA, in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
LCP 85-384	12857	49.2	261	2.33	42199
HoCP 85-845	11567	43.2	268	2.61	33124
HoCP 91-555	12358	49.1	252	2.27	43333
HoCP 01-500	11964	44.8	267	2.34	38342
HoCP 01-506	12070	54.1	224	2.27	47644
HoCP 01-507	8166	39.3	207 -	2.38	33124
HoCP 01-510	11549	49.1	232	2.09	46963
HoCP 01-517	13875	50.7	274	3.13 +	33124
HoCP 01-520	10319	43.8	235	2.02	43333
HoCP 01-523	12964	49.5	262	2.39	41518
HoCP 01-525	9983	40.7	237	2.09	39023
HoCP 01-526	10848	46.8	231	2.34	40157
HoCP 01-528	11863	48.4	245	3.06 +	31763
HoCP 01-529	14700	59.0	250	2.73	43106
HoCP 01-531	13045	46.9	278	2.24	41972
HoCP 01-532	12289	43.5	282	2.20	39476
HoCP 01-533	11023	42.6	257	2.11	40611
HoCP 01-534	13347	46.2	289	2.43	37661
HoCP 01-535	12373	44.8	275	2.62	34258
HoCP 01-541	12141	43.0	282	1.88	45829
HoCP 01-543	10944	41.6	262	1.88	44241
HoCP 01-544	11466	42.9	267	2.68	32216
HoCP 01-545	8460	35.7	238	2.03	35166
HoCP 01-551	13305	48.5	275	2.67	36300
HoCP 01-553	12695	51.1	248	2.72	37888
HoCP 01-558	13650	52.4	260	2.23	46509
HoCP 01-561	14609	54.0	270	3.07 +	35393
Ho 01-564	11327	44.4	255	2.46	36300

Table 11. Means of the 2001 HoCP and Ho series plant-cane nursery variety trial on a Baldwin silty clay soil at Iberia Research Station in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
LCP 85-384	10729	44.7	240	2.14	41745
HoCP 85-845	6998	29.1	241	2.26	25637 -
HoCP 91-555	11773	49.3	241	2.39	41064
HoCP 01-500	6457 -	27.5	235	2.38	23141 -
HoCP 01-506	6668	32.1	208	2.18	29267 -
HoCP 01-507	4895 -	28.0	174 -	2.45	22914 -
HoCP 01-510	6078 -	28.7	213	1.99	28813 -
HoCP 01-517	8800	34.4	256	2.92 +	23822 -
HoCP 01-520	6673	34.1	197 -	1.92	35619
HoCP 01-523	8847	36.3	240	2.33	30855 -
HoCP 01-525	8861	34.9	253	2.41	29040 -
HoCP 01-526	5163 -	22.6 -	229	2.04	22234 -
HoCP 01-527	4206 -	25.8 -	162 -	1.87	27679 -
HoCP 01-528	5464 -	26.9 -	202	2.59	20646 -
HoCP 01-529	6788	31.4	214	2.39	26318 -
HoCP 01-531	8899	33.4	267	2.35	28359 -
HoCP 01-532	8113	30.3	268	2.06	29494 -
HoCP 01-533	5112 -	30.5	158 -	2.21	26544 -
HoCP 01-534	8138	31.8	253	2.13	29040 -
HoCP 01-535	7995	33.5	240	2.16	31082 -
HoCP 01-541	9967	39.9	249	2.17	37208
HoCP 01-543	7905	37.5	216	1.95	38342
HoCP 01-544	7296	34.1	214	2.59	26318 -
HoCP 01-545	6211 -	26.6 -	234	1.84	29040 -
HoCP 01-551	7918	34.4	231	2.57	26771 -
HoCP 01-553	9375	43.1	217	3.18 +	27225 -
HoCP 01-558	6071 -	26.8 -	226	2.25	24049 -
HoCP 01-561	6944	30.0	232	2.30	26091 -
Ho 01-564	6924	28.5	243	2.14	26544 -

Table 12. Means of the 2001 HoCP and Ho series plant-cane nursery variety trial on a Commerce silt loam soil at St. Gabriel Research Station in St. Gabriel, LA, in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
LCP 85-384	10024	41.5	242	2.23	37434
HoCP 85-845	11908	44.6	267	2.49	36073
HoCP 91-555	13178	48.1	274 +	2.30	41972
HoCP 01-500	11805	44.1	268	2.17	40838
HoCP 01-506	11101	49.2	226	2.43	40611
HoCP 01-507	8890	40.7	219	2.49	32670
HoCP 01-510	7751	37.1	211 -	1.82	40838
HoCP 01-517	10200	36.1	283 +	2.90 +	24956
HoCP 01-520	12080	50.9	237	2.28	44694
HoCP 01-523	14199 +	55.8 +	255	2.75	40611
HoCP 01-525	11858	41.6	285 +	2.29	36300
HoCP 01-526	14881 +	58.4 +	255	2.63	44694
HoCP 01-527	8164	41.1	198 -	1.73	47417
HoCP 01-528	11037	45.3	244	2.87 +	31763
HoCP 01-529	12529	48.0	259	2.79	34258
HoCP 01-531	8431	30.8	272 +	2.05	29948
HoCP 01-532	9463	37.3	253	2.32	32216
HoCP 01-533	10463	40.4	258	2.43	33351
HoCP 01-534	11741	39.4	298 +	2.26	34939
HoCP 01-535	10142	39.7	255	2.74	29040
HoCP 01-541	12410	47.6	260	2.09	45602
HoCP 01-543	10217	36.3	280 +	1.99	36300
HoCP 01-544	11183	42.6	262	2.40	35846
HoCP 01-545	11094	42.3	261	2.28	37208
HoCP 01-551	13288	52.1	255	2.90 +	35846
HoCP 01-553	11948	47.3	252	3.01 +	31536
HoCP 01-558	13630	53.2	256	2.50	42653
HoCP 01-561	12167	45.0	272 +	2.64	33804
Ho 01-564	9316	33.9	274 +	2.07	32897

Table 13. Combined means of the 2001 HoCP and Ho series third-stubble nursery variety trials in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)
LCP 85-384	11298	45.2	249	2.25	40202
HoCP 85-845	10158	39.0	259	2.45	31611 -
HoCP 91-555	12436	48.8	256	2.32	42123
HoCP 01-500	10075	38.8	257	2.30	34107
HoCP 01-506	9946	45.1	219 -	2.29	39174
HoCP 01-507	7317 -	36.0	200 -	2.44	29569 -
HoCP 01-510	8459	38.3	218 -	1.97	38871
HoCP 01-517	10958	40.4	271 +	2.98	27301 -
HoCP 01-520	9691	43.0	223	2.07	41216
HoCP 01-523	12003	47.2	252	2.49	37661
HoCP 01-525	9909	38.6	253	2.25	34485
HoCP 01-526	10297	42.6	238	2.34	35695
HoCP 01-527	6185 -	33.5	180 -	1.80	37548
HoCP 01-528	9455	40.2	230	2.84	28057 -
HoCP 01-529	11339	46.2	241	2.64	34561
HoCP 01-531	10125	37.0	273 +	2.21	33426
HoCP 01-532	9955	37.0	268	2.19	33729
HoCP 01-533	8866	37.8	225	2.25	33502
HoCP 01-534	11075	39.1	280 +	2.27	33880
HoCP 01-535	10170	39.3	257	2.51	31460 -
HoCP 01-541	11506	43.5	264	2.04	42879
HoCP 01-543	9689	38.5	253	1.94	39628
HoCP 01-544	9981	39.9	248	2.55	31460 -
HoCP 01-545	8588	34.9	244	2.05	33804
HoCP 01-551	11504	45.0	253	2.71	32973 -
HoCP 01-553	11339	47.1	239	2.97	32216 -
HoCP 01-558	11117	44.2	247	2.33	37737
HoCP 01-561	11240	43.0	258	2.67	31763 -
Ho 01-564	9189	35.6	257	2.22	31914 -

2002 USDA INFIELD VARIETY TRIALS AT ARDOYNE FARM

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Infield variety tests are usually planted at Ardoyne Farm two years after assignment. Varieties in this test are introduced to outfield locations and primary stations this same year. Infield tests planted at Ardoyne Farm still use a traditional infield plot size of three rows wide by 16-feet long, compared to the two-row-wide by 24-feet long plots used in off-station infield tests. Although both plot sizes encompass the same area, the two-row plots are more efficient to harvest on commercial farms, where it is necessary to use a farmer's combine harvester and his operator to harvest tests. Because all infield tests are now harvested with a combine harvester, the two-row plot size may be used in future infield tests planted at Ardoyne Farm. Infield tests are planted in a randomized complete block design with two replications and include at least three commercial varieties (CP 70-321, HoCP 85-845, LCP 85-384, and/or HoCP 91-555) for use as checks.

Recommended culture practices were used at the USDA Ardoyne Farm in 2002. In mid-March, Karmex (2 lb/A), Prowl (3 qt/A), and Weedmaster (1 qt/A) were applied to all infield tests at Ardoyne Farm. Tests were fertilized at a rate of 100-30-60 lbs per acre on either April 22 or April 23. Prowl (3 qt/A) and 2, 4-D (1 qt/A) were broadcast at layby in mid-May. Fields were monitored for sugarcane borer infestations through the growing season. Confirm (6 oz/A) was applied by airplane on August 2 and September 9 in 2002.

In the tests at Ardoyne Farm, a 15-stalk sample was cut from each active plot just prior to harvest and sent to the juice analysis lab. Each bundle was weighed in the lab, and a five-stalk sub-sample was separated from each bundle and run through the pre-breaker at Ardoyne Farm for fiber analysis. The remaining 10 stalks were run through the roller-mill, and a juice sample was obtained and sent to the lab for analysis. Brix and pol were obtained and used to estimate sucrose, purity, and TRS for each sample.

Planting and harvest dates can be found in Table 1. Results from individual tests can be found in Tables 2 through 4. An analysis of variance was performed for each test, using the SAS (Release 8.02) PROC MIXED procedure. Varieties with a "+" or "-" are significantly higher or lower ($P=0.05$), respectively, than LCP 85-384.

Table 1. 2002 Planting and harvest dates of infield tests at Ardoyne Farm.

Series	Location†	Soil Texture‡	Planting Date	Harvest Dates			Varieties	
				2000	2001	2002	No. Planted	No. Harvested*
1997	AFL	Csl	8/20/99	11/22	11/02	10/11	12	1
1998	AFH	Sc	10/2/00		11/15	11/26	10	3
1999	AFH	Sc	9/27/01			11/26	10	4

† AFL-Ardoyne Farm light soil, AFH-Ardoyne Farm heavy soil.

‡ Csl-Commerce silt loam, Sc-Sharkey clay

* No. Harvested does not include varieties used for "check" plots.

Table 2. Means of the 1997 HoCP series second-stubble infield variety test on light soil at Ardoyne Farm in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
CP 70-321	4656	25.4	184 -	1.85	28123	11.3
LCP 85-384	4775	22.8	209	1.40	32649	11.3
HoCP 85-845	5784	26.2	220	1.73	30481	12.4
L 97-128	7115 +	30.6 +	232 +	1.76	34912	13.7 +

Table 3. Means of the 1998 HoCP and L series first-stubble infield variety test on heavy soil at Ardoyne Farm in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
CP 70-321	7052 -	28.1	251	2.30	24508	9.5
LCP 85-384	9923	38.0	261	1.98	38721	10.7
HoCP 85-845	8216	30.6	269	2.05	29915	13.2
TUCCP 77-42	9002	37.6	241	2.03	36946	12.3
L 98-207	6932 -	27.5	250	1.22 -	47474	10.4
L 98-209	8743	35.2	252	1.93	37034	10.4

Table 4. Means of the 1999 Ho series plant-cane infield variety test on heavy soil at Ardoyne Farm in 2002.

Variety	Sugar/ acre (lbs.)	Tons/ acre (tons)	Sugar/ ton (lbs.)	Weight/ stalk (lbs.)	Stalks/ acre (no.)	Fiber (%)
LCP 85-384	10643	40.7	262	2.4	33966	10.2
HoCP 85-845	9114	39.4	230	2.41	32676	11.7
HoCP 91-555	9021	36.0	250	2.22	32402	10.4
L 99-226	11638	46.8	249	3.12	30248	10.3
L 99-233	8686	37.9	228	2.24	34203	11.5
HoCP 99-825	8912	37.0	247	3.27 +	22568	9.4
HoCP 99-866	9381	40.5	232	3.16	26443	9.1

2002 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS¹

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The outfield variety trials are the final stage of testing experimental varieties for their potential commercial production in Louisiana. Results from these trials are used in both variety advancement and crossing decisions. The outfield variety trials are cooperatively conducted at nine commercial locations throughout the Louisiana Sugarcane Belt by the Louisiana Agricultural Experiment Station, The United States Department of Agriculture – Agricultural Research Service, 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 havestability 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 2002 outfield tests. Also 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. To reflect industry practices, all locations were harvested with a combine harvester. First, second, and third-stubble plots were three rows wide (6-foot rows) and 32 feet long with 5-foot alley between plots, with the exception of Glenwood. Plant cane and Glenwood test plots harvested were two rows wide and 50 feet long with 5-foot alley between plots. All tests planted in 2002 had two-row plots that were 50 feet long with 5-foot alleys. Test plots harvested by the combine were weighed with an electronic weigh wagon with load cells mounted on each axle and hitch. A 15-stalk, whole-stalk sample, not stripped of leaves, was taken from each plot and sent to the USDA sucrose lab. Samples were hand cut for all tests. The samples were weighed, milled, and the juice analyzed for Brix and pol. Pounds of theoretical recoverable sugar per ton of cane are reported.

Cane yield for each plot was estimated by plot weight, less 14% to adjust for leaf-trash weight and 10% for harvester efficiency. Stalk number was calculated by dividing adjusted cane yield by stalk weight. Adjustments made to cane yield resulted in lower estimated stalk numbers than those achieved by growers. No adjustment is made to account for leaf trash.

¹The data for each plot were obtained through a cooperative effort of personnel from the Louisiana Agricultural Experiment Station-LSU AgCenter, USDA-Agricultural Research Service, Sugarcane Research Unit, and the American Sugar Cane League in accordance to the provisions of the “Three-way Agreement of 1978.” The Testing program would not be possible without the full cooperation of the growers at each outfield location.

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 attempts to solve these problems by averaging the inconsistent performances.

LCP85-384 has been the leading variety in Louisiana since 1998 with about 80% (approximately 420,000 acres) of the sugarcane acreage in 2002. For comparison, LCP85-384 is highlighted in the tables. To adjust for missing data, the analysis calculated least square means (SAS 8.01 Proc Mixed). Mean separation used least square means probability differences ($P=0.05$). Varieties that are significantly higher or lower than LCP85-384 are denoted by a plus (+) or minus (-), respectively, next to the value for each trait.

Twelve experimental varieties were introduced to the outfield locations for seed increase in 2002 (Table 1). Seven experimental and three commercial varieties were planted at nine outfield locations. Twenty-five tests were harvested in 2002 including eight plant cane, eight first-stubble, seven second-stubble, and two third-stubble crops (Table 2).

Variety yields are reported by crop and trait with overall means and individual location data in the same table (Table 3-22) and in summary tables by crop (Tables 23-26). Tables 27-34 provide combined analysis of plant cane, first-, second-, and third-stubble crops averaged over several years to aid in the evaluation of commercial and experimental varieties.

Ho95-988 is a product of the basic breeding program from the USDA-ARS in Houma. It was dropped in 2000 because of smut. However, data collection for breeding purposes was agreed to. After reviewing the 2001 data, all three organizations agreed to reinstate the variety into the active breeding program. The variety will be replanted at the primary stations in 2003. In 2002, the combined second-stubble data for Ho95-988 exhibited significantly higher sugar yield and sucrose content than did LCP85-384. Smut data indicate the variety is moderately susceptible. Ho95-988 has had higher yields than LCP85-384 in sugar per acre and theoretical recoverable sugar in plant cane through second-stubble crops. In the third-stubble crop for 2002, there were no statistical differences in sugar yield, cane yield, and sucrose content. The variety is more erect than LCP85-384. Ho95-988 will be a candidate for release in 2004.

L97-128 is an erect variety. The variety begins maturing very early in the harvest season. Sugar yield and tonnage were significantly higher in the combined plant cane analysis for 2002. L97-128 has a larger stalk diameter and a lower population than LCP85-384. Its smut rating is moderately susceptible. The parents of L97-128 are LCP81-010 X LCP85-384. The variety will be a candidate for release in 2004.

The most advanced experimental variety, HoCP96-540, had sugar per acre and cane yields that were significantly higher than LCP85-384 in plant cane and second-stubble in 2002. In first-stubble, sugar per acre and cane yield were not statistically different in 2002. The variety tends to have a larger stalk and lower population than LCP85-384. Based on current data and observations, HoCP96-540 is classified as resistant to smut and mosaic. It is moderately resistant to leaf scald and susceptible to the sugarcane borer. The parents of HoCP96-540 are LCP86-454 x LCP85-384. The Louisiana Sugarcane Variety Development release committee will meet in April 2003 to discuss the release of HoCP96-540.

Table 1. 2002 Commercial and experimental varieties planted in the outfield.

Commercial Varieties	Experimental Varieties		Experimental Varieties Introduced to the Outfield		
LCP85-384	HOCP96-540	L99-233	L00-247	HOCP00-930	HOCP00-945
HOCP85-845	L97-128	HOCP99-825	L00-266	HOCP00-933	HOCP00-950
HOCP91-555	L98-209	HOCP99-866	HOCP00-905	HOCP00-939	HOCP00-951
	L99-226		HOCP00-927	HOCP00-942	HOCP00-960

Table 2. Harvest and planting dates for all outfield locations harvested in 2002.

Location	Parish	2002 Date Planted	Plant cane		First-stubble		Second-stubble		Third-stubble	
			2002 Harvest Date	2001 Plant Date	2002 Harvest Date	2000 Plant Date	2002 Harvest Date	1999 Plant Date	2002 Harvest Date	1998 Plant Date
Allain	St. Mary	*	**	09/19	12/23	09/27	12/23	09/14	**	**
Alma	Pointe Coupee	09/04	12/13	09/14	**	08/30	**	**	**	**
Bon Secour	St. James	09/03	12/18	09/08	11/14	08/24	11/14	09/13	**	**
Georgia	Lafourche	09/21	12/06	09/15	12/06	09/19	12/06	08/24	**	**
Glenwood	Assumption	08/29	11/22	09/25	11/22	08/23	11/08	08/26	**	**
Lanaux	St. John	09/11	12/03	09/05	12/03	09/06	11/13	09/15	11/13	10/06
Levert-St.John	St. Martin	09/11	11/18	09/19	11/18	09/01	11/18	08/18	**	**
Magnolia	Terrebonne	08/16	11/21	10/04	11/21	10/04	11/21	08/23	**	**
R. Hebert	Iberia	09/18	12/11	09/27	12/11	09/05	11/07	08/25	11/07	09/24
A. Landry	Iberville	08/28	**	**	**	**	**	**	**	**

* Not planted because of saturated soil conditions.

** No test harvested at this location.

Table 3. Plant cane sugar per acre for three commercial and five experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light						Mean
	Magnolia	Alma	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John	
	(lbs/A)								
TucCP77-42	6549	6266	8287	8396	8648	9263	8033	7005	7806
LCP85-384	6633	7036	7956	7320	7902	7773	7952	7802	7547
HOCP85-845	5850	5776	8107	6766	7861	8388	7540	6778	7193
HOCP91-555	8477 +	4881 -	7843	7128	9072	7881	7620	7621	7565
HOCP96-540	8253	6305	8340	8858 +	8317	11253 +	8622	8354	8538 +
L97-128	5527	7399	8669	8193	9313	10276	7963	7431	8096
L98-207	6089	7538	6476 -	7600	8053	8746	6637	7004	7410
L98-209	7687	7614	8323	7481	9397	7432	7517	8649	8013

Table 4. Plant cane yield for three commercial and five experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light						Mean
	Magnolia	Alma	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John	
	(tons/A)								
TucCP77-42	33.7	30.1	45.7 +	35.3 +	38.4 +	40.8 +	41.7 +	35.1	37.6 +
LCP85-384	29.4	27.9	30.9	26.6	30.9	30.4	30.7	34.1	30.1
HOCP85-845	27.4	23.8	32.7	25.4	30.4	32.0	31.1	30.1	29.1
HOCP91-555	32.8	21.1 -	31.2	24.8	33.0	33.2	30.7	31.7	29.8
HOCP96-540	31.7	24.6	34.2	31.2 +	30.4	41.0 +	34.5	35.0	32.8 +
L97-128	25.0	29.2	34.3	30.9 +	34.0	37.7 +	31.2	31.9	31.8
L98-207	24.0	27.9	28.1	27.1	30.9	31.7	28.9	28.5	28.6
L98-209	32.3	26.4	31.4	26.6	35.7	29.0	32.1	34.0	30.9

Table 5. Plant cane sugar per ton for three commercial and five experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light								Mean					
	Magnolia	Alma	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John								
	(lbs/ton)															
TucCP77-42	195	207	-	181	-	238	-	225	-	228	193	-	200	-	208	-
LCP85-384	228	253		257		276		257		254	260		229		252	
HOCP85-845	239	244		248		267		259		263	242		225		249	
HOCP91-555	258	234		251		287		274		237	248		240		254	
HOCP96-540	261	256		245		284		273		275	250		240		260	
L97-128	220	252		254		265		274		272	255		232		253	
L98-207	268	271		229	-	280		261		275	237		246		259	
L98-209	240	288		265		281		263		256	235	-	254	+	260	

Table 6. Plant cane stalk weight for three commercial and five experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light								Mean						
	Magnolia	Alma	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John									
	(lbs)																
TucCP77-42	2.78	3.05	+	2.89	+	2.89	+	3.01	+	2.93	+	2.74	+	3.30	+	2.97	+
LCP85-384	2.26	2.29		2.00		2.00		2.23		1.95	2.18		2.27		2.18		
HOCP85-845	2.30	2.40		2.68	+	2.68	+	2.21		2.18	2.74	+	2.17		2.40	+	
HOCP91-555	2.47	2.72	+	2.31		2.31		1.91		2.18	2.05		2.15		2.27		
HOCP96-540	2.53	2.62	+	2.73	+	2.73	+	2.19		2.82	+	3.08	+	2.85	+	2.71	+
L97-128	2.41	2.68	+	2.80	+	2.80	+	2.57		2.74	+	2.64	+	2.73	+	2.67	+
L98-207	1.94	1.98	-	1.68		1.68		1.86		1.91	1.71	-	1.55	-	1.78	-	
L98-209	2.40	2.20		2.29		2.29		2.41		2.38	2.61	+	2.19		2.37	+	

Table 7. Plant cane stalk number for three commercial and five experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light						Mean		
	Magnolia	Alma	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John			
	(stalks/A)										
TucCP77-42	24637	19892	31704	23129	25605	27877	30376	21309	25566		
LCP85-384	26131	24612	31064	23983	27707	32052	28275	30333	28020		
HOCP85-845	21557	19916	24763	-	20356	28297	29742	22945	24560	-	
HOCP91-555	26615	15709	-	27298	21319	34668	30679	29811	29533	26954	
HOCP96-540	25052	18802	25123	-	22288	28611	29250	22448	24521	24512	-
L97-128	20650	21813	24613	-	22125	26533	27674	23636	23555	23825	-
L98-207	23354	28250	33421	31469	+	33093	33902	33999	38218	32742	+
L98-209	27578	24044	27695	21714		29626	24614	24934	31168	26422	

Table 8. First-stubble sugar per acre for four commercial and two experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light						Mean		
	Allain	Magnolia	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John			
	(lbs/A)										
CP70-321	5675	4027	8105	7114	5144	-	7360	7603	6771	6407	-
LCP85-384	6393	4435	8631	8583	6745		8246	7788	7725	7324	
HOCP85-845	6216	5009	7479	6311	-	6552	9340	6346	-	7339	6646
HOCP91-555	6257	4620	7388	8459		6659	7540	7479		8163	7071
HOCP96-540	6906	5385	9816	9579		6989	8540	9039	+	8504	8095
L97-128	6970	5061	8273	9382		5899	8924	6951		7707	7432

Table 9. First-stubble cane yield for four commercial and two experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light						Mean		
	Allain	Magnolia	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John			
	(tons/A)										
CP70-321	21.5	15.3	33.3	25.7	16.5	-	26.8	30.9	27.6	24.5	
LCP85-384	24.4	16.3	34.8	29.6	22.0		30.9	30.3	30.4	27.4	
HOCP85-845	24.2	18.0	32.1	23.7	-	21.0	34.6	27.6		28.9	25.7
HOCP91-555	25.6	18.4	27.7	-	29.0		26.6	30.0		30.2	26.1
HOCP96-540	27.4	19.4	38.0	34.9	+	22.0	32.8	36.9	+	33.4	30.6
L97-128	27.5	17.5	32.4	33.1		18.1	33.2	28.5		30.8	27.7

Table 10. First-stubble sugar per ton for four commercial and two experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light							Mean
	Allain	Magnolia	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John		
	(lbs/ton)									
CP70-321	265	262	244	277 -	311	273	246	246	246	265
LCP85-384	262	272	247	290	306	265	257	254	254	269
HOCP85-845	257	278	233	266 -	312	268	230 -	254	254	262
HOCP91-555	244	253	267	291	309	283	249	270	270	271
HOCP96-540	252	277	258	275 -	317	259	245	253	253	267
L97-128	254	290	256	283	325 +	269	244	250	250	271

Table 11. First-stubble stalk weight for four commercial and two experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light							Mean
	Allain	Magnolia	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John		
	(lbs)									
CP70-321	1.88	2.11 +	2.29	1.98 +	1.46	2.22	2.88 +	2.35 +	2.35 +	2.15 +
LCP85-384	1.80	1.50	1.90	1.46	1.44	2.00	1.75	1.91	1.91	1.73
HOCP85-845	2.01	2.12 +	2.21	1.61	1.57	2.34	2.17	2.16	2.16	2.01 +
HOCP91-555	1.86	1.67	1.80	1.68	1.35	1.85	2.01	1.68	1.68	1.74
HOCP96-540	2.42 +	2.07 +	2.19	2.33 +	1.38	2.44	2.48 +	2.37 +	2.37 +	2.21 +
L97-128	2.13	2.05 +	2.27	2.19 +	1.61	2.70 +	2.24 +	2.38 +	2.38 +	2.20 +

Table 12. First-stubble stalk number for four commercial and two experimental varieties at eight outfield locations in 2002.

Variety	Heavy		Light							Mean
	Allain	Magnolia	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John		
	(stalks/A)									
CP70-321	22952	14608 -	29255	26118 -	22903	23315	21572 -	23849 -	23849 -	23044 -
LCP85-384	27596	21826	36842	41661	30686	30482	34802	33098	33098	32049
HOCP85-845	24272	17175	29408	30348 -	27616	28404	25813 -	27028	27028	26144 -
HOCP91-555	28029	22916	30850	34874	31871	28914	29919	36010	36010	30423
HOCP96-540	23104	18941	36155	30177 -	32524	26918	30201	28448	28448	28308 -
L97-128	26131	17326	28683	30496 -	22769	25143	25543 -	25818	25818	25264 -

Table 13. Second-stubble sugar per acre for four commercial and two experimental varieties at seven outfield locations in 2002.

Variety	Heavy		Light						Mean					
	Allain		Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John						
	(lbs/A)													
CP70-321	3846	-	5376	-	6662	-	3817	-	4955	-	5050	5214	4988	-
LCP85-384	5862		8309		8726		8416		7528		5802	6879	7439	
HOCP85-845	5750		7228		6895	-	8278		6183		6820	7508	6952	
HOCP91-555	6204		7328		7363		8160		5982		8015	7655	7205	
HO95-988	6428		7503		9120		9457		8334		6762	8895	8071	+
HOCP96-540	7504	+	8823		8970		9843		8762		7465	8330	8528	+

Table 14. Second-stubble cane yield for four commercial and two experimental varieties at seven outfield locations in 2002.

Variety	Heavy		Light						Mean					
	Allain		Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John						
	(tons/A)													
CP70-321	15.4	-	23.9	-	24.3	-	15.7	-	19.0		22.4	21.6	20.3	-
LCP85-384	21.6		35.3		31.0		31.9		27.4		28.9	29.0	29.3	
HOCP85-845	21.7		29.5	-	25.6	-	31.5		22.5		28.0	29.8	27.0	
HOCP91-555	24.5		28.0	-	24.8	-	28.9		21.2		31.5	29.8	27.0	
HO95-988	24.8		29.5	-	31.1		34.9		31.0		26.0	32.9	30.0	
HOCP96-540	27.3	+	35.6		31.7		39.5	+	36.7		31.7	32.8	33.6	+

Table 15. Second-stubble sugar per ton for four commercial and two experimental varieties at seven outfield locations in 2002.

Variety	Heavy		Light						Mean					
	Allain		Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John						
	(lbs/ton)													
CP70-321	249	-	226		274		247		262		225	240	246	
LCP85-384	272		236		281		264		275		221	236	257	
HOCP85-845	265		245		269		264		273		244	252	259	
HOCP91-555	252	-	263	+	297		282		282		248	257	270	+
HO95-988	260		254		294		272		268		261	271	268	
HOCP96-540	275		249		283		249		242		235	255	256	

Table 16. Second-stubble stalk weight for four commercial and two experimental varieties at seven outfield locations in 2002.

Variety	Heavy		Light							Mean
	Allain	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John	(lbs)		
CP70-321	1.62	2.08	2.11 +	1.60	2.27 +	2.40 +	1.95 +	2.01 +		
LCP85-384	1.39	1.78	1.40	1.56	1.83	1.76	1.52	1.60		
HOCP85-845	1.81 +	2.09	1.53	1.74	1.72	1.95	1.75	1.80 +		
HOCP91-555	1.64 +	1.50	1.45	1.60	1.69	1.52	1.69	1.59		
HO95-988	1.95 +	2.13	1.99 +	2.12 +	2.11	2.25 +	2.03 +	2.08 +		
HOCP96-540	2.04 +	2.09	1.77 +	2.14 +	2.33 +	2.23 +	1.95 +	2.08 +		

Table 17. Second-stubble stalk number for four commercial and two experimental varieties at seven outfield locations in 2002.

Variety	Heavy		Light							Mean
	Allain	Bon Secour	Georgia	Glenwood	Lanaux	R.Hebert	St. John	(stalks/A)		
CP70-321	18963 -	23416 -	23141 -	19821 -	16761 -	18636 -	22173 -	20416 -		
LCP85-384	30956	40517	44910	40979	29948	29900	38415	36849		
HOCP85-845	24119 -	28667 -	33670 -	36306	26060	28513	34184	30217 -		
HOCP91-555	30207	37436	34782 -	36341	25007	43026 +	35593	34208		
HO95-988	25334	27727 -	31558 -	32912	29376	22910	32369	28884 -		
HOCP96-540	26894	34416	35996 -	37186	31169	28560	34649	32696 -		

Table 18. Third-stubble sugar per acre for four commercial and one experimental varieties at two outfield locations in 2002.

Variety	Light		Mean
	Lanaux	R. Hebert	
		(lbs/A)	
CP70-321	6454	5824	6139
LCP85-384	7766	7589	7678
HOCP85-845	6658	5486	6072 -
HOCP91-555	6542	5625	6083 -
HO95-988	7506	8068	7787

Table 19. Third-stubble cane yield for four commercial and one experimental varieties at two outfield locations in 2002.

Variety	Light		Mean
	Lanaux	R. Hebert	
		(tons/A)	
CP70-321	23.8	26.1	24.9
LCP85-384	29.5	30.0	29.8
HOCP85-845	24.2	24.5	24.4 -
HOCP91-555	23.2	21.8	22.5 -
HO95-988	27.6	30.3	28.9

Table 20. Third-stubble sugar per ton for four commercial and one experimental varieties at two outfield locations in 2002.

Variety	Light		Mean
	Lanaux	R. Hebert	
		(lbs/ton)	
CP70-321	272	223 -	247
LCP85-384	262	255	259
HOCP85-845	277	220 -	249
HOCP91-555	280	258	269
HO95-988	271	265	268

Table 21. Third-stubble stalk weight for four commercial and one experimental varieties at two outfield locations in 2002.

Variety	Light		Mean
	Lanaux	R. Hebert	
		(lbs)	
CP70-321	2.45	1.88	2.17 +
LCP85-384	1.47	1.51	1.49
HOCP85-845	2.18	1.73	1.95 +
HOCP91-555	1.69	1.55	1.62
HO95-988	2.00	1.71	1.86 +

Table 22. Third-stubble stalk number for four commercial and one experimental varieties at two outfield locations in 2002.

Variety	Light		R. Hebert (stalks/A)	Mean	
	Lanaux				
CP70-321	19485	-	28275	23880	-
LCP85-384	40264		41201	40732	
HOCP85-845	22199	-	28208	25203	-
HOCP91-555	27683	-	28293	27988	-
HO95-988	27752	-	35244	31498	-

Table 23. 2002 plant cane means from eight outfield locations: Alma, Bon Secour, Georgia, Glenwood, Lanaux, Magnolia, R. Hebert, and St. John farms.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
TucCP77-42	7806	37.6 +	208 -	2.97 +	25566
LCP85-384	7547	30.1	252	2.18	28020
HOCP85-845	7193	29.1	249	2.40 +	24560 -
HOCP91-555	7565	29.8	254	2.27	26954
HOCP96-540	8538 +	32.8 +	260	2.71 +	24512 -
L97-128	8096	31.8	253	2.67 +	23825 -
L98-207	7410	28.6	259	1.78 -	32742 +
L98-209	8013	30.9	260	2.37 +	26422

Table 24. 2002 first stubble means from eight outfield locations: Allain, Bon Secour, Georgia, Glenwood, Lanaux, Magnolia, R. Hebert, and St. John farms.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	6407 -	24.5	265	2.15 +	23044 -
LCP85-384	7324	27.4	269	1.73	32049
HOCP85-845	6646	25.7	262	2.01 +	26144 -
HOCP91-555	7071	26.1	271	1.74	30423
HOCP96-540	8095	30.6	267	2.21 +	28308 -
L97-128	7432	27.7	271	2.20 +	25264 -

Table 25. 2002 second-stubble means from seven outfield locations: Allain, Bon Secour, Georgia, Glenwood, Lanaux, R. Hebert, and St. John farms.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	4988 -	20.3 -	246	2.01 +	20416 -
LCP85-384	7439	29.3	256	1.60	36849
HOCP85-845	6952	27.0	259	1.80 +	30217 -
HOCP91-555	7205	27.0	269 +	1.59	34208
HO95-988	8071	30.0	268 +	2.08 +	28884 -
L96-540	8528 +	33.6 +	256	2.08 +	32696 -

Table 26. 2002 third-stubble means from two outfield locations: Lanaux and R. Hebert farms.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	6139	24.9	247	2.17 +	23880 -
LCP85-384	7678	29.8	259	1.49	40732
HOCP85-845	6072 -	24.4 -	249	1.95 +	25203 -
HOCP91-555	6083 -	22.5 -	269	1.62	27988 -
HO95-988	7787	28.9	268	1.86 +	31498 -

Table 27. Combined plant cane means across outfield locations from 2000 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	7819	30.0	260	2.11	28711
HOCP85-845	7177 -	29.4	245 -	2.48 +	23750 -
HOCP91-555	7871	30.6	257	2.19	28324
HOCP96-540	9097 +	34.8 +	261	2.68 +	26137 -

Table 28. Combined plant cane means across outfield locations from 2001 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	7674	29.8	257	2.16	27938
HOCP85-845	7135 -	28.9	249 -	2.45 +	23588 -
HOCP91-555	7628	29.6	258	2.19	27537
HOCP96-540	8861 +	33.7 +	262	2.69 +	25294 -
L97-128	8793 +	33.0 +	265	2.77 +	23990 -

Table 29. Combined plant cane means across outfield locations from 1996 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
LCP85-384	8612	32.4	266	2.29	28642
HOCP85-845	7751 -	31.6	246 -	2.59 +	24527 -
HOCP91-555	8287 -	31.5	263	2.31	27635 -

Table 30. Combined first-stubble means across outfield locations from 2001 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	6372 -	24.2 -	265	2.26 +	21582 -
LCP85-384	7566	28.3	268	1.77	32285
HOCP85-845	6642 -	25.7 -	260 -	2.04 +	25393 -
HOCP91-555	7291	26.6 -	274	1.74	30841
HOCP96-540	8285 +	31.7 +	263	2.20 +	29089 -

Table 31. Combined first-stubble means across outfield locations from 1997 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	7465 -	27.8 -	269	2.44 +	22923 -
LCP85-384	8754	32.3	271	1.94	33662
HOCP85-845	7762 -	30.0 -	259 -	2.23 +	27081 -
HOCP91-555	8246 -	30.0 -	275	1.91	31622 -

Table 32. Combined second-stubble means across outfield locations from 1998 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	6438 -	25.4 -	253 -	2.23 +	22834 -
LCP85-384	8019	30.8	262	1.70	36602
HOCP85-845	7402 -	28.8 -	256 -	1.97 +	29272 -
HOCP91-555	7562 -	27.7 -	274 +	1.64	34037 -

Table 33. Combined second-stubble means across outfield locations from 2001 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	5579 -	22.8 -	246 -	2.13 +	21443 -
LCP85-384	7400	29.3	257	1.68	34844
HOCP85-845	6740 -	26.1 -	259	1.86 +	28301 -
HOCP91-555	7306	26.8 -	275 +	1.62	33318
HO95-988	8009 +	30.0	267 +	2.07 +	29138 -

Table 34. Combined third-stubble means across outfield locations from 1999 to 2002.

Variety	Sugar per Acre (lbs/A)	Cane Yield (tons/A)	Sugar per Ton (lbs/ton)	Stalk Weight (lbs)	Stalk Number (stalks/A)
CP70-321	5977 -	23.2 -	257	2.28 +	20483 -
LCP85-384	7803	29.7	263	1.64	36861
HOCP85-845	7777	30.2	257	2.09 +	28951 -
HOCP91-555	7315	26.6 -	274 +	1.70	31519 -

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G. L. Hawkins and K. A. Gravois
Sugar Research Station

More than 4,400 samples were processed at the St. Gabriel Sucrose Laboratory during the 2002 harvest season (Table 1). Standard laboratory procedures, which include use of the ABC Clarifier, were used to measure the Brix and Pol of the juice. Personnel in the lab continued to test clarifier, Octapol®, developed by Baddley Chemical to measure the juice pol. Compared to the ABC Clarifier the Octapol® was found to clarify stale sugarcane juice using the same amount of product. The ABC Clarifier does not clarify stale sugarcane juice as easily. The ABC Clarifier active ingredients tend to break down more quickly; therefore, it requires more product to clarify the same amount of raw juice. The juice was extracted via a three-roller mill for 4424 samples. Fiber analysis was done on 48 samples via chip/press extraction. The laboratory numbers were recorded on the sample tags and returned to the researchers, along with the computer file that contains Brix, Pol and theoretical recoverable sugar per ton of cane. The sucrose laboratory processed samples from September 2002 to January 2003.

Table 1. Number of sugarcane samples processed at the St. Gabriel Sucrose Laboratory during the 2002 harvest season.

Project Area	Leader	Number of Samples
Agronomy	James Griffin	205
	Chuck Kennedy	572
	Magdi Selim	6
	Jim Wang	32
	John Richard	48
	John Richard (fiber)	48
Iberia Research Station	William Hallmark	474
	Howard Viator	26
Plant Pathology and Crop Physiology	Jeff Hoy	115
LCES	Ben Legendre	328
USDA	Jim Fouss	36
Sugar Research Station	Line Trials	2058
	Increase	132
	Nursery	248
	Planting Rate	144
TOTAL		4472

LAES SUGARCANE TISSUE CULTURE LABORATORY

Q.J.XIE, J.L Flynn, and K.A.Gravois
Certis USA, LLC and Sugar Research Station

During the 2002-2003 production season, more than 30,000 sugarcane plantlets were regenerated in the Louisiana Agricultural Experiment Station Sugarcane Tissue Culture Laboratory. A total of 31,469 plantlets 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
LCP85-384	10,472
Ho98-988	8,662
HoCP96-540	7,021
L97-128	3,669
HoCP91-555	1,117
HoCP85-845	369
CP70-321	101
L98-209	58
Total	31,469

THE 2002 LOUISIANA SUGARCANE VARIETY SURVEY

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And
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A sugarcane variety survey was conducted during the summer of 2002 by county agents in the 24 sugarcane-growing parishes of Louisiana to determine the variety makeup and distribution across the Sugarcane Belt in the state. The information presented in this report was summarized from those individual parish surveys.

Agents in each sugarcane-producing parish collected acreage figures by variety and crop from growers in their respective parishes. Eight varieties, CP 65-357, CP 70-321, CP 72-370, LCP 82-89, LHo 83-153, LCP 85-384, HoCP 85-845, and HoCP 91-555, were named along with “Others” in the survey. The category of others included, but was not limited to, small acreages of CP 67-412, CP 74-383, CP 76-331, CP 79-318, and LCP 86-454. Crop was divided into four categories which included plant-cane, first-stubble, second-stubble, and third-stubble and older crops. Additional information was collected as needed from the local Farm Service Agency (FSA) offices regarding acres of sugarcane grown in the parishes. However, not all growers participated in the survey; therefore, total acreage figures as reported may differ from those acres certified by FSA.

Actual acreages covered by this survey for each parish, region, and the statewide total are shown in Table 1. Figure 1 shows the parishes where sugarcane is grown in the state. Statewide, the area reported in this survey was 482,666 acres. This is 97.5% of the total acres planted to sugarcane as reported in Louisiana Agricultural Summary for 2002 (Anonymous 2002). Total acres for the 2002 survey for each of the three regions - Teche, River-Bayou Lafourche, and Northern – are shown in Table 1.

The estimated statewide sugarcane acreage in percent by variety and crop is shown in Table 2. The leading variety for 2002 was LCP 85-384, with 85% of the total acreage followed by HoCP 85-845, CP 70-321, and HoCP 91-555 with 6, 5, and 3% of the total acreage, respectively. These are the only four varieties currently recommended for commercial planting in Louisiana (Legendre 2001). LCP 85-384 has been steadily increasing in popularity among growers since its release in 1993. No other variety occupied more than 1% of the total acreage in the current survey.

There was a tendency for growers in the Northern region to plant less cane each year (22.9%) and keep more older stubble crops (29.3% second-stubble and 25.6% third and older stubble)(Table 3). Conversely, there was a tendency for growers in the River-Bayou Lafourche region to plant more cane each year (27.9%) and keep less older stubble (26.2% second stubble and 17.3% third and older stubble) than the Northern region. The distribution by crop for the Teche region was generally intermediate of the other two regions. In recent years there has been a general tendency by the industry statewide to plant less cane while keeping more acreage in older stubble. Two of the four recommended varieties, LCP 85-384 and HoCP 85-845, are listed

as very good stubbling varieties, and HoCP 91-555 is listed as moderate to good in its stubble behavior (Legendre 2001).

Undoubtedly, LCP 85-384 was the preferred variety in all regions (Tables 4, 5, and 6). In the Teche region, LCP 85-384 was the leading variety, with 85% of the total area followed by CP 70-321 with 8% and HoCP 85-845 with 4% (Table 4). HoCP 91-555, released for commercial planting in 1999, has not been widely accepted by growers in the Teche region, with only a 2% share of the planted area. LCP 85-384 occupied 84% of the area in the River-Bayou Lafourche region (Table 5). However, HoCP 85-845 was the second most popular variety, with 9% of the planted area followed by only 2% for both CP 70-321 and HoCP 91-555. For the Northern region, LCP 85-384 occupied 86% of the planted area (Table 6). HoCP 85-845 was planted on 6% of the area followed by HoCP 91-555 with 4% and CP 70-321 with 3%.

Only two varieties, LCP 85-384 and HoCP 91-555, showed an increase in the acreage grown in 2002 when compared to the previous year (Table 7) (Legendre and Gravois 2002). All other varieties in the survey either decreased in area or remained the same from the previous year. CP 70-321 continues its decline in popularity with a decrease of 3% from crop year 2001. This is a drop of 46 percentage points from its high of 49% in 1995. LCP 85-384, now at 85%, is the first variety to reach more than 70% of the total acreage in recent history since CP 65-357, released in 1973, occupied 71% of the acreage in 1980. LCP 85-384 is a high-yielding, excellent-stubbling variety; however, it has a tendency to lodge and is very susceptible to the sugarcane borer. The variety produces a large number of small stalks and consistently out-yields the other three recommended commercial varieties in tons of cane and sugar per acre (Waguespack et al. 2002).

It is anticipated that LCP 85-384 will continue to gain in popularity for the near term, with the possible exception of the Northern region, because of its superior yielding ability in tons of cane and sugar per acre and will remain the top variety in the state until comparable or superior varieties are released for commercial production from the breeding program. It is further anticipated that the remaining varieties will continue to decrease in total acreage, with the possible exception of HoCP 91-555. HoCP 91-555 is being considered as a possible alternative to LCP 85-384 by some growers, especially in the Northern region where the plant-cane crop reached 11% in 2002. However; it is not anticipated that this variety will ever become a major variety statewide. Because of the possibility of an early frost in the Northern region, growers have possibly selected HoCP 91-555 because of its early maturity and its mostly erect growth habit. This allows for the harvest of this variety by both combine and whole-stalk harvesters. On the other hand, LCP 85-384 frequently lodges and is brittle and difficult to harvest when lodged. Since 1995, most of the growers in the state have converted to the combine harvest system to take advantage of the superior yielding ability of LCP 85-384.

Most sugarcane-growing areas of the world are currently in a situation where there is not a high dependence on a single variety as is the case in Louisiana (Tew 1987). The need to avoid genetic vulnerability was seen in Cuba several years ago, when its growers suffered substantial yield losses because of a rust epidemic and the heavy dependence on one variety, B 4362. Guidelines were established in Cuba wherein individual growers were advised not to plant more than 30% of their area with their leading commercial variety. It is known that LCP 85-384 is now considered susceptible to rust as well; however, it appears that rust has not caused a significant reduction in its yield. A similar situation occurred recently in Australia with Q 124

and susceptibility to orange rust. However, once a clearly superior variety, as is the case with LCP 85-384, has been identified in a sugarcane-growing area, the inadvisability of becoming highly dependent on a single variety must be weighed against the increased profitability anticipated from the culture of only one variety; occasionally expectations will outweigh potential risk considerations (Tew 1987). In a continuing effort to lessen the dependence on one variety, the Louisiana variety development program is constantly striving to develop other new, superior varieties that are as good as or better than LCP 85-384; however, the task has not been an easy one.

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 producers who took the time and effort to respond to the survey from their agents.

References

- Anonymous. 2002. Louisiana Agricultural Summary 2002. Louisiana State University Agricultural Center, Louisiana Cooperative Extension Service, Pub. 2382.
- Legendre, B.L. 2001. Sugarcane Production Handbook – 2001. Louisiana State University Agric. Center Pub. 2859
- Legendre, B.L. and Gravois, K.A. 2002. The 2001 Louisiana Variety Survey. Sugar Bull. 80(8):15-20.
- 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.
- Waguespack, Jr., H.L., Jackson, W.R., Orgeron, A.J. and Garrison, D.D. 2002. A report on the 2001 outfield variety tests. Sugar Bull. 80(9):25-28.

Table 1. Estimated total sugarcane acres by parish and region for 2002¹.

Teche region		River-Bayou Lafourche region		Northern region	
Parish	Acres	Parish	Acres	Parish	Acres
Acadia	3,854	Ascension	15,018	Avoyelles	22,034
Calcasieu	5,500	Assumption	41,748	East Baton Rouge	532
Cameron	500	Iberville	36,224	Evangeline	3,021
Iberia	63,536	Lafourche	31,330	Pointe Coupee	31,566
Jeff Davis	7,700	St. Charles	1,630	Rapides	10,562
Lafayette	16,694	St. James	24,837	St. Landry	22,163
St. Martin	36,300	St. John	4,128	West Baton Rouge	15,454
St. Mary	44,940	Terrebonne	11,617		
Vermilion	31,778				
Total	210,802	Total	166,532	Total	105,332
Total all regions: 482,666					

¹ Estimates are based on 2002 variety survey information from county agents.

Figure 1. Louisiana sugarcane growing parishes

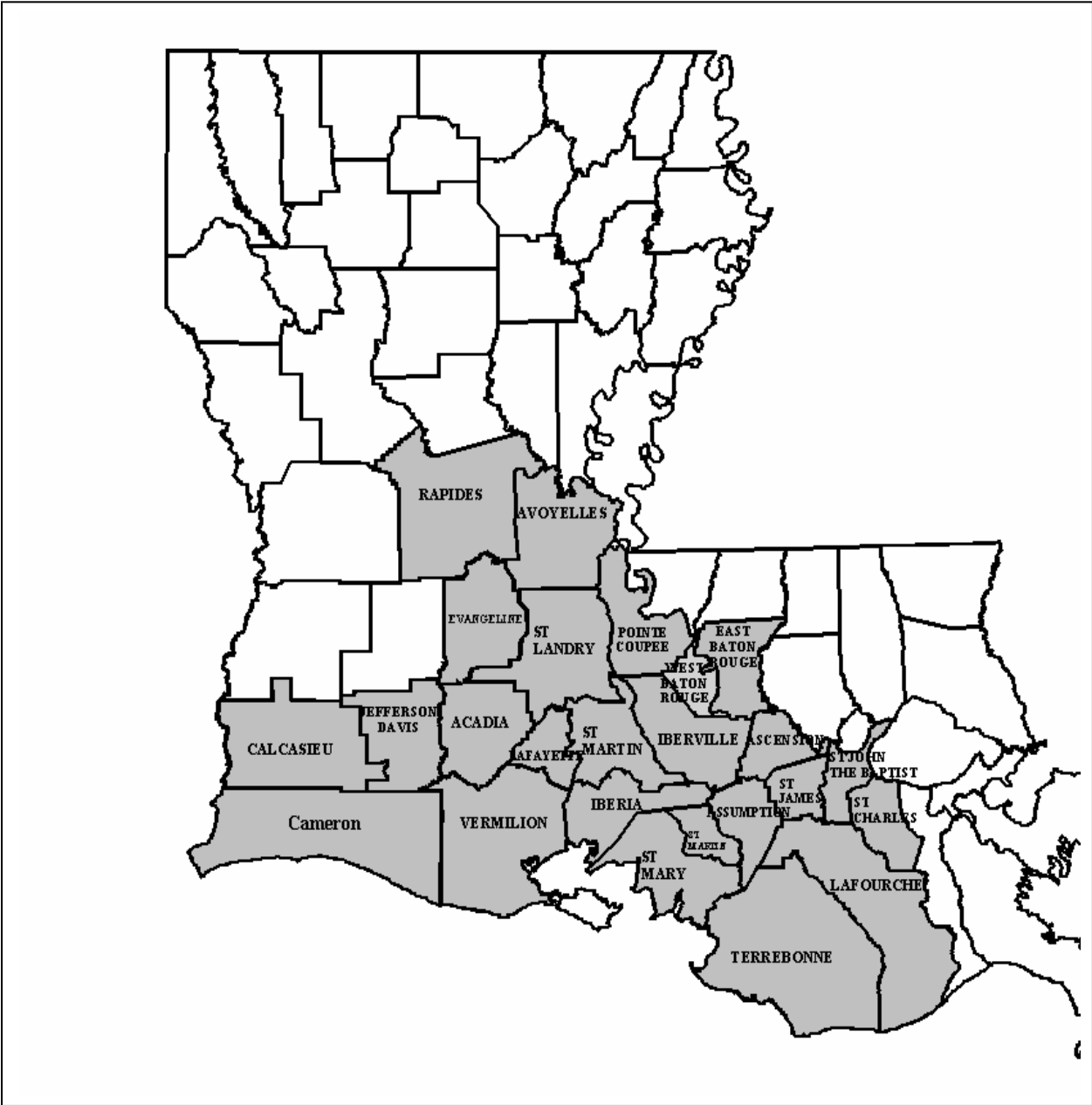


Table 2. Estimated statewide sugarcane acreage percentage by variety and crop, 2002¹.

Variety	Plant-cane	First-stubble	Second-stubble	Third-stubble and older	Total
	-----%-----				
CP 65-357	<1	<1	<1	1	<1
CP 70-321	3	4	6	7	5
CP 72-370	<1	1	1	1	1
LCP 82-89	<1	<1	1	1	<1
LHo 83-153	<1	<1	1	<1	<1
LCP 85-384	87	86	82	83	85
HoCP 85-845	4	5	8	7	6
HoCP 91-555	6	3	1	<1	3
Others	<1	<1	1	1	<1
Total acres	124,212	124,181	128,215	106,058	482,666
Percent total crop (%)	25.7	25.7	26.6	22.0	

¹Based on 2002 variety survey information from county agents.

Table 3. Estimated sugarcane distribution by region and crop, 2002¹.

Crop	Teche	River-Bayou Lafourche	Northern	State total
Plant-cane acres	53,582	46,508	24,122	124,212
%	25.4	27.9	22.9	25.7
First-stubble acres	53,310	47,528	23,343	124,181
%	25.3	28.6	22.2	25.7
Second-stubble acres	53,712	43,633	30,871	128,215
%	25.5	26.2	29.3	26.6
Third-stubble and older acres	50,198	28,863	26,996	106,058
%	23.8	17.3	25.6	22.0
Total acres	210,802	166,532	105,332	482,666

¹Based on 2002 variety survey information from county agents.

Table 4. Estimated Teche region acreage percentage by variety and crop, 2002¹.

Variety	Plant-cane	First- stubble	Second-stubble	Third-stubble and older	Total
CP 65-357	0	<1	<1	<1	<1
CP 70-321	6	7	9	10	8
CP 72-370	<1	1	1	1	1
LCP 82-89	<1	<1	1	1	1
LHo 83-153	0	0	<1	<1	<1
LCP 85-384	88	85	82	83	85
HoCP 85-845	2	3	5	4	4
HoCP 91-555	4	2	1	<1	2
Others	<1	<1	1	1	1

¹Based on 2002 variety survey information from county agents.

Table 5. Estimated River-Bayou Lafourche region sugarcane acreage percentage by variety and crop, 2002¹.

Variety	Plant-cane	First-stubble	Second- stubble	Third-stubble and older	Total
CP 65-357	<1	<1	<1	<1	<1
CP 70-321	1	2	3	4	2
CP 72-370	<1	1	1	1	1
LCP 82-89	<1	0	1	1	<1
LHo 83-153	<1	1	2	1	1
LCP 85-384	90	86	78	79	84
HoCP 85-845	4	7	13	12	9
HoCP 91-555	4	3	1	<1	2
Others	<1	1	1	1	1

¹Based on 2002 variety survey information from county agents.

Table 6. Estimated Northern Region sugarcane acreage percentage by variety and crop, 2002¹.

Variety	Plant-cane	First- stubble	Second-stubble	Third-stubble and older	Total
CP 65-357	0	0	0	2	<1
CP 70-321	1	2	4	4	3
CP 72-370	0	0	0	<1	<1
LCP 82-89	0	0	<1	<1	<1
LHo 83-153	0	<1	<1	<1	<1
LCP 85-384	80	87	89	88	86
HoCP 85-845	7	5	6	5	6
HoCP 91-555	11	5	1	<1	4
Others	<1	<1	<1	<1	<1

¹Based on 2002 variety survey information from county agents.

Table 7. Louisiana sugarcane variety trends 1998-2002¹.

Variety	% of Louisiana total acreage by year					1 yr. Change
	1998	1999	2000	2001	2002	
CP 65-357	3	1	1	1	<1	-1
CP 70-321	29	20	13	8	5	-3
CP 72-370	5	3	2	1	1	0
LCP 82-89	7	5	2	1	<1	-1
LHo 83-153	3	3	2	1	<1	-1
LCP 85-384	43	58	71	78	85	+7
HoCP 85-845	6	8	8	7	6	-1
HoCP 91-555	-	<1	<1	1	3	+2
Others	1	<1	<1	1	<1	-1

¹Based on annual variety survey reports from county agents in sugarcane-producing parishes, 1998-2002.

DEVELOPMENT OF TRANSGENIC LOUISIANA SUGARCANE FOR HERBICIDE RESISTANCE

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Department of Agronomy

SUMMARY

The following results were obtained during 2002: (1) The ALS gene that confers resistance to imidazolinone herbicides was transferred to calli of LCP-384 by bombardment-mediated transformation. The bombarded calli were selected in the presence of the antibiotic G418. A total of about 260 plants were produced in four successful experiments. PCR assays and southern blot analysis indicated that ALS gene was stably integrated into the sugarcane genome. (2) Gene expression was detected in stems of transgenic LCP-384 with construct pCL3 by ELISA assays, and the amount of NPT II protein produced was 1~2 ng /ml extract. (3) Minimum lethal dosage of normal LCP-384 plants and callus cells cultured *in vitro* to the herbicide Arsenal was determined across three separate experiments (4) A total of eight regenerated plants from calli showed tolerance to the herbicide Glean. Additional tests will be required to fully characterize this material.

The Sugarcane Genetics Project, located at the LSU Agricultural Center Department of Agronomy, was carried out under LAES Project 3295 in close cooperation with scientists at the Sugar Research Station and the LSU Baton Rouge campus. The objectives of this project were as follows:

- (1) Transfer ALS herbicide resistance gene to variety LCP-384 to obtain transgenic plants. Confirm gene integration by molecular analysis.
- (2) Determine extent and level of NPTII reporter gene expression in stems of transgenic sugarcane.
- (3) Determine minimum lethal dose response of normal LCP-384 plants to the herbicide Arsenal.
- (4) Determine dose response of sugarcane calli to Arsenal herbicide.
- (5) Select plants regenerated from calli grown in the presence of lethal doses of the herbicide Glean.

Objective 1: Production and identification of transgenic sugarcane containing ALS herbicide gene by particle bombardment

The plasmid constructs pCL4, pCL21 and pCL22, containing the NPT II gene, and constructs pUAUA2 and pURAL34, containing the ALS herbicide resistance gene, were engineered and used in particle bombardment experiments in the following combinations: pCL4 + pUAUA2; pCL21 + pURAL34; pCL22 + pUAUA2; and pCL22 + pUAUA2. The plasmids were mixed and transferred to calli of LCP-384 via particle bombardment. A total of six experiments were conducted using the above plasmid combinations, followed by selection using the antibiotic G418. Regenerated plants were produced in four successful experiments designated I, II, III, and IV.

Experiment I: In this experiment the plasmid combination of pCL4 and pUAUA2 was used. Approximately 90 plants were regenerated and transferred to the greenhouse, among which 38 plants were transplanted to the St. Gabriel Sugar Research Station in 2002. Because of an unusually dry April and May of that year, only seven plants survived, with four plants currently being propagated for cuttings in the greenhouse. This material will be further evaluated for levels of herbicide resistance and additional biochemical/molecular tests in 2003.

Experiment II: The plasmid combination used was pCL21 and pURAL34. A total of 60 plants were produced and transferred into greenhouse. Thirty-six plants were transplanted in the 2002 field at the St. Gabriel. Because of the unusual dry spring in 2002, only eight plants survived in the field. Currently cuttings are being produced from seven plants for additional evaluation in 2003.

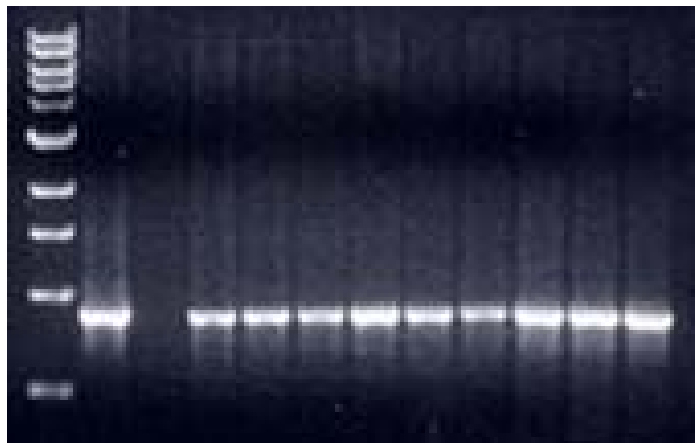
Experiment III: One plasmid pCL22 and a fragment containing the Ubi-1-ALS cassette were used in this experiment. About 50 plants were regenerated and transferred to the greenhouse. A total of 14 plants were cut for propagation in the green house, and seven of them produced plants for further testing in 2003.

Experiment IV: This experiment involved co-transformation of constructs pCL21 and pUAUA2. Approximately 60 plants were produced and transferred to the winter greenhouse for propagation of cuttings and subsequent testing in 2003.

IDENTIFICATION OF TRANSGENIC PLANTS BY MOLECULAR ANALYSIS

As stated previously, 260 plants were produced by particle bombardment via co-transformation of two separate constructs. NPT II gene expression was demonstrated by ELISA analysis. Selection of transformed plants was based on the NPT II antibiotic gene, while the ALS herbicide gene resided on the second, unlinked plasmid. Therefore, PCR assays were used to detect presence and incorporation of the ALS gene into the sugarcane genome. From a total of 28 plants that contained the NPT II gene, 23 plants showed positive results for the ALS gene. The figure below shows PCR products of nine positive plants, indicating that the ALS gene could be successfully introduced into Louisiana sugarcane germplasm by co-transformation of two separate plasmids during particle bombardment.

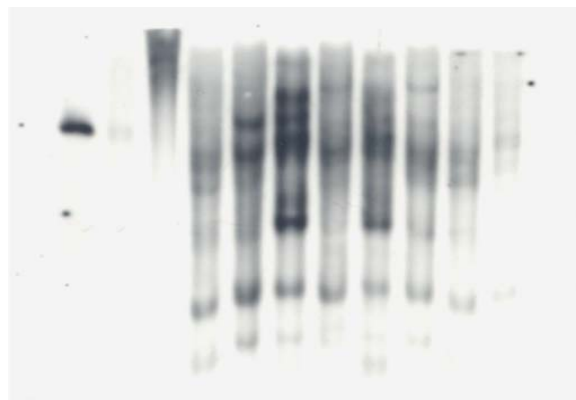
M CK+ CK- 1 2 3 4 5 6 7 8 9



M: Marker; Ck⁺: 0.9 kb PCR product from plasmid pUAUA2; Ck⁻: No PCR product from nontransgenic plant; lanes 1 to 9: Nine plants showing 0.9 kb PCR product

To confirm foreign stable gene integration into Louisiana sugarcane, southern blot analysis was carried out using the GUS or ALS gene as probes. The genomic DNA was extracted from leaves of transgenic plants, digested with the enzyme *Kpn I*, separated in agarose gels and hybridized with fluorescein-dUTP labeled probe. The results showed that the GUS gene was stably integrated into sugarcane genome. Gene copy number ranged from 2 to 6, and some plants showed multi-copy insertion. Similar results were obtained for the ALS gene. The figure below shows the hybridization profile after total genomic DNA of transgenic plants was digested with *Kpn I* (lane 1~8) or undigested (Lane U), fractionalized on an agarose gel and hybridized with fluorescein-dUTP labeled ALS gene probe.

CK+ CK- U 1 2 3 4 5 6 7 8



Ck⁺: plasmid pCL4; Ck⁻: Genomic DNA from nontransgenic plant; U: Undigested DNA from transgenic plant; Lanes 1 to 8: Genomic DNA from eight transgenic plants.

Objective 2: Gene expression analysis in the stem of transgenic LCP-384 sugarcane

The gene expression in leaves of sugarcane was demonstrated by histochemical assays for GUS gene, and by ELISA assays for NPT II gene. For the NPT II assay, protein solutions were extracted from the stem of transgenic plants about ~ 1 m in height. NPT II protein production was determined using a commercial NPT II ELISA kit. Seven out of eight plants that were tested did express NPT II protein in the stem at ~1 to 2 ng/ml, while no NPT II protein was detected in non-transgenic plants. This result indicated that NPT II gene could be efficiently expressed in an economically important part of the sugarcane plant under the control of Ubi-1 promoter.

Objective 3: Determine minimum lethal dose response of normal LCP-384 plants to the herbicide Arsenal

To determine if transgenic plants show tolerance or resistance to different herbicides, it is necessary to determine the minimum lethal dose response of normal, untransformed sugarcane plants. Because no documentation existed to indicate the lethal rate of Arsenal herbicide to LCP-384, two dose response trials were conducted in the greenhouse. Arsenal was sprayed at the rate of 1 lb, ½ lb, ¼ lb, 1/8 lb, 1/16lb a.i./A on normal LCP-384. All plants were killed within four weeks after herbicide application, indicating that the lowest rate of 1/16lb a.i./A was sufficient for lethal damage to the plants. To narrow the minimum rate of killing sugarcane plants, Arsenal was sprayed on sugarcane plants ~ 60 cm in height at the rate of 1/30 lb, 1/60 lb, 1/120 lb and 1/200 lb a.i./A. One month post application, plants treated with 1/30 lb and 1/60 lb a.i./A showed herbicide damage as yellow leaves, while plants treated with 1/120 lb or 1/200 lb a.i./A showed no visible systems. One month later, all plants died that were treated at the 1/30 lb and 1/60 lb a.i./A rates. It should be noted that all plants sprayed at any rate with Arsenal did lead to a substantial reduction of plant height (~ 50%) compared to unsprayed plants. These results show that the minimum rate for killing sugarcane ranged from 1/30 lb to 1/60 lb a.i./A. A total of 20 transgenic plants derived from co-transformation of pCL22 and Ubi-1-ALS were sprayed with Arsenal at the rate of 1/60 lb a.i./A. No clear herbicide damage was observed for transgenic plants one month after application. The control plants with the same herbicide application rate showed yellowish leaves, but did not die. Therefore, more experiments are needed in the future to determine potential levels of Arsenal resistance of this transgenic material.

Objective 4: Dose response of sugarcane calli to Arsenal herbicide

Due to public concerns of antibiotic genes in transgenic plants, a non-antibiotic transformation system is urgently needed, especially for vegetatively propagated crops such as sugarcane, where antibiotic genes would be difficult to remove by means of sexual propagation and subsequent selection. In an effort to use herbicide Arsenal as a selectable agent, herbicide ranging from 0.1 mg/L to 4.0 mg/L was added to callus culture medium to determine minimum lethal rates. The results showed that calli exhibited a sticky, brown appearance when placed on medium with 0.7 mg/L Arsenal for two, four-week rounds. A majority of the calli died after three, four-week rounds of culture on medium > 1.0 mg/L Arsenal. This indicated that Arsenal

was a strong herbicide that could kill sugarcane calli at a minimum lethal concentration of 1 mg/L.

Objective 5: Selection for Glean herbicide-resistant sugarcane via somatic cell culture

There are numerous reports in the literature of ALS mutants that exhibit resistance to ALS herbicides by natural mutation or somatic cell selection. For the purpose of obtaining Louisiana sugarcane exhibiting resistance to the herbicide Glean, two experiments were conducted using technical grade Glean as a selectable agent. Six rounds of selection, two weeks each round, were carried out in Experiment I at herbicide concentrations of 4 mg/L for 2 rounds, 6 mg/L for 2 rounds and 8 mg/L for 2 rounds. In experiment II, five rounds of selection were carried out at 4 mg/L for one round, 6 mg/L for two rounds and 8 mg/L for two rounds. Five and six pieces of resistant calli were obtained in experiment I and II, respectively. Approximately 15 plants were regenerated from these calli, and eight plants are currently growing in the greenhouse. Biochemical and molecular tests will be conducted in 2003 to further evaluate the regenerated lines for level of resistance to Glean.