# AN OVERVIEW OF 2014 ACTIVITIES IN THE LOUISIANA STATE UNIVERSITY AGRICULTURAL CENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

Collins Kimbeng
Sugar Research Station

The main objective of the Louisiana State University Agricultural Center (LSU AgCenter) Sugarcane Variety Development Program is to develop new, genetically improved varieties of sugarcane for the Louisiana sugar industry. This is accomplished through multidisciplinary research among a team of scientists drawn from a diversity of disciplines within the LSU AgCenter (Table 1) as well as from other organizations such as the United States Department of Agriculture (USDA) and the American Sugar Cane League. The LSU AgCenter and the United States Department of Agriculture (USDA) sugarcane variety development teams work independently as well as cooperatively to produce "L" and HoCP or Ho varieties, respectively. The best varieties from each program are brought together for evaluation at the nursery, infield, and outfield testing stages of the program (Table 2). Outfield testing is conducted by personnel from the LSU AgCenter, the USDA, and the American Sugar Cane League. Upon recommending a variety for commercial release, seed increase is carried out by the American Sugar Cane League and generally commences when varieties are introduced to the outfield testing stage. The cooperative effort under which the three entities (the LSU AgCenter, the USDA, and the American Sugar Cane League) participate to develop improved sugarcane varieties for the Louisiana sugarcane industry is outlined in the "Three-Way Agreement of 2007".

Table 1. Members of the LSU AgCenter Sugarcane Variety Development Team in 2014.

| Team Member | Budgetary Unit | Responsibility |
|---|---|---|
| Collins Kimbeng | Sugar Res. Station | Program Leader |
| Michael Pontif | Sugar Res. Station | Crossing, Selection and Variety Testing |
| Sonny Viator | Iberia Research Station | Variety Testing |
| Niranjan Baisakh | School of Plant, Soil and Environmental Sciences | Molecular Breeding |
| Gene Reagan | Entomology | Insect Resistance |
| Jeff Hoy | Plant Pathology | Disease Resistance |
| Gert Hawkins | Sugar Res. Station | Sucrose Laboratory |
| Mavis Finger | Sugar Res. Station | Photoperiod & Crossing |
| David Sexton | Sugar Res. Station | Outfield |
| Todd Robert | Sugar Res. Station | Farm Crew |
| Alphonse Coco | Sugar Res. Station | Farm Manager |

Genetic variability is an essential raw ingredient in any crop improvement program. Success in developing improved sugarcane varieties is heavily dependent on the availability of novel genetic variability made available for selection via targeted cross hybridization among desirable sugarcane parents or clones. Cultivated sugarcane does not flower naturally in Louisiana because of the cool fall temperatures hence, the breeding program must rely on artificial photoperiod treatment to induce and synchronize flowering of sugarcane parents for crossing. Photoperiod treatment to induce flowering began on June 1, and continued until

September 12, 2014. Crossing began on August 29, 2014 and ended on November 10, 2014. A total of 526 tassels of 89 clones were used to make 292 crosses with a total of 88,778 viable seeds being produced. The number of viable seeds per cross was estimated by counting the number of shoots produced per 0.5 g of seed (fuzz). A total of 81,207 seeds were produced from bi-parental crosses, and 5,128 seeds were produced from polycrosses. Far fewer tassels were produced in 2014 (755 tassels in 2013) resulting in fewer crosses (529 crosses in 2013) and viable seeds (110,953 seeds in 2013) than in most other years. Stored seed from past crossing campaigns are available to make up any potential shortfall in seed for planting in 2016. Details about the 2014 crossing campaign and plans to improve flowering, crossing and seed set in the LSU AgCenter crossing program can be found in the section titled '**2014 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM**'.

Seeds (fuzz) were germinated in the green house in 25 l x 15 w x 4 h inches metal trays filled with 2 inches of potting mix in January of 2014. Individual seedlings were transplanted into styrofoam trays with 128 (1.5 l x 1.5 w x 1.5 h inches per cell) cells in late February to early March of 2014. A total of 76,217 seedlings from 155 crosses most of them from the 2013 crossing campaign were transplanted to the field in April, 2014. Many of these seedlings were progeny of biparental crosses among commercial as well as superior experimental varieties. In addition, seedlings were planted in a cross appraisal trial. Individual seedling selection will be carried out next year when these seedlings are in the first stubble crop.

Individual seedling selection was practiced on 38,616 first stubble single stools in the fall of 2014. These seedlings were mostly from the 2012 crossing series that were planted to the field in 2013, allowed to overwinter and were in the first ratoon cane crop in 2014. Unlike in 2012 where the seedlings were severely lodged following Hurricane Isaac, the seedlings were mostly erect during selection which made for easier selection environment. Selection was conducted in September. Family selection, based on accumulated data from family appraisal studies and visual assessment of seedling populations, was used to discard about ten percent of families prior to selection. The selection criteria included visual appraisal of individual seedlings for disease and insect damage, lodging, yield (stalk number, stalk diameter and height) and then lastly for the absence of pith. This was followed by evaluation of the visually selected clones for Brix using a hand held refractometer. A total of 1,414 clones (3.6 % selection rate) were selected and planted in 10-foot, First Line trial plots.

The First Line trial plots established the year before (2011 crossing series) were evaluated and superior clones selected and planted into a Second Line trial. Breeders walked through the plots and dropped clones based on visual appraisal for diseases, insect damage and, if the stand was poor or weak. Clones that were not dropped the first time around were evaluated for pith, and Brix. A total of 461 clones (23.2 % selection rate) were eventually selected and planted into single row, 16-foot Second Line trial. From the Second Line trial established the year before (2010 crossing series) 294 clones were selected and planted into single row, unreplicated, 16-foot increase plots. These are tentative selections with the 'seed cane' being increased pending data from the ratoon crop. By the time clones are assigned a permanent 'L' number using both the plant and first ratoon cane crop data there will be enough material to plant replicated trials in three On Station Nurseries.

Preliminary visual ratings for cane yield and plant type were done in August on the 190 Second Line clones from the 2009 crossing series. Clones with acceptable ratings were further evaluated for lodging and/or broken tops, borer damage, disease symptoms, pith, and Brix/sugar per ton. A total of 33 experimental varieties judged to be superior to the checks were assigned permanent variety designations ("L") in the fall of 2014 (Table 2). These newly assigned experimental varieties were entered into replicated On Station Nursery trials (2 replicates, 16-foot plots) at three locations (Sugar Research Station, Iberia Research Station and USDA-ARS Ardoyne Farm). Details about the seedling and early clonal stage selection activities can be found in the section titled '**SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER'S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2014**'.

Seventeen experimental varieties from the 2013 Assignment series that performed well in the plant cane crop On Station Nursery trials were replanted into Infield and Off Station nursery tests (Table 2). Three varieties (L 12-201, L 12-202, 12-227) that performed well in the Infield and Off Station nurseries (plant cane crops) and On Station nurseries (first ratoon cane crops) tests were introduced to Outfield locations as increase plots. Those that continue to perform well in these tests will subsequently be planted into the Outfield testing stage of the program in 2015. Four varieties (L11-168, L11-172, L11-183 and L11-184) introduced to outfield locations last year that continued to perform well were entered into the Outfield tests. Additional information can be found in the section titled **'2014 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFIELD VARIETY TRIALS'.**

Rust caused by *Puccinia melanocephalacan* was not a major problem in the 2014 season. There was no need to rate trials specifically for incidence of rust infection. Only 0.65 % of clones were dropped in the First Line trial because of susceptibility to rust. Other diseases also had a minimal effect on the selection process. For example, only 0.76 % of clones were dropped from the First Line trial for susceptibility to smut compared to 1.5 % in 2012. Artificial screening for these diseases will be carried out to weed out susceptible clones before time and resources are spent evaluating them in multiple locations and years. It was not necessary to spray the crop on the station to prevent borer damage as very little incidences of borer damage were reported.

As mentioned earlier, the goals of the LSU AgCenter sugarcane crop improvement program are accomplished through a multidisciplinary effort. To this end, promising experimental varieties that made it to the more advanced stages of the program were entered into several tests to screen for resistance to prominent diseases (Dr. Jeff Hoy, Plant Pathologist) and Insect pests (Dr. Gene Reagan, Entomologist). Results gathered from these screening tests will be influential in determining which varieties to recommend for commercial release and how best to manage them during commercial production. The data will also be useful in the crossing program in determining what parents to pair in order to avoid making susceptible by susceptible crosses. Also informative was data from the molecular breeding program (Dr. Niranjan Baisakh) in deciding, which crosses to make based on genetic diversity among parents at the molecular level and, which parents harbor the Bru 1 gene that confers rust resistance.

In general, the 2014 sugarcane crop improvement program accomplished all of its goals for the year. The season started slowly because of the uncharacteristically wet conditions experienced during peak planting or harvesting times throughout the year. The planting and

harvesting operation suffered several delays but in the end all the experiments were planted and harvested as planned. The 2014 crop was spared from tropical storm damage making it easy for the Crop Improvement crew members to walk the plots and conduct selection as lodging was not prevalent. Clones naturally prone to lodging lodged easily and these were easy to identify and eliminate from the program. As in 2013, the 2014 crop experienced a freeze in late November.

The decision regarding further testing and seed increase of candidate varieties in the program was determined at the Variety Advancement Committee meeting. The 2014 meeting was held on Friday August 15, 2014 at the American Sugar Cane League office in Thibodaux, Louisiana.

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

Table 2. Number of "L" varieties by assignment series for each stage of testing in 2014.

| Assignment Series | Stage of Testing | Number of experimental varieties |
|---|---|---|
| L 2010 | Outfield – Replanted and harvested as plantcane<br>On-station nurseries - 3rd stubble harvested<br>Off-station nurseries and infield – 2nd stubble harvested. | 1 |
| L 2011 | Outfield – Planted<br>On-station nurseries - 2nd stubble harvested<br>Off-station nurseries and infield - 1st stubble harvested | 4 |
| L 2012 | Outfield – Introduced<br>On-station nurseries - 1st stubble harvested<br>Off-station nurseries and infield - plantcane harvested. | 3 |
| L 2013 | On-station nurseries - plantcane harvested<br>Off-station nurseries and infield planted | 17 |
| L 2014 | Assignment<br>On-station nurseries planted | 33 |

# 2014 PHOTOPERIOD AND CROSSING IN THE LSU AGCENTER SUGARCANE VARIETY DEVELOPMENT PROGRAM

Mavis Finger, Alphonse Coco, and Collins Kimbeng
LSU AgCenter Sugar Research Station
St. Gabriel, LA

The longstanding and continued goal of the LSU AgCenter's Sugarcane Variety Development Program is the development of genetically improved sugarcane varieties which will positively impact the sugar industry. The variety development program begins with the photoperiod and crossing stages. Photoperiod treatments are managed as to encourage flowering of genotypes that would otherwise not flower naturally in Louisiana's climatic conditions. Pre-planned crosses, based on an additive-model that uses the performance of sugarcane parents for several yield components as well as resistance to pests and diseases, are made through hybridization techniques. The breeding program strives to produce crosses that will yield superior progeny.

Eyepiece cuttings of breeding genotypes to be used for the 2014 crossing season were planted in October of 2013. The cuttings were planted in Styrofoam cell trays and maintained in the greenhouse. In late January of 2014, the cuttings were transferred to can culture. The transplants were planted in large cans (38 liters) containing equal parts of field soil, washed sand, and peat moss and maintained in the greenhouse. In April, after the danger of frost, the cans were moved from the greenhouse to the photoperiod rail carts. Natural lighting and six light-tight chambers were used for photoperiod treatments. Photoperiod treatments were initiated by pushing the rail carts in to a light-tight chamber shortly after twilight. The photoperiod carts remained in the light-tight chamber until a specific time each morning at which point, the photoperiod carts were moved out of the light-tight chamber into natural sunlight. The cans were placed on photoperiod carts and assigned to a specific photoperiod regime based on past flowering behavior. Genotypes that are difficult to flower were given a longer induction treatment and longer decline period. Fertilization was adjusted to condition plants for floral induction as a high C:N ratio has been shown to promote flowering in sugarcane.

The first photoperiod treatment began on June 1, 2014. All photoperiod treatments were initiated with a minimum of 37 consecutive days of 12 ½ hours of constant day length (Table 1). After the initial constant photoperiod days, artificial day length was shortened by one minute per day. Tassel (flower) initiation begins when day length begins to decrease. Treatments differed by the number of days with constant day length and the date on which the decline of photoperiod was initiated (Table 1). All photoperiod treatments were discontinued on September 12, 2014, when natural day length was less than 12 ½ hours and decreasing at a rate conducive to sugarcane flowering.

The flowering season began the last week of August in 2014. The normal time frame for first flowering can be as early as the last week of August or as late as the third week of September. There may be a slight deviation in the appearance of the first flower due to temperature during the photoperiod induction phase, varietal characteristics, and the photoperiod treatments. Flowering percentages of stalks on photoperiod carts were below average in 2014

and were especially low in photoperiod carts located in position “C” (Table 1). The total flowering percentage for the six photoperiod bays equaled 38%. The total flowering percentage was significantly below the last 5 year average. Of a total of 1,369 stalks, 526 tassels were produced (Table 2). The flowering season peaked in late September through mid-October (Fig. 1).

Crossing began on August 29, 2014 and ended on November 10, 2014. A total of 526 tassels of 89 genotypes (Table 4) were used to produce 292 crosses (Table 3, Table 5). A total of 88,778 viable seed were produced in 2014 (Table 3). A total of 81,027 seed were produced from bi-parental crosses and a total of 5,128 seed were produced from polycrosses (Table 3). Germination rate was estimated based on the germination of 0.5 g of seed under greenhouse conditions in late December of 2014. Germination rates were below average in 2014 (Table 3).

The transfer of cans to the photoperiod rail carts in 2014 was delayed due to cooler than normal spring temperatures. This delay may have contributed, in part, to the poor flowering of genotypes. In an attempt to improve monitoring capabilities of temperature and relative humidity in the crossing greenhouse, a data logging system was installed in 2014. Real-time temperature and relative humidity data was available to the persons involved in the management of plants in the crossing greenhouse through a computer terminal and handheld devices. The availability of this information allowed for better management of temperature and relative humidity. High relative humidity was maintained with the use of a misting system installed inside the crossing greenhouse. High temperatures in excess of 95°F were recorded on multiple days in the crossing greenhouse and this may have contributed to the poor seed set observed in 2014. It has been previously observed that temperatures in excess of 95°F have adverse effects on pollen viability. Additionally, several days of unfavorable weather conditions were observed during the 2014 crossing season. On multiple occasions, plants on the rail carts were moved into the photoperiod bays for protection against driving rain and wind in excess of 15 mph. To further compound poor flowering, the arrival of a flock of birds, which roosted on some flowers, caused the breakage of several stalks.

Table 1. Summary of the 2014 photoperiod treatments for the LSU AgCenter's sugarcane variety development program.

| Bay | Cart | Treatment Start Date | Days of Constant Photoperiod | Date Photoperiod Decline Started | Days of Declining Photoperiod | | Mean Flowering Date | Total Stalks | Percent Flowered |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Peak 1 | Peak 2 | | | |
| 1 | A | 16-Jun | 44 | 30-Jul | 72 | 87 | 289±1 | 79 | 71 |
| 1 | B | 16-Jun | 44 | 30-Jul | 72 | 87 | 288±2 | 72 | 40 |
| 1 | C | 16-Jun | 44 | 30-Jul | 72 | 87 | 283±2 | 68 | 28 |
| 2 | A | 16-Jun | 44 | 30-Jul | 72 | 87 | 293±1 | 82 | 79 |
| 2 | B | 16-Jun | 44 | 30-Jul | 72 | 87 | 287±2 | 74 | 43 |
| 2 | C | 16-Jun | 44 | 30-Jul | 72 | 87 | 292±3 | 69 | 19 |
| 3 | A | 01-Jun | 37 | 8-Jul | 87 | 102 | 274±3 | 83 | 57 |
| 3 | B | 01-Jun | 37 | 8-Jul | 87 | 102 | 276±4 | 79 | 32 |
| 3 | C | 01-Jun | 37 | 8-Jul | 87 | 102 | 279±4 | 74 | 20 |
| 4 | A | 01-Jun | 37 | 8-Jul | 87 | 102 | 273±2 | 71 | 62 |
| 4 | B | 01-Jun | 37 | 8-Jul | 87 | 102 | 261±4 | 73 | 10 |
| 4 | C | 01-Jun | 37 | 8-Jul | 87 | 102 | 265±4 | 68 | 15 |
| 5 | A | 01-Jun | 41 | 12-Jul | 82 | 97 | 281±2 | 81 | 63 |
| 5 | B | 01-Jun | 41 | 12-Jul | 82 | 97 | 275±3 | 75 | 29 |
| 5 | C | 01-Jun | 41 | 12-Jul | 82 | 97 | 267±7 | 71 | 18 |
| 6 | A | 01-Jun | 41 | 12-Jul | 82 | 97 | 274±2 | 86 | 51 |
| 6 | B | 01-Jun | 41 | 12-Jul | 82 | 97 | 287±4 | 85 | 25 |
| 6 | C | 01-Jun | 41 | 12-Jul | 82 | 97 | 277±3 | 79 | 16 |

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

| Varieties used in crossing | Cans with stalks | Cans with tassels | Total stalks | Total tassels | Mean stalks per can | Mean tassels per can† | Mean pollen rating‡ | Mean days to flower§ |
|---|---|---|---|---|---|---|---|---|
| ---Number--- | | | | | | | | |
| 89 | 324 | 182 | 1369 | 526 | 4.23 ± 1.06 | 2.89 ± 1.40 | 5.19 ± 1.90 | 82.14 ± 14.36 |

† Based upon cans with tassels.

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

§ Days from photoperiod decline start date to flowering.

Table 3. Summary of 2014 crossing and seed production.

| Type of Cross | Crosses | Sum of Seed Production | Mean Seed Production Per Cross | Mean Seed Production Per Female Tassel | Mean Germination Per Gram Seed |
|---|---|---|---|---|---|
| ---Number--- | | | | | |
| Biparental | 270 | 81027 | 299±464 | 299±464 | 27±38 |
| Polycross | 14 | 5128 | 366±637 | 366±637 | 37±62 |
| Self | 8 | 2623 | 328±587 | 328±587 | 35±63 |
| Total | 292 | 88778 | 304±475 | 304±475 | 29±41 |

Table 4. Varietal flowering summary in 2014 in the photoperiod bays.

| Variety | Days of Constant Photoperiod | First Flower Date | Mean Days to Flower | Pollen Rating | Total Stalk Number | Total Flowers | Percent Flowering Stalks |
|---|---|---|---|---|---|---|---|
| CP1983-644 | 41 | 314 | 121 | 3 | 22 | 1 | 5 |
| HO1995-988 | 41±1 | . | . | . | 8 | . | . |
| HO2006-530 | 41 | . | . | . | 5 | . | . |
| HO2006-563 | 37 | 267 | 88±5 | 5±1 | 6 | 6 | 100 |
| HO2007-613 | 41±1 | 293 | 87±5 | 5±2 | 25 | 2 | 8 |
| HO2007-617 | 41 | . | . | . | 4 | . | . |
| HO2008-709 | 42 | 288 | 90±4 | 7 | 11 | 3 | 27 |
| HO2008-711 | 41 | . | . | . | 4 | . | . |
| HO2008-717 | 40±1 | . | . | . | 9 | . | . |
| HO2008-730 | 41 | 283 | 90 | 7 | 5 | 1 | 20 |
| HO2009-832 | 44 | 288 | 81±1 | 4±1 | 4 | 4 | 100 |
| HO2009-840 | 40±1 | 258 | 72±4 | 7±1 | 15 | 8 | 53 |
| HO2009-9401 | 37 | 251 | 66±1 | 8 | 6 | 6 | 100 |
| HO2009-9402 | 37 | 253 | 64 | 5 | 4 | 1 | 25 |
| HO2010-937 | 41 | 274 | 97±5 | 7 | 10 | 9 | 90 |
| HO2011-512 | 41 | 290 | 105±4 | 7 | 9 | 4 | 44 |
| HO2011-515 | 44 | 300 | 89 | 4 | 5 | 2 | 40 |
| HO2011-529 | 40±1 | . | . | . | 8 | . | . |
| HO2011-532 | 39±1 | 267 | 80±1 | 4 | 10 | 10 | 100 |
| HO2011-556 | 37 | 286 | 97 | 4 | 4 | 1 | 25 |
| HO2011-572 | 37 | . | . | . | 4 | . | . |
| HO2011-573 | 42±1 | . | . | . | 9 | . | . |
| HO2011-9403 | 37 | . | . | . | 5 | . | . |
| HO2011-9404 | 44 | . | . | . | 4 | . | . |
| HO2011-9405 | 44 | 288 | 84±4 | 5±1 | 5 | 3 | 60 |
| HO2011-9406 | 44 | 283 | 73±1 | 6±1 | 4 | 3 | 75 |
| HO2012-615 | 40±1 | 288 | 87±8 | 5±1 | 11 | 6 | 55 |
| HO2012-626 | 44 | . | . | . | 5 | . | . |
| HO2012-633 | 41±1 | . | . | . | 8 | . | . |
| HO2012-641 | 41±1 | . | . | . | 10 | . | . |
| HO2012-9407 | 37 | . | . | . | 4 | . | . |
| HO2012-9408 | 44 | . | . | . | 4 | . | . |
| HO2012-9409 | 44 | 274 | 70±5 | 6±1 | 4 | 4 | 100 |
| HO2012-9410 | 37 | 272 | 83 | 7 | 2 | 1 | 50 |
| HO2012-9411 | 37 | 279 | 104±9 | 3 | 5 | 3 | 60 |
| HOCP1985-845 | 41±1 | 281 | 95±4 | 6±1 | 19 | 5 | 26 |
| HOCP1991-552 | 41±1 | 260 | 75±6 | 4 | 10 | 8 | 80 |
| HOCP1991-553 | 44 | . | . | . | 1 | . | . |
| HOCP1991-554 | 44 | 295 | 84 | 3 | 1 | 1 | 100 |
| HOCP1992-618 | 40±1 | 269 | 92±4 | 4 | 24 | 11 | 46 |
| HOCP1992-624 | 42±1 | 260 | 77±2 | 6 | 23 | 19 | 83 |
| HOCP1995-951 | 40±1 | 260 | 91±7 | 7 | 12 | 8 | 67 |
| HOCP1996-540 | 41±1 | 274 | 89±3 | 4 | 28 | 8 | 29 |
| HOCP1996-561 | 42±1 | 274 | 85±2 | 4 | 16 | 9 | 56 |
| HOCP1997-609 | 39±1 | 265 | 79±2 | 3 | 10 | 5 | 50 |
| HOCP2000-950 | 41±1 | 269 | 87±4 | 8 | 19 | 11 | 58 |

Table 4. Continued

| Variety | Days of Constant Photoperiod | First Flower Date | Mean Days To Flower | Pollen Rating | Total Stalk Number | Total Flowers | Percent Flowering Stalks |
|---|---|---|---|---|---|---|---|
| HOCP2001-517 | 41±1 | 281 | 85±3 | 6±1 | 25 | 7 | 28 |
| HOCP2001-523 | 43 | . | . | . | 15 | . | . |
| HOCP2002-618 | 40±1 | 272 | 88±7 | 4±1 | 11 | 4 | 36 |
| HOCP2004-838 | 42±1 | 253 | 76±5 | 4 | 20 | 11 | 55 |
| HOCP2004-847 | 40±1 | 274 | 94±3 | 8 | 19 | 5 | 26 |
| HOCP2005-902 | 41 | 290 | 105±6 | 4±1 | 6 | 3 | 50 |
| HOCP2009-800 | 44 | . | . | . | 4 | . | . |
| HOCP2009-804 | 38 | 309 | 120 | 4 | 16 | 1 | 6 |
| HOCP2009-814 | 39±1 | 269 | 95±13 | 4±1 | 8 | 3 | 38 |
| HOCP2009-846 | 44 | . | . | . | 4 | . | . |
| HOCP2011-504 | 42±1 | 255 | 64±1 | 4 | 7 | 7 | 100 |
| HOCP2011-516 | 44 | 288 | 85±5 | 4±1 | 3 | 3 | 100 |
| HOCP2011-548 | 39±1 | 265 | 72 | 4 | 7 | 2 | 29 |
| HOCP2011-576 | 41 | . | . | . | 4 | . | . |
| L1994-426 | 41±1 | 274 | 81 | 6 | 16 | 2 | 13 |
| L1994-428 | 44 | . | . | . | 5 | . | . |
| L1994-433 | 37 | 314 | 125 | 7 | 6 | 2 | 33 |
| L1997-128 | 41±1 | 265 | 77±3 | 8 | 23 | 11 | 48 |
| L1998-207 | 43 | 295 | 89±4 | 7 | 11 | 3 | 27 |
| L1998-209 | 40±1 | 260 | 82±8 | 6±2 | 11 | 3 | 27 |
| L1999-226 | 41 | 265 | 85±2 | 3 | 42 | 25 | 60 |
| L1999-233 | 40±1 | 251 | 76±5 | 4 | 24 | 15 | 63 |
| L2001-283 | 41 | 283 | 97±5 | 6 | 28 | 4 | 14 |
| L2001-299 | 40 | 265 | 80±2 | 5 | 42 | 25 | 60 |
| L2001-315 | 41 | . | . | . | 8 | . | . |
| L2003-371 | 41±1 | . | . | . | 15 | . | . |
| L2005-448 | 40±1 | 253 | 72±2 | 4 | 9 | 8 | 89 |
| L2005-457 | 41±1 | 251 | 69±3 | 7 | 21 | 17 | 81 |
| L2006-001 | 41±1 | 274 | 89±2 | 4 | 31 | 14 | 45 |
| L2006-038 | 39±1 | 260 | 80±6 | 5±1 | 15 | 4 | 27 |
| L2006-040 | 41±1 | 281 | 79±5 | 6±1 | 20 | 3 | 15 |
| L2007-057 | 39±1 | 248 | 66±3 | 4 | 14 | 9 | 64 |
| L2007-068 | 44 | . | . | . | 5 | . | . |
| L2008-088 | 44 | . | . | . | 2 | . | . |
| L2008-090 | 40±1 | 262 | 76±1 | 4 | 31 | 25 | 81 |
| L2009-099 | 41±1 | 276 | 89±7 | 4 | 22 | 8 | 36 |
| L2009-112 | 41±1 | . | . | . | 21 | . | . |
| L2009-117 | 44 | . | . | . | 5 | . | . |
| L2009-123 | 41±1 | 260 | 71±2 | 7 | 10 | 9 | 90 |
| L2009-125 | 40±1 | . | . | . | 9 | . | . |
| L2009-131 | 37 | . | . | . | 9 | . | . |
| L2011-168 | 40±1 | 274 | 78±3 | 7±1 | 7 | 5 | 71 |
| L2011-172 | 37 | 272 | 86±2 | 3±1 | 6 | 5 | 83 |
| L2011-178 | 37 | . | . | . | 4 | . | . |
| L2011-183 | 39±1 | 274 | 95±8 | 6±1 | 9 | 5 | 56 |
| L2011-187 | 41±1 | 267 | 85±3 | 5±1 | 10 | 5 | 50 |
| L2011-191 | 41±1 | 253 | 69±4 | 3 | 10 | 5 | 50 |

Table 4. Continued

| Variety | Days of Constant Photoperiod | First Flower Date | Mean Days To Flower | Pollen Rating | Total Stalk Number | Total Flowers | Percent Flowering Stalks |
|---|---|---|---|---|---|---|---|
| L2012-193 | 37 | . | . | . | 4 | . | . |
| L2012-197 | 44 | 279 | 80±6 | 5±1 | 5 | 5 | 100 |
| L2012-198 | 37 | . | . | . | 5 | . | . |
| L2012-199 | 44 | . | . | . | 3 | . | . |
| L2012-201 | 41 | . | . | . | 5 | . | . |
| L2012-202 | 38±1 | 260 | 79±6 | 8 | 13 | 9 | 69 |
| L2012-210 | 44 | . | . | . | 2 | . | . |
| L2012-216 | 37 | 255 | 66 | 7 | 4 | 1 | 25 |
| L2012-218 | 37 | 286 | 101±2 | 4 | 3 | 3 | 100 |
| L2012-223 | 41 | . | . | . | 5 | . | . |
| L2012-227 | 43±1 | 274 | 84±2 | 4 | 4 | 4 | 100 |
| L2012-229 | 37 | . | . | . | 3 | . | . |
| L2012-230 | 44 | . | . | . | 3 | . | . |
| L2012-232 | 41 | 253 | 60 | 3 | 3 | 1 | 33 |
| L2013-234 | 39±1 | 260 | 69±1 | 6±1 | 10 | 3 | 30 |
| L2013-235 | 37 | . | . | . | 2 | . | . |
| L2013-236 | 37 | . | . | . | 3 | . | . |
| L2013-237 | 42±1 | 251 | 70±2 | 8 | 6 | 6 | 100 |
| L2013-238 | 39±1 | . | . | . | 7 | . | . |
| L2013-239 | 43±1 | 241 | 59±4 | 7 | 6 | 6 | 100 |
| L2013-240 | 40±1 | . | . | . | 7 | . | . |
| L2013-241 | 41 | 276 | 83 | 7 | 3 | 1 | 33 |
| L2013-242 | 41 | . | . | . | 4 | . | . |
| L2013-243 | 42±1 | 279 | 81±6 | 4 | 7 | 2 | 29 |
| L2013-244 | 41 | 265 | 90±5 | 7 | 6 | 6 | 100 |
| L2013-245 | 44 | 300 | 94±3 | 7±1 | 7 | 4 | 57 |
| L2013-246 | 42 | 295 | 111±3 | 7 | 11 | 4 | 36 |
| L2013-247 | 37 | 293 | 104 | 4 | 3 | 1 | 33 |
| L2013-248 | 42±1 | 279 | 89±2 | 4 | 6 | 5 | 83 |
| L2013-249 | 39±1 | . | . | . | 9 | . | . |
| L2013-250 | 44 | . | . | . | 4 | . | . |
| L2013-251 | 42 | 260 | 77±4 | 4 | 12 | 8 | 67 |
| L2013-252 | 44 | 276 | 65 | 8 | 3 | 1 | 33 |
| L2013-253 | 39±1 | 269 | 82±2 | 8±1 | 8 | 2 | 25 |
| L2013-254 | 42±1 | 309 | 101±1 | 7 | 7 | 5 | 71 |
| L2013-255 | 44 | . | . | . | 3 | . | . |
| L2013-256 | 44 | 295 | 84 | 7 | 5 | 1 | 20 |
| L2013-258 | 39±1 | . | . | . | 9 | . | . |
| L2013-259 | 37 | . | . | . | 3 | . | . |
| L2013-260 | 44 | 272 | 62±1 | 7 | 3 | 2 | 67 |
| L2013-261 | 41 | 276 | 91±7 | 3 | 5 | 3 | 60 |
| L2013-262 | 41 | . | . | . | 3 | . | . |
| L2013-263 | 39±1 | . | . | . | 7 | . | . |
| LCP1981-010 | 42±1 | 281 | 78±4 | 5±1 | 12 | 7 | 58 |
| LCP1985-384 | 41±1 | 276 | 88±2 | 4 | 32 | 12 | 38 |
| LCP1986-454 | 42±1 | . | . | . | 7 | . | . |
| N27 | 41 | 265 | 84±8 | 4±1 | 10 | 3 | 30 |
| US2001-040 | 39±1 | . | . | . | 6 | . | . |

Table 5. Crosses and seed made in 2014

| Cross | Female | Male | Seed |
|---|---|---|---|
| XL14-001 | L13-239 | L13-239 | 28 |
| XL14-002 | L13-239 | L07-057 | 1242 |
| XL14-003 | HO09-9401 | L99-233 | 1017 |
| XL14-004 | L13-239 | L05-457 | 18 |
| XL14-005 | L07-057 | L99-233 | 750 |
| XL14-006 | HO09-9401 | HOCP04-838 | 815 |
| XL14-007 | L13-237 | HOCP04-838 | 422 |
| XL14-008 | L12-232* | HOCP04-838 | 1270 |
| XL14-009 | HO09-9401 | L11-191 | 359 |
| XL14-010 | HO09-9402 | L11-191 | 1826 |
| XL14-011 | L05-448* | L11-191 | 749 |
| XL14-012 | L99-233* | L11-191 | 0 |
| XL14-013 | HO09-9401 | HOCP11-504 | 140 |
| XL14-014 | L12-216 | L11-191 | 19 |
| XL14-015 | L05-457 | L11-191 | 181 |
| XL14-016 | HOCP04-838 | L07-057 | 553 |
| XL14-017 | L05-457 | L07-057 | 216 |
| XL14-018 | L05-457 | HOCP11-504 | 2242 |
| XL14-019 | HO09-840 | HOCP11-504 | 0 |
| XL14-020 | HO09-840 | L99-233 | 0 |
| XL14-021 | L05-457 | L99-233 | 2809 |
| XL14-022 | HO09-9401 | L99-233 | 229 |
| XL14-023 | L05-457 | HO09-840 | 193 |
| XL14-024 | HOCP92-624 | HOCP91-552 | 548 |
| XL14-025 | L12-202 | HOCP91-552 | 29 |
| XL14-026 | HO09-9401 | HOCP91-552 | 637 |
| XL14-027 | HOCP91-552 | HOCP91-552 | 1151 |
| XL14-028 | L13-234 | L98-209 | 1363 |
| XL14-029 | L12-202 | L98-209 | 190 |
| XL14-030 | HOCP04-838 | HOCP11-504 | 281 |
| XL14-031 | L12-202 | HOCP11-504 | 330 |
| XL14-032 | HO09-840 | L07-057 | 149 |
| XL14-033 | HOCP92-624 | L07-057 | 1065 |
| XL14-034 | L12-202 | L07-057 | 0 |
| XL14-035 | HOCP95-951 | L13-251 | 284 |
| XL14-036 | L06-038 | L13-251 | 0 |
| XL14-037 | L09-123 | L05-448 | 2302 |
| XL14-038 | HOCP92-624 | L99-233 | 1340 |
| XL14-039 | L09-123 | L99-233 | 927 |
| XL14-040 | L12-202 | L99-233 | 102 |
| XL14-041 | L12-202 | L08-090 | 0 |
| XL14-042 | L09-123 | L08-090 | 212 |
| XL14-043 | L13-234 | L08-090 | 304 |
| XL14-044 | HOCP92-624 | L13-251 | 149 |
| XL14-045 | L08-090* | L01-299 | 31 |
| XL14-046 | HO09-840 | L08-090 | 0 |
| XL14-047 | N27* | L08-090 | 14 |
| XL14-048 | L09-123 | HOCP11-548 | 1288 |
| XL14-049 | L05-448 | HOCP11-548 | 724 |
| XL14-050 | L13-244 | L13-234 | 0 |
| XL14-051 | L05-457 | L99-226 | 539 |
| XL14-052 | L97-128 | L99-226 | 46 |
| XL14-053 | HOCP97-609* | L13-251 | 168 |
| XL14-054 | L01-299* | L13-251 | 7 |
| XL14-055 | HOCP95-951 | L01-299 | 589 |
| XL14-056 | L11-187 | L01-299 | 14 |
| XL14-057 | L99-226* | L01-299 | 31 |
| XL14-058 | L09-123 | HOCP04-838 | 1709 |
| XL14-059 | HO11-532* | HOCP04-838 | 656 |
| XL14-060 | HO11-532* | L08-090 | 20 |
| XL14-061 | L05-457 | L08-090 | 13 |
| XL14-062 | HOCP97-609* | L08-090 | 89 |
| XL14-063 | L06-038* | HO06-563 | 98 |
| XL14-064 | HOCP97-609* | HO06-563 | 1066 |
| XL14-065 | L13-239 | HO11-532 | 430 |
| XL14-066 | HOCP00-950 | HO11-532 | 56 |
| XL14-067 | L13-253 | HOCP09-814 | 12 |
| XL14-068 | L13-239 | L08-090 | 26 |
| XL14-069 | HO11-532* | L05-448 | 23 |
| XL14-070 | HOCP92-618 | 14P1 | 0 |
| XL14-071 | L08-090 | 14P1 | 27 |
| XL14-072 | HOCP91-552* | L99-226 | 622 |
| XL14-073 | HO06-563 | L99-226 | 457 |
| XL14-074 | L12-202 | L99-226 | 12 |
| XL14-075 | HO06-563 | L01-299 | 193 |
| XL14-076 | L97-128 | L01-299 | 15 |
| XL14-077 | L05-457 | L01-299 | 197 |
| XL14-078 | L13-260 | HO11-532 | 64 |
| XL14-079 | L08-090* | HO11-532 | 216 |
| XL14-080 | HOCP02-618* | HO11-532 | 42 |
| XL14-081 | L99-233* | L01-299 | 530 |
| XL14-082 | L13-253 | L07-057 | 66 |
| XL14-083 | HOCP02-618* | L07-057 | 12 |
| XL14-084 | L13-244 | HOCP92-618 | 201 |
| XL14-085 | L11-172* | HOCP92-618 | 206 |
| XL14-086 | L11-187* | HOCP92-618 | 41 |
| XL14-087 | HO12-9410 | HOCP92-618 | 488 |
| XL14-088 | HO11-532* | HOCP04-838 | 12 |
| XL14-089 | HOCP11-504* | HOCP04-838 | 28 |
| XL14-090 | L99-233 | L01-299 | 160 |
| XL14-091 | N27* | L99-226 | 458 |
| XL14-092 | L05-457 | L99-226 | 856 |
| XL14-093 | HO09-840 | L99-226 | 16 |
| XL14-094 | HOCP09-814 | HOCP11-504 | 44 |
| XL14-095 | HOCP92-618* | HOCP11-504 | 77 |
| XL14-096 | HO12-9409 | HOCP11-504 | 6 |
| XL14-097 | L11-168 | HOCP92-624 | 181 |
| XL14-098 | HOCP97-609 | HOCP92-624 | 152 |

Table 5. Continued

| Cross | Female | Male | Seed |
|---|---|---|---|
| XL14-099 | L13-251* | HOCP92-624 | 565 |
| XL14-100 | L09-123 | HOCP96-540 | 1253 |
| XL14-101 | HOCP91-552* | HOCP96-540 | 259 |
| XL14-102 | L11-172* | HOCP96-540 | 917 |
| XL14-103 | HO10-937 | L06-001 | 472 |
| XL14-104 | L13-260 | L06-001 | 222 |
| XL14-105 | HO12-9409 | L06-001 | 29 |
| XL14-106 | L94-426 | L08-090 | 34 |
| XL14-107 | HO10-937 | L08-090 | 99 |
| XL14-108 | HOCP96-561* | L08-090 | 13 |
| XL14-109 | HOCP04-847 | L11-172 | 96 |
| XL14-110 | L11-183 | L11-172 | 0 |
| XL14-111 | HO11-532* | L11-172 | 722 |
| XL14-112 | L98-209 | L12-227 | 0 |
| XL14-113 | L94-426 | HOCP04-838 | 58 |
| XL14-114 | L13-252 | LCP85-384 | 346 |
| XL14-115 | L13-241 | LCP85-384 | 1705 |
| XL14-116 | HO10-937 | L08-090 | 230 |
| XL14-117 | L05-457 | L09-099 | 911 |
| XL14-118 | L09-123 | L07-057 | 198 |
| XL14-119 | L11-168 | L11-191 | 952 |
| XL14-120 | L11-183 | L13-261 | 344 |
| XL14-121 | HOCP02-618 | L99-233 | 665 |
| XL14-122 | L99-233 | L99-233 | 1394 |
| XL14-123 | L05-457 | L99-226 | 740 |
| XL14-124 | L12-197 | L99-226 | 832 |
| XL14-125 | HO10-937 | HOCP96-540 | 307 |
| XL14-126 | L13-244 | HOCP96-561 | 12 |
| XL14-127 | HOCP91-552* | L13-248 | 14 |
| XL14-128 | HOCP92-624* | L13-248 | 344 |
| XL14-129 | L13-243* | L13-248 | 35 |
| XL14-130 | L13-261 | 14P2 | 2308 |
| XL14-131 | LCP85-384 | 14P2 | 1056 |
| XL14-132 | HO12-9409 | 14P2 | 11 |
| XL14-133 | HO12-9411 | 14P2 | 496 |
| XL14-134 | L97-128 | L06-001 | 86 |
| XL14-135 | HOCP01-517 | L06-001 | 353 |
| XL14-136 | L97-128 | L99-233 | 29 |
| XL14-137 | LCP81-010 | L99-233 | 234 |
| XL14-138 | HOCP92-624 | L99-233 | 56 |
| XL14-139 | HOCP85-845 | L08-090 | 89 |
| XL14-140 | L06-040 | L08-090 | 0 |
| XL14-141 | HOCP95-951 | HOCP92-618 | 167 |
| XL14-142 | HOCP92-624 | L01-299 | 60 |
| XL14-143 | LCP81-010 | L11-172 | 434 |
| XL14-144 | L97-128 | HOCP92-618 | 219 |
| XL14-145 | HOCP00-950 | L01-299 | 7 |
| XL14-146 | HOCP95-951 | L01-299 | 129 |
| XL14-147 | L13-237 | L01-299 | 423 |
| XL14-148 | HO08-730 | L05-448 | 117 |
| XL14-149 | L09-123 | L05-448 | 231 |
| XL14-150 | L01-283 | L08-090 | 115 |
| XL14-151 | HO11-9406 | L08-090 | 105 |
| XL14-152 | L09-123 | L99-226 | 12 |
| XL14-153 | HOCP85-845 | HOCP92-624 | 41 |
| XL14-154 | HOCP92-624 | HOCP92-624 | 0 |
| XL14-155 | HOCP04-847 | L11-183 | 0 |
| XL14-156 | L06-038 | L11-183 | 0 |
| XL14-157 | L12-197 | L11-183 | 76 |
| XL14-158 | L13-237 | L12-227 | 38 |
| XL14-159 | L97-128 | L01-299 | 8 |
| XL14-160 | HO11-532* | L08-090 | 53 |
| XL14-161 | L09-099* | L08-090 | 45 |
| XL14-162 | LCP85-384* | LCP81-010 | 31 |
| XL14-163 | HOCP91-552 | L05-448 | 0 |
| XL14-164 | L13-251* | L05-448 | 221 |
| XL14-165 | L06-040 | HOCP92-624 | 9 |
| XL14-166 | L11-168 | HOCP92-624 | 0 |
| XL14-167 | L97-128 | HOCP96-540 | 12 |
| XL14-168 | HOCP01-517 | L01-299 | 1365 |
| XL14-169 | L08-090* | L01-299 | 24 |
| XL14-170 | L13-239 | L01-299 | 689 |
| XL14-171 | L13-237 | L01-299 | 394 |
| XL14-172 | L01-299 | L01-299 | 0 |
| XL14-173 | L01-283 | L99-226 | 444 |
| XL14-174 | L12-218* | L99-226 | 956 |
| XL14-175 | L13-244 | L99-226 | 12 |
| XL14-176 | L12-197 | L99-226 | 444 |
| XL14-177 | L05-457 | L06-001 | 0 |
| XL14-178 | L98-209 | HO11-556 | 350 |
| XL14-179 | HO06-563* | L08-090 | 0 |
| XL14-180 | HO11-9406* | L08-090 | 0 |
| XL14-181 | L11-168* | L08-090 | 8 |
| XL14-182 | HOCP85-845* | L08-090 | 9 |
| XL14-183 | L09-099* | HOCP04-838 | 301 |
| XL14-184 | L06-040* | HOCP04-838 | 0 |
| XL14-185 | L13-248 | 14P3 | 10 |
| XL14-186 | L13-243 | 14P3 | 20 |
| XL14-187 | L06-038 | 14P3 | 55 |
| XL14-188 | HOCP91-552 | 14P3 | 504 |
| XL14-189 | HOCP92-624 | LCP85-384 | 1852 |
| XL14-190 | L01-283 | HO12-615 | 540 |
| XL14-191 | L11-168 | HO12-615 | 164 |
| XL14-192 | HO11-9405* | LCP85-384 | 87 |
| XL14-193 | HOCP96-561* | LCP85-384 | 0 |
| XL14-194 | L13-248* | LCP85-384 | 7 |
| XL14-195 | L99-226 | LCP85-384 | 0 |
| XL14-196 | HOCP00-950 | L01-299 | 0 |

Table 5. Continued

| Cross | Female | Male | Seed |
|---|---|---|---|
| XL14-197 | HOCP00-950 | HOCP01-517 | 43 |
| XL14-198 | HOCP04-847 | HOCP01-517 | 27 |
| XL14-199 | HOCP00-950 | L99-226 | 126 |
| XL14-200 | HO08-709 | L99-226 | 298 |
| XL14-201 | HO09-832 | HOCP11-516 | 89 |
| XL14-202 | HOCP00-950 | L06-001 | 52 |
| XL14-203 | HOCP04-847 | L99-226 | 20 |
| XL14-204 | L01-299 | L99-226 | 80 |
| XL14-205 | L12-218* | L99-226 | 0 |
| XL14-206 | HO12-9411* | L99-226 | 9 |
| XL14-207 | HO10-937 | L81-010 | 145 |
| XL14-208 | HO12-512 | L81-010 | 415 |
| XL14-209 | HOCP85-845 | L81-010 | 78 |
| XL14-210 | HO10-937 | L12-227 | 200 |
| XL14-211 | HOCP04-847 | HOCP05-902 | 0 |
| XL14-212 | L01-299 | HOCP05-902 | 110 |
| XL14-213 | HO12-615* | HOCP04-838 | 15 |
| XL14-214 | L13-251* | HOCP04-838 | 21 |
| XL14-215 | L13-244 | HO09-832 | 166 |
| XL14-216 | HOCP96-561* | HO09-832 | 218 |
| XL14-217 | L12-218* | HO09-832 | 0 |
| XL14-218 | L13-247* | HO09-832 | 18 |
| XL14-219 | HO12-615 | N27 | 59 |
| XL14-220 | HOCP95-951 | HOCP96-561 | 15 |
| XL14-221 | L01-299 | HOCP96-561 | 0 |
| XL14-222 | HO08-709 | HOCP96-561 | 0 |
| XL14-223 | HO12-615 | L11-187 | 89 |
| XL14-224 | HOCP95-951 | HOCP96-540 | 376 |
| XL14-225 | L01-299 | HOCP96-540 | 136 |
| XL14-226 | L12-202 | HO07-613 | 0 |
| XL14-227 | L13-246 | HOCP92-624 | 404 |
| XL14-228 | HO12-9409 | HOCP92-624 | 0 |
| XL14-229 | L11-187* | HOCP92-624 | 0 |
| XL14-230 | L97-128 | L99-226 | 16 |
| XL14-231 | L01-299 | L99-226 | 461 |
| XL14-232 | L98-207 | L99-226 | 836 |
| XL14-233 | HOCP92-618 | HOCP04-838 | 262 |
| XL14-234 | HO11-512 | HOCP91-552 | 36 |
| XL14-235 | HOCP05-902* | L13-251 | 0 |
| XL14-236 | HO11-9405* | HOCP11-516 | 46 |
| XL14-237 | HOCP01-517* | L12-197 | 0 |
| XL14-238 | LCP85-384* | L12-227 | 39 |
| XL14-239 | HOCP96-561* | L06-001 | 0 |
| XL14-240 | L01-299 | L06-001 | 181 |
| XL14-241 | LCO85-384* | L06-001 | 317 |
| XL14-242 | L06-001 | L06-001 | 0 |
| XL14-243 | HO11-512 | HOCP02-618 | 236 |
| XL14-244 | L13-261* | HOCP02-618 | 0 |
| XL14-245 | HOCP01-517 | L13-248 | 76 |
| XL14-246 | L98-207 | L11-191 | 190 |
| XL14-247 | HOCP00-950 | HOCP96-540 | 219 |
| XL14-248 | L12-202 | HO11-515 | 11 |
| XL14-249 | LCP85-384* | HO11-515 | 19 |
| XL14-250 | HO11-515 | HO11-515 | 51 |
| XL14-251 | L13-245 | HOCP91-552 | 0 |
| XL14-252 | L13-244 | L06-001 | 0 |
| XL14-253 | L01-299* | L09-099 | 0 |
| XL14-254 | L09-099* | L99-226 | 84 |
| XL14-255 | HOCP00-950 | L2006-001 | 624 |
| XL14-256 | HOCP85-845 | L2006-001 | 1988 |
| XL14-257 | HOCP92-624 | L2006-001 | 1523 |
| XL14-258 | L06-001 | L2006-001 | 0 |
| XL14-259 | HO07-613 | L2006-001 | 566 |
| XL14-260 | HO09-840 | L2006-001 | 1069 |
| XL14-261 | HO10-937 | L2006-001 | 628 |
| XL14-262 | HO11-9405 | L06-001 | 0 |
| XL14-263 | L13-246 | L09-099 | 36 |
| XL14-264 | HOCP92-624 | HOCP96-540 | 2392 |
| XL14-265 | HOCP00-950 | HOCP96-540 | 9 |
| XL14-266 | L01-283 | HOCP96-540 | 596 |
| XL14-267 | HO08-709 | 14P4 | 115 |
| XL14-268 | HOCP01-517 | 14P4 | 96 |
| XL14-269 | HOCP11-516 | 14P4 | 430 |
| XL14-270 | L13-245 | 14P4 | 0 |
| XL14-271 | L98-207 | LCP81-010 | 11 |
| XL14-272 | HOCP05-902 | L99-226 | 394 |
| XL14-273 | L13-246 | L99-226 | 272 |
| XL14-274 | HO11-512 | HOCP09-804 | 42 |
| XL14-275 | HOCP09-814 | HOCP96-561 | 0 |
| XL14-276 | L11-187 | L99-226 | 109 |
| XL14-277 | L13-254 | L99-226 | 490 |
| XL14-278 | HOCP95-951 | L09-099 | 45 |
| XL14-279 | L13-246 | HO12-9411 | 778 |
| XL14-280 | HO10-937 | CP83-644 | 0 |
| XL14-281 | LCP85-384 | CP83-644 | 38 |
| XL14-282 | L13-245 | CP83-644 | 370 |
| XL14-283 | HO10-937 | HOCP04-838 | 13 |
| XL14-284 | HO12-615 | HOCP04-838 | 0 |
| XL14-285 | L94-433 | HOCP04-838 | 305 |
| XL14-286 | L99-233 | HOCP04-838 | 83 |
| XL14-287 | L13-254 | HOCP96-540 | 171 |
| XL14-288 | L94-433 | HOCP96-540 | 392 |
| XL14-289 | HOCP92-618 | HOCP96-540 | 49 |
| XL14-290 | L99-233 | HOCP96-540 | 41 |
| XL14-291 | L13-254 | L12-197 | 25 |
| XL14-292 | L11-183 | L12-197 | 57 |

* Indicates emasculated flower

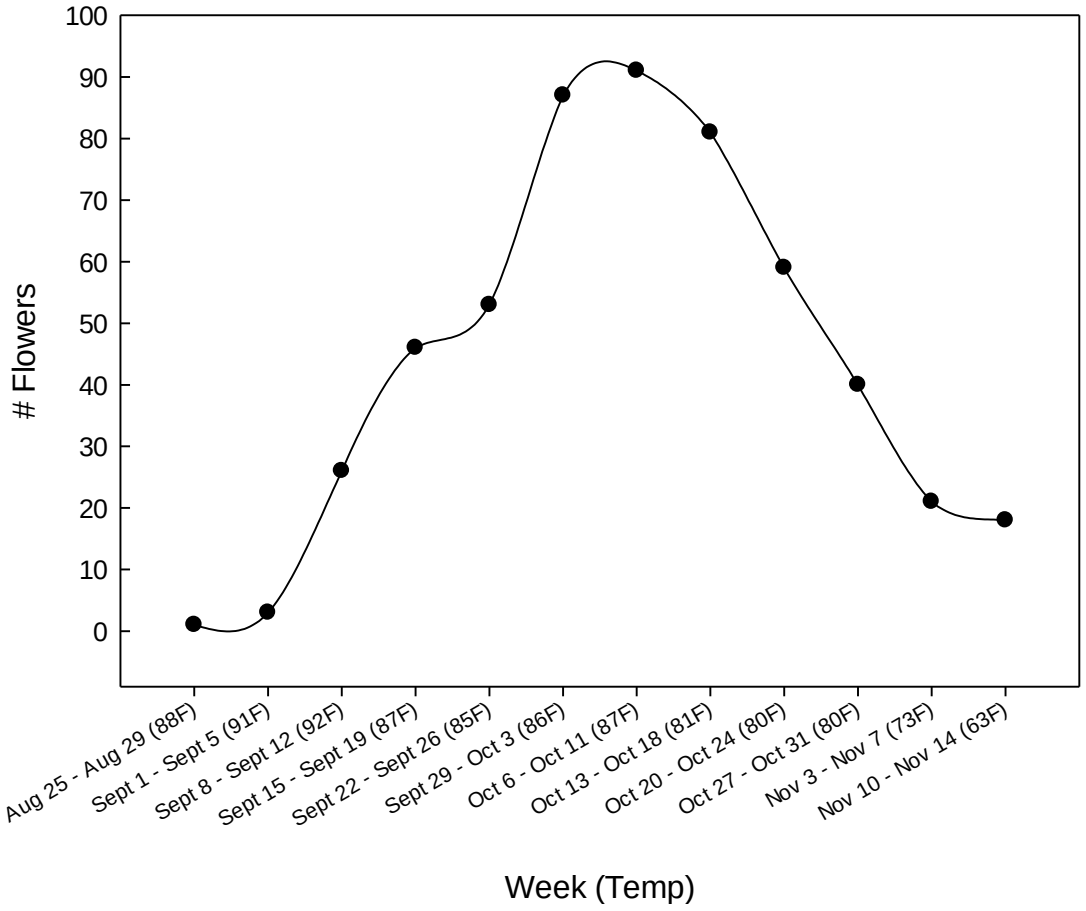


**Fig. 1.** Number of flowers produced during the 2014 crossing season. The average ambient temperature is reported for each week.

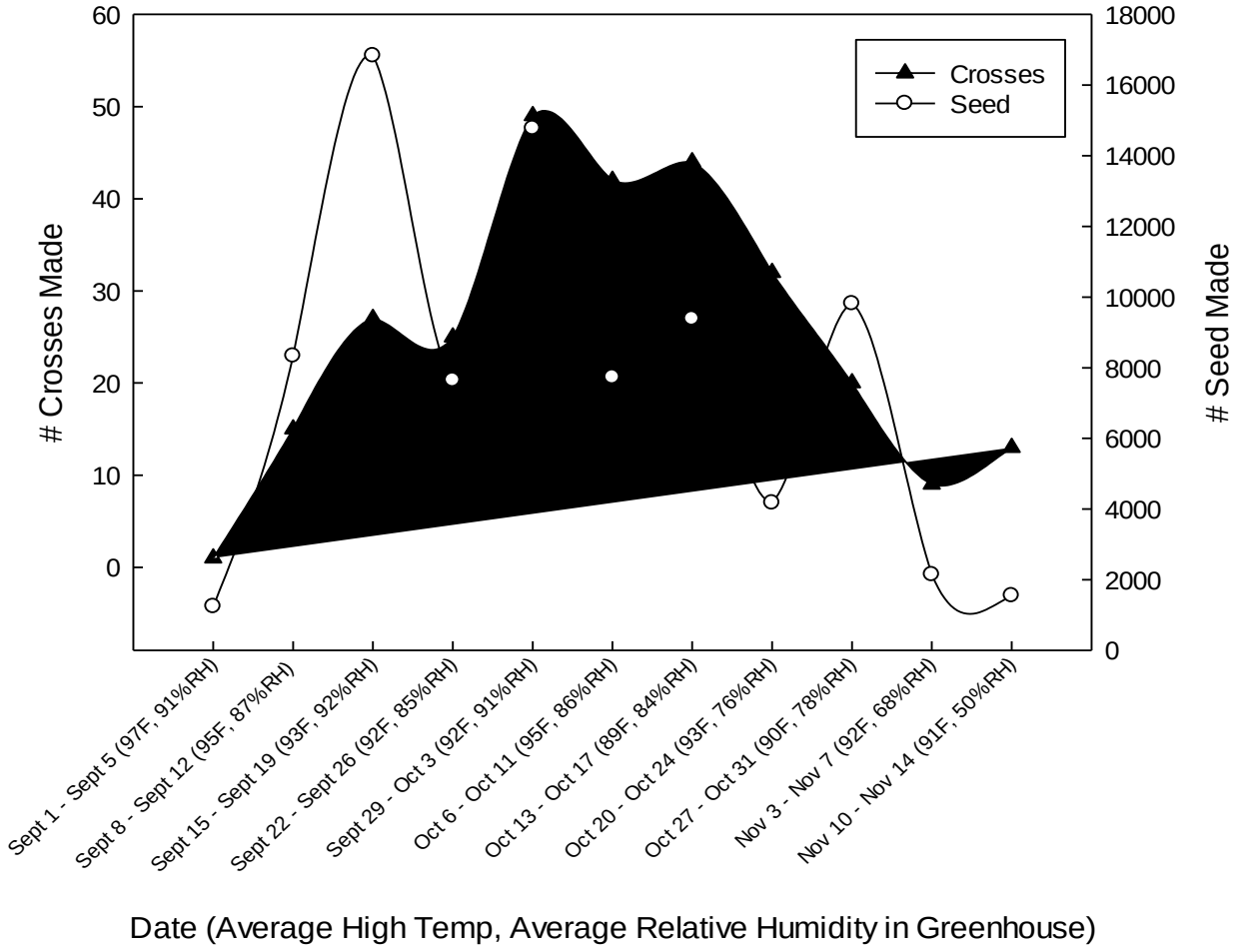


**Fig. 2.** Number of crosses made and number of seed made from those corresponding crosses in 2014. Average weekly high temperature and average weekly relative humidity readings were recorded inside the crossing greenhouse located in St. Gabriel, LA.

# SELECTIONS, ADVANCEMENTS, AND ASSIGNMENTS OF THE LSU AGCENTER'S SUGARCANE VARIETY DEVELOPMENT PROGRAM FOR 2014

Michael J. Pontif, Collins Kimbeng, Gert Hawkins, David Sexton, and Alphonse Coco
Sugar Research Station

*SUMMARY*

In the selection phase of the LSU AgCenter's Sugarcane Variety Development Program, superior clones are advanced through the single stool, first line, second line, and increase stages of the breeding program. In the first stubble crop of the second-line trials, those clones with acceptable breeding or commercial value are assigned a permanent variety number. A total of 76,217 seedlings from 155 crosses were planted in the field in the spring of 2014. The majority of these seedlings are progeny of bi-parental crosses among commercial and elite experimental varieties. In the fall of 2014, family selection was practiced on the 38,616 stubble seedlings surviving the winter. This selection resulted in the planting of 1,414 first-line trial plots. At the same time, superior clones were also selected and advanced through subsequent stages (461 to second line trials, 294 to the increase stage). Assignments of permanent "L14" numbers were given to the 33 best clones of the 2009 crossing series.

*PROCEDURES*

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

*RESULTS AND DISCUSSION*

A total of 76,217 seedlings from 155 crosses of the 2013 crossing series were planted to the field in the spring of 2014 (Table 1). Many of these seedlings were progeny of crosses among commercial and superior experimental varieties. In the fall of 2014, individual selection was practiced on the 38,616 stubble single stools of the 2012 crossing series that survived the winter. The 1,414 clones selected and advanced from the single stools were planted in 10-foot first-line trial plots. Dates of planting and harvesting of all plots in the selection phase of the program can be found in Table 2.

The 1,985 first-line trial plots of the 2011 crossing series were rated for cane yield and pest resistance in August of 2014 (Table 3). After screening for cane yield rating, acceptable clones were further evaluated for pest resistance (diseases and borer injury) stalk quality, and Brix (Table 3). This second stage of advancement was concluded with the planting of 461 clones in single row 16-foot second line trials plots.

Stalk counts were made on the 484 plant-cane second line trial plots of the 2010 crossing series in August 2013. Based on these counts and sucrose lab data collected in 2013, 294 clones

were planted in two single row 16-foot plots representing the increase stage of the program (Table 4). One replication was planted in light soil and the other in heavy soil. These clones will be candidates for assignment in 2015. Of the 120 candidates from the first stubble crop of the second line trial plots, the best 33 clones from the 2009 crossing series were assigned permanent "L14" numbers (Table 5). These newly assigned "L14" varieties were then planted in replicated nursery trials at three on station locations (Sugar Research Station, Iberia Research Station, USDA-ARS Ardoyne Farm).

The advancement summary of clones from crosses made in 2009 through 2013 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 2014 by the Louisiana, "L" Sugarcane Variety Development Program's personnel.

| Crossing series | Crosses | | Plants transplanted | Over-wintered plants | Advanced to | | | |
|---|---|---|---|---|---|---|---|---|
| | Progeny test | Selection program | | | 1st line | 2nd line | Increase | On-station Nurseries (L14 Assignments) |
| | | | number of clones | | | | | |
| X09 | 60 | 215 | 76,095 | 41,581 | 1,888 | 393 | 190 | 33 |
| X10 | 50 | 211 | 90,294 | 61,704 | 2,416 | 484 | 294 | |
| X11 | 58 | 166 | 75,703 | 45,543 | 1,985 | 461 | | |
| X12 | 40 | 170 | 78,747 | 38,616 | 1,414 | | | |
| X13 | -- | 155 | 76,217 | | | | | |

Table 2. Dates of seedling and line trials planted or harvested in 2014.

| Crossing Series | Test | Crop | Date Planted | Date Harvested |
|---|---|---|---|---|
| X13 | Seedlings | Planted | 4/23 – 4/28 | |
| X12 | Seedlings | First Stubble | 4/9 – 4/23 | 9/9 -9/22 |
| X12 | Progeny Test | First Stubble | 4/22 | 12/15 |
| X12 | First Line Trials | Planted | 9/11 | |
| X11 | First Line Trials | Plant-cane | 10/11/13 | 9/23/14 |
| X10 | First Line Trials | First Stubble | 9/21/12 | 12/10/14 |
| X11 | Second Line Trials | Planted | 9/24/14 | |
| X10 | Second Line Trials | Plant-cane | 9/27/13 | 10/22/14 |
| X09 | Second Line Trials | First Stubble | 10/12/12 | 10/8/14 |
| X08 | Second Line Trials | Second Stubble | 09/14/11 | 12/2/14 |
| X10 | Light Soil Increase | Planted | 10/23/14 | |
| X09 | Light Soil Increase | Plant-cane | 10/17/13 | 12/15/14 |
| X08 | Light Soil Increase | First Stubble | 10/30/12 | 12/3/14 |
| X07 | Light Soil Increase | Second Stubble | 10/25/11 | 11/11/14 |
| X10 | Heavy Soil Increase | Planted | 10/23/14 | |
| X09 | Heavy Soil Increase | Plant-cane | 10/17/13 | 12/3/14 |
| X08 | Heavy Soil Increase | First Stubble | 10/30/12 | 12/2/14 |
| X07 | Heavy Soil Increase | Second Stubble | 10/25/11 | 11/11/14 |

Table 3. Numbers of experimental clones dropped for identified faults in the 2011 crossing series first-line trials.

| | Fault | |
|---|---|---|
| Trait | Frequency | Percent |
| ---------- 1985 clones enter first round of evaluation ---------- | | |
| Initial Selection (Rating) | 766 | 38.6 |
| ---------- 1219 clones enter second round of evaluation ---------- | | |
| Pith | 58 | 2.92 |
| Smut | 15 | 0.76 |
| Rust | 13 | 0.65 |
| Tube | 34 | 1.71 |
| Other | 7 | 0.35 |
| ---------- 127 clones dropped ---------- | | |
| ----------1092 clones enter third round of evaluation ---------- | | |
| Brix | 631 | 31.79 |
| Clones advanced | 461 | 23.22 |

Table 4. Number of experimental clones dropped for identified faults in the 2010 crossing series of the plant-cane second line trial prior to advancement to the increase stage.

| | Fault | |
|---|---|---|
| Trait | Frequency | Percent |
| ---------- 484 clones enter first round of evaluation ---------- | | |
| Stalk count <75 per plot & observations | 122 | 25.21 |
| Lodged | 33 | 6.82 |
| Pith / Tube | 23 | 4.75 |
| Other | 12 | 2.48 |
| ---------- 190 clones dropped ---------- | | |
| Clones advanced to Increase stage | 294 | 60.74 |

Table 5. Yield data for the 2014 “L” assignments made in the first-stubble second line trials.

| Variety | Female | Male | Sugar Per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|---|---|
| HoCP96-540 | LCP86-454 | LCP85-384 | 5571 | 34.4 | 162 | 1.9 | 35393 | 10.5 |
| L99-226 | CP89-846 | LCP81-030 | 5034 | 28.4 | 173 | 2.18 | 25637 | 10.7 |
| L01-299 | L93-365 | LCP85-384 | 9304 | 48.9 | 189 | 2.13 | 45602 | 11.6 |
| L03-371 | CP83-644 | LCP82-089 | 8168 | 43.7 | 187 | 1.99 | 43787 | 9.8 |
| HoCP04-838 | HOCP85-845 | LCP85-384 | 4710 | 25.1 | 188 | 1.39 | 36981 | 11.6 |
| L14-264 | HOCP96-561 | L99-226 | 6339 | 32.1 | 197 | 1.97 | 32670 | 9.2 |
| L14-265 | HOCP04-847 | HOCP96-540 | 7101 | 38.3 | 185 | 1.4 | 54904 | 11.6 |
| L14-266 | L97-128 | HOCP01-517 | 6899 | 34.5 | 200 | 1.83 | 37661 | 10.4 |
| L14-267 | HOCP05-918 | L01-283 | 8510 | 38.7 | 220 | 1.86 | 41745 | 10.1 |
| L14-268 | L01-283 | HOCP02-610 | 6613 | 38.8 | 170 | 1.65 | 47190 | 7.2 |
| L14-269 | L01-283 | HOCP02-610 | 6531 | 35.8 | 183 | 1.86 | 38569 | 10.7 |
| L14-270 | HOCP00-950 | L99-226 | 5182 | 25.2 | 206 | 1.59 | 31763 | 10.8 |
| L14-271 | HOCP04-847 | HOCP96-540 | 7146 | 33.5 | 213 | 1.38 | 48551 | 13.3 |
| L14-272 | HOCP92-648 | L01-299 | 7735 | 47.6 | 162 | 2.47 | 38569 | 10.9 |
| L14-273 | L99-233 | HOCP96-540 | 5255 | 30.1 | 175 | 1.75 | 34485 | 11.4 |
| L14-274 | HOCP00-930 | HOCP96-540 | 7295 | 37 | 197 | 1.97 | 37661 | 10.1 |
| L14-275 | HOCP92-624 | L99-226 | 5908 | 28.8 | 205 | 1.82 | 31763 | 11.3 |
| L14-276 | HOCP92-648 | L01-299 | 5489 | 26.9 | 204 | 1.58 | 34031 | 11.7 |
| L14-277 | HOCP00-950 | 09P25 | 6910 | 40.8 | 169 | 1.78 | 45829 | 8.5 |
| L14-278 | L01-299 | 09P7 | 6186 | 30.4 | 204 | 1.84 | 33124 | 10.2 |
| L14-279 | L01-283 | L99-233 | 5862 | 32.9 | 178 | 1.41 | 46736 | 13.6 |
| L14-280 | HO05-961 | HOCP85-845 | 3613 | 20.2 | 179 | 1.57 | 25864 | 10.8 |
| L14-281 | HOCP04-838 | L01-283 | 3344 | 17.6 | 190 | 1.77 | 19965 | 12.1 |
| L14-282 | HO06-562 | L99-226 | 8530 | 46.2 | 185 | 1.85 | 49913 | 11.1 |
| L14-284 | L01-283 | 09P26 | 5511 | 29.7 | 186 | 2.15 | 27679 | 8.7 |
| L14-285 | HO05-961 | HOCP85-845 | 6522 | 29.6 | 220 | 1.77 | 33578 | 10.3 |
| L14-286 | HOCP04-838 | L01-283 | 7736 | 39.1 | 198 | 1.78 | 44014 | 10.3 |
| L14-287 | HOCP00-950 | L01-283 | 7815 | 40.1 | 195 | 1.94 | 41291 | 10.3 |
| L14-288 | HOCP04-838 | L01-283 | 7465 | 41.7 | 179 | 2.52 | 33124 | 9.7 |
| L14-289 | L05-448 | L01-283 | 9053 | 50.8 | 178 | 2.44 | 41745 | 11.8 |
| L14-290 | L01-283 | 09P26 | 3882 | 23 | 169 | 1.43 | 32216 | 10.4 |
| L14-291 | HO06-523 | L99-233 | 6220 | 32.6 | 191 | 1.87 | 34939 | 13.6 |
| L14-292 | L01-283 | L99-233 | 4774 | 26.8 | 178 | 2.36 | 22688 | 10 |
| L14-293 | L99-233 | L99-226 | 5505 | 29.1 | 189 | 1.83 | 31763 | 9.6 |
| L14-294 | L01-283 | L99-233 | 4139 | 25.1 | 165 | 1.03 | 49005 | 9.4 |
| L14-295 | CP83-644 | L99-226 | 9402 | 48.1 | 195 | 1.91 | 50366 | 10.9 |
| L14-296 | HO07-613 | L99-226 | 5413 | 27.3 | 198 | 1.42 | 38569 | 10.7 |
| L14-297 | L01-283 | 09P26 | 9029 | 44.7 | 202 | 2.53 | 35393 | 9.4 |

Table 6. Advancement summary of the crosses in the 2009 through 2012 series.

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| 2009 Crossing Series | | | | | | | | | | |
| CP83-644 | HO05-961 | 418 | 11 | 60 | 8 | 94 | 4 | 91 | 0 | 44 |
| CP83-644 | L01-283 | 118 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| CP83-644 | L01-283 | 477 | 58 | 99 | 21 | 98 | 13 | 98 | . | . |
| CP83-644 | L99-226 | 399 | 29 | 92 | 9 | 95 | 3 | 90 | 1 | 94 |
| HO01-564 | HOCP01-517 | 213 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO01-564 | L01-299 | 196 | 13 | 91 | 1 | 69 | 1 | 81 | 0 | 44 |
| HO01-564 | TUCCP77-042 | 442 | 7 | 52 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO05-961 | HOCP02-618 | 139 | 4 | 62 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO05-961 | HOCP85-845 | 270 | 8 | 63 | 5 | 92 | 3 | 93 | 2 | 98 |
| HO05-961 | L01-299 | 184 | 1 | 48 | 1 | 69 | 0 | 32 | 0 | 44 |
| HO05-961 | L99-226 | 177 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO05-961 | L99-226 | 429 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| HO06-523 | L99-233 | 545 | 25 | 76 | 6 | 78 | 4 | 89 | 1 | 92 |
| HO06-523 | LCP85-384 | 131 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-530 | HO05-961 | 184 | 6 | 65 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-530 | HO06-523 | 162 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-530 | L06-038 | 386 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-537 | L99-226 | 349 | 17 | 78 | 5 | 85 | 2 | 83 | 0 | 44 |
| HO06-537 | L99-233 | 388 | 20 | 79 | 5 | 82 | 1 | 69 | 0 | 44 |
| HO06-562 | L01-283 | 208 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-562 | L01-283 | 410 | 17 | 72 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-562 | L99-226 | 302 | 9 | 63 | 3 | 78 | 1 | 74 | 0 | 44 |
| HO06-562 | L99-226 | 286 | 16 | 82 | 7 | 96 | 3 | 92 | 1 | 96 |
| HO06-562 | L99-233 | 212 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-562 | L99-233 | 369 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-562 | LCP85-384 | 333 | 10 | 63 | 5 | 86 | 0 | 32 | 0 | 44 |
| HO06-562 | TUCCP77-042 | 389 | 2 | 48 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-563 | HOCP96-540 | 173 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-563 | HOCP96-540 | 146 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-563 | HOCP96-540 | 363 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO06-563 | L01-299 | 262 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO07-613 | L99-226 | 465 | 21 | 74 | 11 | 96 | 5 | 92 | 1 | 93 |
| HO07-617 | HO06-523 | 214 | 4 | 54 | 1 | 66 | 1 | 78 | 0 | 44 |
| HO95-988 | 09P21 | 343 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO95-988 | 09P24 | 122 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO95-988 | HOCP01-523 | 131 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO95-988 | HOCP96-540 | 294 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HO95-988 | L01-283 | 445 | 15 | 67 | 1 | 57 | 0 | 32 | 0 | 44 |
| HOCP00-930 | HOCP96-540 | 132 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-930 | HOCP96-540 | 441 | 9 | 55 | 5 | 79 | 3 | 87 | 1 | 93 |
| HOCP00-930 | HOCP96-540 | 235 | 20 | 93 | 1 | 63 | 0 | 32 | . | . |
| HOCP00-930 | US01-040 | 170 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | 09P25 | 740 | 27 | 69 | 4 | 69 | 3 | 75 | 1 | 89 |
| HOCP00-950 | HO06-562 | 514 | 9 | 53 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | HOCP96-540 | 1668 | 41 | 58 | 11 | 72 | 6 | 74 | 0 | 44 |
| HOCP00-950 | HOCP96-540 | 307 | 10 | 65 | 1 | 61 | 1 | 72 | 0 | 44 |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP00-950 | HOCP96-540 | 392 | 13 | 65 | 1 | 58 | 1 | 68 | 0 | 44 |
| HOCP00-950 | HOCP97-609 | 417 | 16 | 71 | 4 | 77 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L01-283 | 854 | 47 | 81 | 16 | 93 | 4 | 78 | 1 | 88 |
| HOCP00-950 | L01-299 | 1232 | 34 | 62 | 3 | 57 | 4 | 72 | 0 | 44 |
| HOCP00-950 | L01-299 | 637 | 74 | 97 | 10 | 88 | 4 | 85 | . | . |
| HOCP00-950 | L06-001 | 807 | 27 | 65 | 6 | 73 | 1 | 64 | 0 | 44 |
| HOCP00-950 | L06-001 | 247 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| HOCP00-950 | L06-038 | 396 | 1 | 47 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L06-038 | 218 | 9 | 72 | 3 | 83 | 2 | 91 | 0 | 44 |
| HOCP00-950 | L08-076 | 196 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L94-428 | 218 | 4 | 53 | 1 | 65 | 1 | 77 | 0 | 44 |
| HOCP00-950 | L94-432 | 360 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L99-226 | 361 | 8 | 56 | 1 | 60 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L99-226 | 132 | 8 | 86 | 2 | 87 | 2 | 95 | 1 | 99 |
| HOCP00-950 | L99-233 | 206 | 2 | 50 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | L99-233 | 199 | 5 | 58 | 0 | 27 | 0 | 32 | . | . |
| HOCP00-950 | LCP85-384 | 145 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | LCP85-384 | 201 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP00-950 | LCP86-454 | 375 | 18 | 77 | 7 | 93 | 2 | 81 | 0 | 44 |
| HOCP00-950 | US01-040 | 240 | 15 | 89 | 1 | 63 | 1 | 75 | . | . |
| HOCP01-523 | LCP85-384 | 174 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-*610 | L01-299 | 424 | 24 | 83 | 6 | 84 | 3 | 88 | 0 | 44 |
| HOCP02-610 | HO06-562 | 173 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | HOCP01-523 | 163 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | HOCP96-540 | 337 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | HOCP96-540 | 244 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | HOCP97-609 | 166 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | L06-001 | 217 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | L06-001 | 218 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-610 | L94-432 | 139 | 9 | 90 | 2 | 85 | 1 | 88 | 0 | 44 |
| HOCP02-610 | L99-233 | 573 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-618 | HOCP92-618 | 132 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-623 | HOCP96-540 | 639 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-623 | L01-299 | 320 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-623 | L08-089 | 194 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP02-623 | L94-428 | 152 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | HOCP05-904 | 206 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | HOCP07-615 | 382 | 3 | 49 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | HOCP91-552 | 221 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | HOCP96-540 | 500 | 3 | 49 | 1 | 56 | 1 | 67 | 0 | 44 |
| HOCP04-838 | L01-283 | 678 | 42 | 88 | 9 | 82 | 5 | 89 | 3 | 97 |
| HOCP04-838 | L01-299 | 508 | 11 | 56 | 3 | 70 | 1 | 67 | 0 | 44 |
| HOCP04-838 | L06-001 | 202 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L06-038 | 182 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L06-038 | 160 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L94-428 | 164 | 6 | 70 | 1 | 71 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L94-428 | 201 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP04-838 | L99-226 | 980 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L99-233 | 107 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L99-233 | 152 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-838 | L99-233 | 207 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP04-847 | HOCP96-540 | 222 | 10 | 74 | 7 | 97 | 6 | 98 | 2 | 99 |
| HOCP04-847 | L08-089 | 454 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP05-902 | L01-299 | 380 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP05-918 | L01-283 | 644 | 16 | 58 | 3 | 66 | 2 | 70 | 1 | 90 |
| HOCP05-918 | L01-299 | 369 | 7 | 54 | 1 | 59 | 0 | 32 | 0 | 44 |
| HOCP85-845 | HO95-988 | 523 | 33 | 89 | 6 | 79 | 3 | 84 | 0 | 44 |
| HOCP85-845 | HOCP97-609 | 182 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-618 | 09P24 | 131 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-618 | HOCP96-540 | 102 | 6 | 84 | 1 | 77 | 0 | 32 | 0 | 44 |
| HOCP92-618 | L01-299 | 638 | 60 | 95 | 12 | 93 | 10 | 95 | 0 | 44 |
| HOCP92-618 | L05-448 | 142 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | HO01-564 | 332 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | HOCP01-523 | 164 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | HOCP91-552 | 172 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | HOCP96-540 | 447 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | L01-283 | 1178 | 31 | 60 | 2 | 56 | 2 | 66 | 0 | 44 |
| HOCP92-624 | L01-283 | 1152 | 140 | 99 | 37 | 97 | 22 | 97 | . | . |
| HOCP92-624 | L01-299 | 419 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | L01-299 | 424 | 34 | 93 | 6 | 84 | 2 | 79 | 0 | 44 |
| HOCP92-624 | L01-299 | 436 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| HOCP92-624 | L06-001 | 131 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | L06-038 | 397 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | L08-089 | 1118 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| HOCP92-624 | L98-207 | 202 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP92-624 | L99-226 | 814 | 75 | 94 | 10 | 81 | 3 | 74 | 1 | 89 |
| HOCP92-624 | L99-233 | 552 | 27 | 78 | 4 | 73 | 0 | 32 | 0 | 44 |
| HOCP92-648 | HOCP96-540 | 544 | 33 | 86 | 4 | 73 | 1 | 66 | 0 | 44 |
| HOCP92-648 | L01-283 | 218 | 26 | 98 | 2 | 76 | 1 | 77 | 0 | 44 |
| HOCP92-648 | L01-299 | 436 | 25 | 83 | 7 | 90 | 5 | 93 | 2 | 97 |
| HOCP92-648 | L94-428 | 175 | 4 | 57 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP96-540 | 09P14 | 155 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP96-540 | L99-233 | 310 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP96-561 | HO05-961 | 145 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP96-561 | HOCP96-540 | 226 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP96-561 | L99-226 | 629 | 34 | 81 | 2 | 61 | 2 | 71 | 1 | 91 |
| HOCP96-561 | TUCCP77-042 | 365 | 2 | 48 | 0 | 27 | 0 | 32 | 0 | 44 |
| HOCP97-606 | L94-426 | 159 | 9 | 83 | 2 | 81 | 1 | 86 | 0 | 44 |
| L01-283 | 09P13 | 435 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L01-283 | 09P26 | 1033 | 62 | 85 | 19 | 92 | 13 | 94 | 3 | 95 |
| L01-283 | HO06-562 | 432 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L01-283 | HOCP02-610 | 1106 | 50 | 74 | 13 | 80 | 6 | 82 | 2 | 91 |
| L01-283 | HOCP02-610 | 237 | 27 | 96 | 13 | 99 | 9 | 99 | . | . |
| L01-283 | HOCP06-523 | 156 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |

Table 6. Continue

| | | | 1 st. Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| L01-283 | L08-076 | 405 | 25 | 88 | 2 | 68 | 2 | 80 | 0 | 44 |
| L01-283 | L94-426 | 602 | 16 | 61 | 3 | 68 | 1 | 66 | 0 | 44 |
| L01-283 | L94-428 | 670 | 28 | 74 | 4 | 71 | 1 | 65 | 0 | 44 |
| L01-283 | L94-428 | 472 | 23 | 78 | 7 | 86 | 4 | 90 | . | . |
| L01-283 | L99-226 | 313 | 5 | 52 | 1 | 61 | 1 | 71 | 0 | 44 |
| L01-283 | L99-233 | 788 | 48 | 86 | 18 | 96 | 13 | 96 | 2 | 94 |
| L01-283 | L99-233 | 693 | 32 | 76 | 11 | 89 | 5 | 88 | 1 | 90 |
| L01-283 | L99-233 | 435 | 27 | 88 | 7 | 90 | 7 | 96 | . | . |
| L01-299 | 09P1 | 603 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| L01-299 | 09P3 | 718 | 69 | 95 | 10 | 83 | 4 | 83 | . | . |
| L01-299 | 09P4 | 578 | 41 | 92 | 11 | 94 | 4 | 87 | . | . |
| L01-299 | 09P7 | 331 | 9 | 61 | 6 | 91 | 4 | 94 | 1 | 96 |
| L01-299 | TUCCP77-042 | 192 | 12 | 89 | 3 | 88 | 1 | 81 | 0 | 44 |
| L01-315 | HOCP96-540 | 416 | 12 | 62 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-448 | L01-283 | 386 | 20 | 79 | 3 | 75 | 1 | 69 | 1 | 95 |
| L05-457 | HO01-564 | 301 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | HOCP02-623 | 158 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | HOCP91-552 | 154 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | HOCP96-540 | 635 | 7 | 50 | 3 | 66 | 1 | 65 | 0 | 44 |
| L05-457 | L01-283 | 521 | 8 | 51 | 2 | 62 | 0 | 32 | 0 | 44 |
| L05-457 | L01-283 | 401 | 9 | 56 | 3 | 74 | 1 | 68 | 0 | 44 |
| L05-457 | L01-283 | 1206 | 137 | 96 | 40 | 98 | 26 | 97 | . | . |
| L05-457 | L01-299 | 188 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | L06-038 | 194 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | L99-226 | 236 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L05-457 | L99-226 | 239 | 14 | 84 | 3 | 81 | 1 | 76 | 0 | 44 |
| L05-457 | L99-233 | 197 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L06-001 | L01-299 | 74 | 3 | 72 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-078 | HO05-961 | 229 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-082 | HOCP00-610 | 188 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-082 | HOCP96-540 | 352 | 12 | 67 | 3 | 75 | 0 | 32 | 0 | 44 |
| L08-082 | HOCP96-540 | 394 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-082 | LCP86-454 | 106 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-090 | L01-299 | 413 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-094 | L01-299 | 472 | 6 | 51 | 2 | 63 | 0 | 32 | 0 | 44 |
| L08-094 | L01-299 | 217 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L08-095 | HOCP00-930 | 215 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L94-426 | L06-001 | 192 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L94-426 | L06-001 | 1156 | 79 | 92 | 11 | 77 | 7 | 85 | . | . |
| L94-426 | L99-226 | 380 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L94-426 | L99-226 | 229 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| L94-428 | L01-299 | 173 | 10 | 84 | 1 | 70 | 1 | 84 | 0 | 44 |
| L94-432 | L01-299 | 358 | 7 | 55 | 1 | 60 | 1 | 70 | 0 | 44 |
| L94-433 | HO05-961 | 184 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L94-433 | HOCP05-918 | 303 | 14 | 76 | 2 | 72 | 1 | 73 | 0 | 44 |
| L94-433 | L01-283 | 304 | 7 | 57 | 1 | 61 | 1 | 73 | 0 | 44 |
| L94-433 | L01-283 | 419 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| L94-433 | L99-226 | 396 | 14 | 68 | 1 | 58 | 0 | 32 | 0 | 44 |
| L97-128 | 09P17 | 197 | 7 | 69 | 3 | 87 | 1 | 80 | 0 | 44 |
| L97-128 | 09P3 | 144 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L97-128 | HO01-564 | 220 | 8 | 69 | 1 | 64 | 1 | 76 | 0 | 44 |
| L97-128 | HOCP01-517 | 205 | 13 | 89 | 1 | 68 | 1 | 79 | 1 | 98 |
| L97-128 | L01-283 | 182 | 11 | 85 | 4 | 95 | 1 | 82 | 0 | 44 |
| L97-128 | L01-299 | 165 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L97-128 | L06-038 | 247 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L97-128 | L98-207 | 227 | 6 | 60 | 0 | 27 | 0 | 32 | 0 | 44 |
| L97-128 | L98-207 | 249 | 27 | 96 | 16 | 99 | 12 | 99 | . | . |
| L97-128 | L99-226 | 91 | 3 | 65 | 0 | 27 | 0 | 32 | 0 | 44 |
| L97-128 | L99-233 | 501 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L98-207 | HO05-961 | 334 | 12 | 69 | 0 | 27 | 0 | 32 | 0 | 44 |
| L98-207 | HOCP01-517 | 344 | 12 | 68 | 0 | 27 | 0 | 32 | 0 | 44 |
| L98-207 | L01-299 | 121 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L98-207 | TUCCP77-042 | 434 | 11 | 58 | 2 | 65 | 2 | 77 | 0 | 44 |
| L98-209 | L99-226 | 912 | 44 | 77 | 7 | 74 | 1 | 64 | 0 | 44 |
| L98-209 | L99-226 | 485 | 42 | 94 | 8 | 90 | 3 | 85 | . | . |
| L99-226 | 09P4 | 392 | 0 | 23 | 0 | 27 | 0 | 32 | . | . |
| L99-233 | 09P2 | 409 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| L99-233 | HOCP96-540 | 506 | 59 | 97 | 8 | 88 | 5 | 92 | 1 | 92 |
| L99-233 | L08-093 | 180 | 1 | 49 | 0 | 27 | 0 | 32 | 0 | 44 |
| L99-233 | L99-226 | 944 | 35 | 70 | 11 | 80 | 6 | 86 | 1 | 88 |
| LCP81-010 | HOCP96-540 | 386 | 7 | 53 | 0 | 27 | 0 | 32 | 0 | 44 |
| LCP81-010 | L01-299 | 325 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| LCP81-010 | L06-001 | 310 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| LCP81-010 | L06-038 | 341 | 13 | 71 | 3 | 76 | 1 | 70 | 0 | 44 |
| LCP81-010 | L99-226 | 344 | 19 | 81 | 5 | 85 | 0 | 32 | 0 | 44 |
| LCP81-010 | L99-226 | 229 | 15 | 91 | 1 | 64 | 0 | 32 | 0 | 44 |
| LCP81-010 | L99-233 | 239 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| LCP85-384 | HOCP96-540 | 634 | 26 | 72 | 1 | 55 | 0 | 32 | 0 | 44 |
| LCP85-384 | HOCP96-540 | 324 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| LCP85-384 | L01-299 | 1253 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| N-27 | L94-428 | 204 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| N-27 | L94-432 | 211 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| N-27 | L99-226 | 213 | 0 | 23 | 0 | 27 | 0 | 32 | 0 | 44 |
| N-27 | L99-226 | 392 | 18 | 76 | 1 | 58 | 0 | 32 | 0 | 44 |
| TUCCP77-042 | L01-283 | 169 | 9 | 80 | 3 | 91 | 3 | 96 | 0 | 44 |
| US01-040 | HOCP97-609 | 216 | 26 | 98 | 1 | 65 | 0 | 32 | 0 | 44 |
| 2010 Crossing Series | | | | | | | | | | |
| CP83-644 | HOCP85-845 | 328 | 6 | 39 | 2 | 73 | 0 | 33 | . | . |
| CP83-644 | L94-428 | 521 | 7 | 34 | 0 | 30 | 0 | 33 | . | . |
| CP83-644 | L99-233 | 304 | 13 | 69 | 3 | 80 | 2 | 83 | . | . |
| HO06-530 | 10P26 | 212 | 6 | 49 | 0 | 30 | 0 | 33 | . | . |
| HO06-563 | 10P24 | 240 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HO07-613 | 10P21 | 149 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HO08-709 | 10P6 | 495 | 15 | 51 | 0 | 30 | 0 | 33 | . | . |
| HO95-988 | 10P7 | 484 | 30 | 80 | 0 | 30 | 0 | 33 | . | . |
| HO95-988 | 10P9 | 443 | 8 | 39 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | 10P18 | 928 | 26 | 49 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | HO95-988 | 166 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | L06-001 | 214 | 8 | 60 | 1 | 69 | 1 | 77 | . | . |
| HOCP00-930 | L06-038 | 189 | 27 | 98 | 1 | 70 | 0 | 33 | . | . |
| HOCP00-930 | L94-428 | 250 | 18 | 85 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | L98-207 | 228 | 3 | 34 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | L99-226 | 131 | 4 | 52 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-930 | L99-226 | 172 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-950 | 10P36 | 678 | 9 | 34 | 0 | 30 | 0 | 33 | . | . |
| HOCP00-950 | L99-226 | 2127 | 33 | 37 | 0 | 30 | 0 | 33 | . | . |
| HOCP01-517 | 10P12 | 242 | 7 | 50 | 4 | 87 | 2 | 85 | . | . |
| HOCP01-523 | L99-226 | 89 | 4 | 70 | 0 | 30 | 0 | 33 | . | . |
| HOCP02-618 | 10P12 | 178 | 16 | 90 | 0 | 30 | 0 | 33 | . | . |
| HOCP02-623 | 10P24 | 324 | 12 | 60 | 0 | 30 | 0 | 33 | . | . |
| HOCP02-623 | 10P29 | 674 | 3 | 21 | 0 | 30 | 0 | 33 | . | . |
| HOCP02-623 | 10P5 | 180 | 5 | 49 | 0 | 30 | 0 | 33 | . | . |
| HOCP04-838 | 10P2 | 117 | 2 | 37 | 1 | 78 | 1 | 86 | . | . |
| HOCP04-838 | HOCP02-623 | 170 | 6 | 56 | 0 | 30 | 0 | 33 | . | . |
| HOCP04-838 | L06-001 | 170 | 6 | 56 | 0 | 30 | 0 | 33 | . | . |
| HOCP05-902 | 10P34 | 440 | 15 | 54 | 0 | 30 | 0 | 33 | . | . |
| HOCP85-845 | 10P10 | 488 | 39 | 88 | 3 | 73 | 3 | 81 | . | . |
| HOCP85-845 | 10P11 | 650 | 6 | 28 | 0 | 30 | 0 | 33 | . | . |
| HOCP85-845 | 10P13 | 129 | 9 | 83 | 0 | 30 | 0 | 33 | . | . |
| HOCP85-845 | 10P28 | 415 | 18 | 69 | 0 | 30 | 0 | 33 | . | . |
| HOCP85-845 | L99-233 | 136 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | 10P12 | 421 | 5 | 32 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | 10P13 | 348 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | 10P14 | 210 | 5 | 44 | 5 | 94 | 4 | 96 | . | . |
| HOCP91-552 | 10P2 | 64 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | HOCP02-623 | 396 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | L05-448 | 181 | 9 | 74 | 1 | 71 | 0 | 33 | . | . |
| HOCP91-552 | L07-057 | 232 | 7 | 51 | 0 | 30 | 0 | 33 | . | . |
| HOCP91-552 | L09-107 | 694 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-618 | 10P12 | 173 | 6 | 56 | 1 | 71 | 1 | 79 | . | . |
| HOCP92-624 | 10P1 | 244 | 10 | 66 | 1 | 65 | 1 | 73 | . | . |
| HOCP92-624 | 10P11 | 1095 | 20 | 39 | 1 | 61 | 1 | 67 | . | . |
| HOCP92-624 | 10P21 | 304 | 13 | 69 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | 10P3 | 385 | 14 | 58 | 3 | 76 | 1 | 71 | . | . |
| HOCP92-624 | HO08-706 | 166 | 6 | 58 | 1 | 72 | 1 | 80 | . | . |
| HOCP92-624 | HO95-988 | 701 | 26 | 60 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | HOCP04-838 | 950 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | L01-299 | 153 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | L05-448 | 220 | 12 | 78 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | L05-448 | 489 | 20 | 66 | 0 | 30 | 0 | 33 | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP92-624 | L07-057 | 216 | 23 | 95 | 3 | 86 | 2 | 87 | . | . |
| HOCP92-624 | L07-057 | 385 | 18 | 71 | 7 | 89 | 3 | 84 | . | . |
| HOCP92-624 | L08-090 | 229 | 22 | 92 | 4 | 88 | 2 | 87 | . | . |
| HOCP92-624 | L09-106 | 205 | 24 | 96 | 7 | 98 | 3 | 94 | . | . |
| HOCP92-624 | L99-226 | 1199 | 87 | 85 | 24 | 91 | 15 | 92 | . | . |
| HOCP92-624 | L99-226 | 892 | 23 | 47 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | L99-233 | 369 | 19 | 75 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-624 | L99-233 | 551 | 23 | 67 | 10 | 89 | 6 | 91 | . | . |
| HOCP92-624 | LCP86-454 | 182 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP92-648 | L99-233 | 212 | 20 | 91 | 5 | 93 | 3 | 93 | . | . |
| HOCP95-951 | 10P5 | 413 | 5 | 32 | 3 | 75 | 2 | 78 | . | . |
| HOCP95-951 | 10P6 | 606 | 14 | 43 | 4 | 74 | 1 | 70 | . | . |
| HOCP96-540 | 10P10 | 893 | 12 | 34 | 0 | 30 | 0 | 33 | . | . |
| HOCP96-540 | 10P11 | 1117 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP96-540 | 10P12 | 188 | 10 | 77 | 2 | 82 | 0 | 33 | . | . |
| HOCP96-540 | 10P15 | 1217 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP96-540 | 10P17 | 206 | 8 | 64 | 4 | 90 | 2 | 88 | . | . |
| HOCP96-540 | 10P18 | 225 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOCP96-540 | 10P19 | 446 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| HOL08-720 | L99-233 | 87 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L01-283 | 10P29 | 478 | 4 | 26 | 0 | 30 | 0 | 33 | . | . |
| L01-283 | 10P30 | 635 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L01-283 | 10P32 | 1114 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L01-283 | 10P34 | 194 | 19 | 92 | 2 | 81 | 2 | 89 | . | . |
| L01-299 | 10P10 | 242 | 15 | 80 | 6 | 95 | 2 | 85 | . | . |
| L01-299 | 10P11 | 383 | 10 | 47 | 0 | 30 | 0 | 33 | . | . |
| L01-299 | 10P17 | 234 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L01-299 | 10P38 | 148 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L01-299 | 10P38 | 472 | 57 | 97 | 20 | 99 | 10 | 97 | . | . |
| L01-299 | 10P9 | 157 | 13 | 89 | 3 | 90 | 1 | 82 | . | . |
| L01-315 | 10P12 | 238 | 3 | 34 | 0 | 30 | 0 | 33 | . | . |
| L01-315 | L99-233 | 226 | 9 | 64 | 5 | 93 | 5 | 98 | . | . |
| L05-457 | 10P13 | 187 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L05-457 | 10P3 | 206 | 10 | 73 | 0 | 30 | 0 | 33 | . | . |
| L05-457 | HO95-988 | 192 | 10 | 76 | 2 | 82 | 1 | 79 | . | . |
| L05-457 | HOCP04-838 | 248 | 5 | 41 | 0 | 30 | 0 | 33 | . | . |
| L05-457 | L07-057 | 135 | 5 | 60 | 0 | 30 | 0 | 33 | . | . |
| L05-457 | L08-090 | 243 | 14 | 79 | 2 | 77 | 1 | 73 | . | . |
| L05-457 | L09-106 | 230 | 25 | 96 | 0 | 30 | 0 | 33 | . | . |
| L05-457 | L99-226 | 516 | 27 | 76 | 2 | 64 | 0 | 33 | . | . |
| L05-457 | L99-233 | 210 | 9 | 69 | 2 | 79 | 1 | 78 | . | . |
| L06-001 | 10P17 | 138 | 7 | 75 | 1 | 75 | 1 | 84 | . | . |
| L06-001 | L99-226 | 123 | 4 | 53 | 0 | 30 | 0 | 33 | . | . |
| L07-057 | 10P1 | 193 | 9 | 71 | 4 | 92 | 2 | 90 | . | . |
| L08-090 | 10P11 | 955 | 24 | 46 | 0 | 30 | 0 | 33 | . | . |
| L08-090 | 10P16 | 163 | 8 | 73 | 2 | 84 | 1 | 81 | . | . |
| L09-099 | 10P17 | 304 | 11 | 58 | 4 | 85 | 4 | 93 | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | | Rank Percentile | | Rank Percentile | | Rank Percentile |
| L09-118 | 10P31 | 383 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L09-123 | 10P12 | 219 | 3 | 36 | 0 | 30 | 0 | 33 | . | . |
| L09-123 | 10P6 | 122 | 3 | 46 | 1 | 77 | 0 | 33 | . | . |
| L09-123 | 10P9 | 225 | 16 | 84 | 0 | 30 | 0 | 33 | . | . |
| L09-125 | L01-299 | 209 | 8 | 63 | 1 | 70 | 0 | 33 | . | . |
| L09-130 | 10P9 | 231 | 16 | 82 | 1 | 66 | 1 | 75 | . | . |
| L94-428 | LCP85-384 | 243 | 26 | 95 | 1 | 65 | 0 | 33 | . | . |
| L94-432 | 10P11 | 238 | 29 | 98 | 2 | 78 | 1 | 74 | . | . |
| L94-432 | 10P13 | 188 | 10 | 77 | 4 | 92 | 2 | 90 | . | . |
| L94-432 | 10P15 | 143 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L94-432 | 10P27 | 203 | 17 | 89 | 6 | 96 | 5 | 98 | . | . |
| L94-432 | 10P28 | 1004 | 105 | 94 | 38 | 98 | 29 | 99 | . | . |
| L94-432 | 10P31 | 226 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L97-128 | 10P6 | 225 | 9 | 64 | 1 | 67 | 1 | 75 | . | . |
| L97-128 | HOCP95-951 | 219 | 15 | 82 | 1 | 68 | 0 | 33 | . | . |
| L97-128 | L06-001 | 164 | 25 | 99 | 5 | 97 | 3 | 95 | . | . |
| L97-128 | L99-226 | 137 | 1 | 24 | 0 | 30 | 0 | 33 | . | . |
| L98-207 | 10P27 | 198 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L98-207 | 10P6 | 365 | 2 | 22 | 0 | 30 | 0 | 33 | . | . |
| L98-207 | 10P9 | 235 | 9 | 63 | 4 | 87 | 3 | 92 | . | . |
| L98-207 | LCP81-010 | 172 | 4 | 43 | 0 | 30 | 0 | 33 | . | . |
| L98-209 | 10P5 | 236 | 13 | 78 | 6 | 95 | 4 | 95 | . | . |
| L98-209 | HOCP95-951 | 403 | 4 | 30 | 0 | 30 | 0 | 33 | . | . |
| L99-226 | HO08-706 | 245 | 9 | 60 | 3 | 83 | 1 | 72 | . | . |
| L99-226 | L01-299 | 116 | 4 | 54 | 0 | 30 | 0 | 33 | . | . |
| L99-226 | L06-038 | 152 | 12 | 87 | 2 | 85 | 1 | 83 | . | . |
| L99-226 | L06-038 | 613 | 5 | 26 | 2 | 63 | 1 | 69 | . | . |
| L99-226 | L99-233 | 557 | 18 | 53 | 0 | 30 | 0 | 33 | . | . |
| L99-233 | 10P11 | 797 | 7 | 28 | 0 | 30 | 0 | 33 | . | . |
| L99-233 | 10P12 | 597 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L99-233 | 10P2 | 146 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| L99-233 | 10P3 | 143 | 11 | 86 | 4 | 96 | 3 | 96 | . | . |
| L99-233 | HOCP04-838 | 224 | 23 | 93 | 1 | 68 | 1 | 76 | . | . |
| LCP81-010 | 10P12 | 334 | 2 | 23 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | 10P14 | 287 | 7 | 44 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | 10P4 | 132 | 1 | 26 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | HO06-530 | 222 | 4 | 39 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | HO07-613 | 213 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | HO08-706 | 287 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | HO08-706 | 389 | 4 | 30 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | HOCP01-523 | 127 | 13 | 93 | 0 | 30 | 0 | 33 | . | . |
| LCP81-010 | L01-299 | 937 | 5 | 22 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P17 | 295 | 6 | 41 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P18 | 197 | 8 | 66 | 2 | 81 | 2 | 89 | . | . |
| LCP85-384 | 10P19 | 208 | 7 | 54 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P20 | 858 | 9 | 30 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P24 | 443 | 28 | 81 | 4 | 79 | 1 | 70 | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| LCP85-384 | 10P28 | 146 | 7 | 72 | 2 | 85 | 0 | 33 | . | . |
| LCP85-384 | 10P31 | 604 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P32 | 425 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P4 | 252 | 22 | 90 | 1 | 64 | 1 | 71 | . | . |
| LCP85-384 | 10P7 | 232 | 18 | 87 | 0 | 30 | 0 | 33 | . | . |
| LCP85-384 | 10P8 | 159 | 4 | 46 | 0 | 30 | 0 | 33 | . | . |
| LCP86-454 | 10P9 | 844 | 7 | 26 | 0 | 30 | 0 | 33 | . | . |
| N27 | 10P35 | 347 | 3 | 28 | 0 | 30 | 0 | 33 | . | . |
| N27 | 10P7 | 932 | 5 | 22 | 1 | 62 | 1 | 68 | . | . |
| N27 | 10P8 | 1614 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| N27 | HO08-706 | 876 | 19 | 42 | 1 | 62 | 1 | 68 | . | . |
| N27 | HOCP96-540 | 1635 | 12 | 24 | 0 | 30 | 0 | 33 | . | . |
| N27 | L06-001 | 225 | 16 | 84 | 1 | 67 | 1 | 75 | . | . |
| N27 | L94-426 | 368 | 0 | 10 | 0 | 30 | 0 | 33 | . | . |
| N27 | L99-226 | 829 | 16 | 40 | 0 | 30 | 0 | 33 | . | . |
| TUCCP77-042 | 10P37 | 456 | 6 | 34 | 0 | 30 | 0 | 33 | . | . |
| 2011 Crossing Series | | | | | | | | | | |
| CP83-644 | 11P35 | 273 | 0 | 9 | 0 | 15 | . | . | . | . |
| CP83-644 | 11P36 | 198 | 1 | 26 | 1 | 51 | . | . | . | . |
| CP83-644 | L01-283 | 186 | 7 | 68 | 1 | 54 | . | . | . | . |
| HO06-563 | 11P11 | 385 | 16 | 72 | 2 | 52 | . | . | . | . |
| HO06-563 | 11P28 | 495 | 3 | 27 | 1 | 34 | . | . | . | . |
| HO06-563 | 11P29 | 484 | 20 | 72 | 1 | 36 | . | . | . | . |
| HO07-613 | L99-226 | 164 | 0 | 9 | 0 | 15 | . | . | . | . |
| HO08-709 | LCP86-454 | 700 | 46 | 89 | 10 | 86 | . | . | . | . |
| HO08-717 | 11P22 | 223 | 6 | 54 | 2 | 71 | . | . | . | . |
| HO08-717 | 11P23 | 381 | 11 | 57 | 3 | 67 | . | . | . | . |
| HO08-717 | 11P26 | 222 | 3 | 38 | 3 | 84 | . | . | . | . |
| HO08-717 | 11P32 | 488 | 0 | 9 | 0 | 15 | . | . | . | . |
| HO08-717 | L09-131 | 219 | 16 | 94 | 4 | 91 | . | . | . | . |
| HO09-824 | 11P33 | 234 | 23 | 98 | 10 | 98 | . | . | . | . |
| HO09-827 | L07-057 | 738 | 27 | 66 | 7 | 74 | . | . | . | . |
| HO09-827 | LCP85-384 | 170 | 4 | 51 | 1 | 56 | . | . | . | . |
| HO09-841 | 11P7 | 162 | 21 | 99 | 1 | 60 | . | . | . | . |
| HO09-841 | 11P9 | 227 | 5 | 50 | 3 | 84 | . | . | . | . |
| HO95-988 | 11P15 | 715 | 21 | 57 | 2 | 40 | . | . | . | . |
| HO95-988 | 11P16 | 653 | 19 | 57 | 2 | 43 | . | . | . | . |
| HO95-988 | 11P17 | 477 | 2 | 22 | 0 | 15 | . | . | . | . |
| HO95-988 | L09-125 | 251 | 14 | 83 | 3 | 81 | . | . | . | . |
| HOCP00-930 | 11P26 | 813 | 50 | 88 | 6 | 65 | . | . | . | . |
| HOCP00-930 | HOCP96-561 | 485 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP00-930 | L10-147 | 241 | 5 | 48 | 2 | 68 | . | . | . | . |
| HOCP00-930 | L99-226 | 692 | 13 | 46 | 2 | 41 | . | . | . | . |
| HOCP00-950 | 11P13 | 535 | 7 | 35 | 0 | 15 | . | . | . | . |
| HOCP00-950 | 11P33 | 251 | 10 | 70 | 2 | 67 | . | . | . | . |
| HOCP01-517 | 11P22 | 648 | 24 | 66 | 6 | 73 | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP01-517 | L01-283 | 244 | 2 | 30 | 0 | 15 | . | . | . | . |
| HOCP01-523 | HOCP96-540 | 250 | 10 | 70 | 4 | 89 | . | . | . | . |
| HOCP01-523 | HOCP96-561 | 360 | 22 | 87 | 1 | 40 | . | . | . | . |
| HOCP01-523 | LCP85-384 | 1185 | 43 | 64 | 11 | 73 | . | . | . | . |
| HOCP02-618 | 11P13 | 478 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP02-618 | 11P22 | 439 | 47 | 98 | 11 | 96 | . | . | . | . |
| HOCP02-618 | 11P29 | 221 | 8 | 64 | 0 | 15 | . | . | . | . |
| HOCP02-623 | 11P17 | 192 | 6 | 59 | 0 | 15 | . | . | . | . |
| HOCP02-623 | 11P18 | 251 | 2 | 30 | 0 | 15 | . | . | . | . |
| HOCP02-623 | 11P19 | 949 | 15 | 40 | 6 | 61 | . | . | . | . |
| HOCP02-623 | L06-001 | 476 | 15 | 60 | 6 | 82 | . | . | . | . |
| HOCP04-838 | 11P10 | 429 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP04-838 | 11P18 | 933 | 4 | 22 | 3 | 44 | . | . | . | . |
| HOCP04-838 | 11P20 | 440 | 29 | 89 | 3 | 63 | . | . | . | . |
| HOCP04-838 | HOCP95-951 | 220 | 3 | 38 | 1 | 49 | . | . | . | . |
| HOCP04-838 | L07-057 | 548 | 9 | 40 | 4 | 64 | . | . | . | . |
| HOCP04-838 | L08-090 | 926 | 62 | 90 | 23 | 95 | . | . | . | . |
| HOCP04-838 | L08-090 | 396 | 10 | 52 | 3 | 66 | . | . | . | . |
| HOCP04-847 | 11P19 | 250 | 4 | 40 | 3 | 81 | . | . | . | . |
| HOCP08-726 | 11P24 | 686 | 34 | 80 | 8 | 79 | . | . | . | . |
| HOCP08-726 | L06-001 | 131 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP08-726 | L08-090 | 145 | 4 | 55 | 4 | 96 | . | . | . | . |
| HOCP08-726 | L99-233 | 501 | 23 | 77 | 11 | 94 | . | . | . | . |
| HOCP09-803 | HOCP96-540 | 168 | 1 | 27 | 1 | 57 | . | . | . | . |
| HOCP09-810 | 11P22 | 686 | 17 | 52 | 1 | 33 | . | . | . | . |
| HOCP09-846 | 11P23 | 245 | 15 | 87 | 1 | 44 | . | . | . | . |
| HOCP09-846 | 11P9 | 206 | 9 | 74 | 0 | 15 | . | . | . | . |
| HOCP85-845 | 11P10 | 492 | 34 | 92 | 3 | 58 | . | . | . | . |
| HOCP85-845 | 11P16 | 677 | 9 | 35 | 4 | 56 | . | . | . | . |
| HOCP85-845 | 11P17 | 818 | 3 | 22 | 0 | 15 | . | . | . | . |
| HOCP85-845 | 11P18 | 667 | 8 | 33 | 2 | 42 | . | . | . | . |
| HOCP85-845 | 11P19 | 263 | 4 | 38 | 4 | 88 | . | . | . | . |
| HOCP85-845 | 11P24 | 255 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP85-845 | 11P33 | 710 | 34 | 79 | 10 | 85 | . | . | . | . |
| HOCP85-845 | L01-283 | 57 | 1 | 44 | 0 | 15 | . | . | . | . |
| HOCP85-845 | L10-160 | 378 | 2 | 26 | 2 | 53 | . | . | . | . |
| HOCP91-552 | HOCP04-838 | 210 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP91-552 | L01-299 | 881 | 0 | 9 | 0 | 15 | . | . | . | . |
| HOCP92-618 | 11P33 | 225 | 4 | 44 | 1 | 47 | . | . | . | . |
| HOCP92-618 | L06-001 | 702 | 1 | 18 | 0 | 15 | . | . | . | . |
| HOCP92-624 | 11P3 | 372 | 18 | 79 | 8 | 93 | . | . | . | . |
| HOCP92-624 | HOCP01-523 | 433 | 30 | 92 | 5 | 78 | . | . | . | . |
| HOCP92-624 | L05-457 | 448 | 15 | 62 | 3 | 62 | . | . | . | . |
| HOCP92-624 | L08-090 | 411 | 19 | 77 | 1 | 37 | . | . | . | . |
| HOCP92-624 | L09-125 | 1173 | 53 | 75 | 9 | 66 | . | . | . | . |
| HOCP95-951 | L09-099 | 234 | 9 | 68 | 3 | 83 | . | . | . | . |
| HOCP97-609 | 11P10 | 488 | 39 | 96 | 16 | 98 | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP97-609 | 11P15 | 699 | 38 | 82 | 13 | 91 | . | . | . | . |
| HOCP97-609 | 11P18 | 212 | 12 | 85 | 3 | 86 | . | . | . | . |
| HOCP97-609 | 11P19 | 547 | 7 | 35 | 5 | 72 | . | . | . | . |
| HOL08-723 | 11P25 | 419 | 14 | 62 | 5 | 80 | . | . | . | . |
| HOL08-723 | L01-283 | 215 | 8 | 66 | 0 | 15 | . | . | . | . |
| L01-283 | 11P33 | 231 | 1 | 22 | 1 | 46 | . | . | . | . |
| L01-299 | 11P26 | 475 | 32 | 90 | 9 | 93 | . | . | . | . |
| L01-299 | 11P27 | 500 | 23 | 77 | 1 | 34 | . | . | . | . |
| L01-315 | 11P7 | 223 | 6 | 54 | 1 | 49 | . | . | . | . |
| L01-315 | L99-233 | 754 | 0 | 9 | 0 | 15 | . | . | . | . |
| L05-448 | 11P28 | 235 | 3 | 35 | 1 | 46 | . | . | . | . |
| L05-448 | 11P5 | 215 | 1 | 26 | 0 | 15 | . | . | . | . |
| L06-001 | 11P17 | 231 | 13 | 83 | 4 | 90 | . | . | . | . |
| L06-040 | 11P25 | 475 | 1 | 19 | 1 | 36 | . | . | . | . |
| L06-040 | L05-448 | 151 | 6 | 70 | 0 | 15 | . | . | . | . |
| L06-040 | L99-233 | 208 | 8 | 68 | 2 | 75 | . | . | . | . |
| L07-057 | 11P20 | 486 | 14 | 57 | 7 | 87 | . | . | . | . |
| L08-088 | 11P28 | 230 | 1 | 22 | 0 | 15 | . | . | . | . |
| L08-090 | 11P2 | 583 | 40 | 92 | 6 | 77 | . | . | . | . |
| L08-090 | 11P3 | 642 | 32 | 80 | 6 | 73 | . | . | . | . |
| L09-099 | 11P16 | 612 | 0 | 9 | 0 | 15 | . | . | . | . |
| L09-099 | L01-283 | 445 | 36 | 97 | 3 | 62 | . | . | . | . |
| L09-099 | L06-001 | 685 | 33 | 79 | 9 | 83 | . | . | . | . |
| L09-099 | L10-163 | 228 | 18 | 96 | 11 | 99 | . | . | . | . |
| L09-099 | L99-233 | 235 | 0 | 9 | 0 | 15 | . | . | . | . |
| L09-107 | 11P27 | 116 | 0 | 9 | 0 | 15 | . | . | . | . |
| L09-107 | L09-125 | 485 | 8 | 40 | 5 | 77 | . | . | . | . |
| L09-108 | HOCP01-523 | 728 | 13 | 44 | 2 | 38 | . | . | . | . |
| L09-108 | HOCP92-618 | 452 | 0 | 9 | 0 | 15 | . | . | . | . |
| L09-121 | L98-207 | 762 | 0 | 9 | 0 | 15 | . | . | . | . |
| L09-121 | L99-226 | 138 | 4 | 57 | 3 | 94 | . | . | . | . |
| L09-123 | HOCP96-540 | 225 | 4 | 44 | 0 | 15 | . | . | . | . |
| L09-123 | L99-233 | 137 | 3 | 50 | 2 | 88 | . | . | . | . |
| L10-132 | 11P2 | 195 | 5 | 53 | 1 | 51 | . | . | . | . |
| L10-132 | 11P3 | 203 | 0 | 9 | 0 | 15 | . | . | . | . |
| L10-147 | HOCP96-540 | 680 | 5 | 29 | 1 | 33 | . | . | . | . |
| L94-426 | 11P14 | 233 | 3 | 35 | 2 | 69 | . | . | . | . |
| L94-426 | 11P15 | 386 | 0 | 9 | 0 | 15 | . | . | . | . |
| L94-426 | HOCP96-561 | 180 | 13 | 94 | 3 | 89 | . | . | . | . |
| L94-426 | L06-001 | 202 | 14 | 92 | 6 | 97 | . | . | . | . |
| L94-426 | L99-226 | 185 | 0 | 9 | 0 | 15 | . | . | . | . |
| L94-428 | 11P11 | 684 | 20 | 57 | 7 | 76 | . | . | . | . |
| L94-433 | 11P11 | 498 | 6 | 33 | 0 | 15 | . | . | . | . |
| L94-433 | 11P14 | 485 | 16 | 62 | 3 | 60 | . | . | . | . |
| L94-433 | HOCP96-540 | 699 | 3 | 22 | 1 | 31 | . | . | . | . |
| L98-207 | 11P15 | 543 | 0 | 9 | 0 | 15 | . | . | . | . |
| L98-207 | 11P19 | 669 | 12 | 44 | 3 | 49 | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| L99-223 | 11P22 | 705 | 15 | 48 | 7 | 76 | . | . | . | . |
| L99-226 | 11P13 | 514 | 0 | 9 | 0 | 15 | . | . | . | . |
| L99-226 | 11P14 | 160 | 10 | 88 | 3 | 92 | . | . | . | . |
| L99-226 | 11P15 | 239 | 1 | 22 | 0 | 15 | . | . | . | . |
| L99-226 | 11P16 | 1292 | 16 | 33 | 11 | 69 | . | . | . | . |
| L99-226 | 11P17 | 971 | 18 | 46 | 4 | 44 | . | . | . | . |
| L99-233 | 11P2 | 334 | 7 | 48 | 3 | 71 | . | . | . | . |
| L99-233 | 11P3 | 419 | 0 | 9 | 0 | 15 | . | . | . | . |
| L99-233 | 11P4 | 634 | 0 | 9 | 0 | 15 | . | . | . | . |
| LCP81-010 | 11P17 | 490 | 22 | 75 | 3 | 58 | . | . | . | . |
| LCP81-010 | 11P28 | 700 | 0 | 9 | 0 | 15 | . | . | . | . |
| LCP81-010 | L10-132 | 952 | 72 | 95 | 2 | 36 | . | . | . | . |
| LCP81-010 | L99-226 | 1046 | 45 | 73 | 6 | 55 | . | . | . | . |
| LCP85-384 | 11P10 | 691 | 5 | 29 | 1 | 31 | . | . | . | . |
| LCP85-384 | 11P12 | 586 | 0 | 9 | 0 | 15 | . | . | . | . |
| LCP85-384 | 11P15 | 575 | 0 | 9 | 0 | 15 | . | . | . | . |
| LCP85-384 | 11P16 | 164 | 2 | 33 | 1 | 58 | . | . | . | . |
| LCP85-384 | 11P17 | 696 | 40 | 85 | 4 | 55 | . | . | . | . |
| LCP85-384 | 11P22 | 453 | 18 | 70 | 4 | 70 | . | . | . | . |
| LCP85-384 | 11P25 | 224 | 10 | 75 | 1 | 49 | . | . | . | . |
| LCP85-384 | 11P28 | 688 | 40 | 86 | 5 | 64 | . | . | . | . |
| LCP85-384 | 11P31 | 850 | 8 | 31 | 0 | 15 | . | . | . | . |
| LCP85-384 | 11P33 | 434 | 24 | 83 | 5 | 78 | . | . | . | . |
| LCP85-384 | L10-160 | 228 | 8 | 63 | 0 | 15 | . | . | . | . |
| LCP85-384 | L99-226 | 334 | 0 | 9 | 0 | 15 | . | . | . | . |
| N27 | L10-144 | 115 | 0 | 9 | 0 | 15 | . | . | . | . |
| N27 | L10-163 | 158 | 6 | 68 | 1 | 61 | . | . | . | . |
| N27 | L99-226 | 695 | 22 | 60 | 2 | 41 | . | . | . | . |
| N27 | L99-233 | 632 | 10 | 40 | 3 | 50 | . | . | . | . |
| US79-010 | 11P14 | 549 | 0 | 9 | 0 | 15 | . | . | . | . |
| US79-010 | 11P17 | 230 | 5 | 50 | 1 | 46 | . | . | . | . |
| US79-010 | 11P30 | 192 | 10 | 81 | 0 | 15 | . | . | . | . |
| US79-010 | 11P31 | 976 | 4 | 22 | 2 | 34 | . | . | . | . |
| US79-010 | L05-448 | 717 | 2 | 20 | 2 | 40 | . | . | . | . |
| US79-010 | L99-226 | 1126 | 21 | 46 | 3 | 38 | . | . | . | . |
| 2012 Crossing Series | | | | | | | | | | |
| CP83-644 | 12P16 | 948 | 18 | 64 | . | . | . | . | . | . |
| CP83-644 | HOCP04-838 | 444 | 11 | 73 | . | . | . | . | . | . |
| CP83-644 | L06-001 | 1414 | 42 | 77 | . | . | . | . | . | . |
| HO05-961 | L01-299 | 410 | 0 | 15 | . | . | . | . | . | . |
| HO06-530 | HOCP96-540 | 504 | 0 | 15 | . | . | . | . | . | . |
| HO06-530 | L11-182 | 451 | 2 | 36 | . | . | . | . | . | . |
| HO06-563 | L11-182 | 448 | 0 | 15 | . | . | . | . | . | . |
| HO06-563 | L99-226 | 399 | 6 | 57 | . | . | . | . | . | . |
| HO07-613 | L08-090 | 227 | 0 | 15 | . | . | . | . | . | . |
| HO07-613 | LCP85-384 | 972 | 7 | 44 | . | . | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HO08-709 | 12P17 | 389 | 7 | 62 | . | . | . | . | . | . |
| HO08-709 | HOCP96-540 | 419 | 8 | 64 | . | . | . | . | . | . |
| HO08-709 | L08-090 | 224 | 2 | 46 | . | . | . | . | . | . |
| HO08-709 | L99-226 | 229 | 0 | 15 | . | . | . | . | . | . |
| HO08-709 | L99-226 | 1182 | 14 | 52 | . | . | . | . | . | . |
| HO08-709 | LCP85-384 | 866 | 0 | 15 | . | . | . | . | . | . |
| HO08-717 | 12P17 | 587 | 0 | 15 | . | . | . | . | . | . |
| HO08-717 | L06-001 | 434 | 16 | 85 | . | . | . | . | . | . |
| HO09-832 | L11-182 | 250 | 0 | 15 | . | . | . | . | . | . |
| HO09-840 | 12P3 | 388 | 2 | 39 | . | . | . | . | . | . |
| HO95-951 | L99-233 | 657 | 21 | 79 | . | . | . | . | . | . |
| HOCP00-950 | HOCP04-838 | 959 | 14 | 57 | . | . | . | . | . | . |
| HOCP00-950 | L06-001 | 243 | 3 | 52 | . | . | . | . | . | . |
| HOCP00-950 | L94-428 | 235 | 2 | 46 | . | . | . | . | . | . |
| HOCP01-517 | L01-299 | 376 | 7 | 64 | . | . | . | . | . | . |
| HOCP01-517 | L06-001 | 781 | 53 | 94 | . | . | . | . | . | . |
| HOCP01-517 | L07-057 | 693 | 34 | 91 | . | . | . | . | . | . |
| HOCP01-523 | L01-299 | 227 | 0 | 15 | . | . | . | . | . | . |
| HOCP02-618 | HOCP96-540 | 206 | 7 | 81 | . | . | . | . | . | . |
| HOCP04-838 | HOCP01-523 | 478 | 38 | 97 | . | . | . | . | . | . |
| HOCP04-838 | L10-147 | 200 | 1 | 39 | . | . | . | . | . | . |
| HOCP09-804 | L99-233 | 234 | 9 | 86 | . | . | . | . | . | . |
| HOCP09-814 | 12P17 | 411 | 17 | 89 | . | . | . | . | . | . |
| HOCP09-814 | LCP85-384 | 437 | 8 | 62 | . | . | . | . | . | . |
| HOCP85-845 | 12P11 | 546 | 17 | 78 | . | . | . | . | . | . |
| HOCP85-845 | HOCP96-540 | 225 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | HOCP96-540 | 372 | 4 | 50 | . | . | . | . | . | . |
| HOCP85-845 | HOCP96-540 | 243 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | L06-001 | 236 | 1 | 36 | . | . | . | . | . | . |
| HOCP85-845 | L06-001 | 748 | 6 | 45 | . | . | . | . | . | . |
| HOCP85-845 | L08-090 | 209 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | L11-172 | 139 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | L11-172 | 497 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | L99-226 | 499 | 0 | 15 | . | . | . | . | . | . |
| HOCP85-845 | L99-226 | 467 | 0 | 15 | . | . | . | . | . | . |
| HOCP91-552 | 12P11 | 373 | 0 | 15 | . | . | . | . | . | . |
| HOCP91-552 | 12P12 | 839 | 3 | 36 | . | . | . | . | . | . |
| HOCP91-552 | 12P5 | 168 | 0 | 15 | . | . | . | . | . | . |
| HOCP91-552 | HOCP01-523 | 257 | 10 | 87 | . | . | . | . | . | . |
| HOCP91-552 | L01-283 | 473 | 3 | 42 | . | . | . | . | . | . |
| HOCP91-552 | L01-299 | 127 | 0 | 15 | . | . | . | . | . | . |
| HOCP91-552 | L08-090 | 295 | 0 | 15 | . | . | . | . | . | . |
| HOCP91-552 | LCP85-384 | 193 | 0 | 15 | . | . | . | . | . | . |
| HOCP92-618 | HOCP96-540 | 473 | 0 | 15 | . | . | . | . | . | . |
| HOCP92-618 | L01-299 | 220 | 0 | 15 | . | . | . | . | . | . |
| HOCP92-624 | 12P1 | 152 | 5 | 80 | . | . | . | . | . | . |
| HOCP92-624 | HOCP01-523 | 459 | 11 | 71 | . | . | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| HOCP92-624 | HOCP04-847 | 381 | 8 | 67 | . | . | . | . | . | . |
| HOCP92-624 | HOCP91-552 | 812 | 30 | 85 | . | . | . | . | . | . |
| HOCP92-624 | HOCP96-540 | 217 | 10 | 90 | . | . | . | . | . | . |
| HOCP92-624 | HOCP96-540 | 497 | 12 | 71 | . | . | . | . | . | . |
| HOCP92-624 | L07-057 | 871 | 30 | 81 | . | . | . | . | . | . |
| HOCP92-624 | L08-090 | 448 | 36 | 98 | . | . | . | . | . | . |
| HOCP92-624 | L11-172 | 246 | 12 | 91 | . | . | . | . | . | . |
| HOCP92-624 | L11-190 | 248 | 3 | 52 | . | . | . | . | . | . |
| HOCP92-624 | L99-233 | 765 | 53 | 95 | . | . | . | . | . | . |
| HOCP92-624 | L99-233 | 197 | 8 | 89 | . | . | . | . | . | . |
| HOCP95-951 | HOCP96-540 | 948 | 19 | 66 | . | . | . | . | . | . |
| HOCP95-951 | L01-299 | 450 | 3 | 44 | . | . | . | . | . | . |
| HOCP95-951 | L09-099 | 395 | 6 | 57 | . | . | . | . | . | . |
| HOCP96-540 | 12P17 | 410 | 1 | 32 | . | . | . | . | . | . |
| HOCP96-561 | 12P15 | 238 | 8 | 81 | . | . | . | . | . | . |
| HOCP96-561 | 12P16 | 484 | 19 | 87 | . | . | . | . | . | . |
| HOCP96-561 | HOCP96-540 | 466 | 3 | 42 | . | . | . | . | . | . |
| HOCP96-561 | L06-001 | 432 | 6 | 56 | . | . | . | . | . | . |
| HOCP97-609 | 12P6 | 674 | 24 | 84 | . | . | . | . | . | . |
| HOCP97-609 | 12P8 | 387 | 0 | 15 | . | . | . | . | . | . |
| HOCP97-609 | 12P9 | 200 | 8 | 88 | . | . | . | . | . | . |
| L01-283 | 12P14 | 247 | 0 | 15 | . | . | . | . | . | . |
| L01-299 | 12P8 | 244 | 8 | 80 | . | . | . | . | . | . |
| L01-299 | HOCP04-838 | 117 | 0 | 15 | . | . | . | . | . | . |
| L01-299 | L99-226 | 187 | 0 | 15 | . | . | . | . | . | . |
| L05-448 | L08-090 | 617 | 4 | 42 | . | . | . | . | . | . |
| L05-448 | L99-233 | 310 | 0 | 15 | . | . | . | . | . | . |
| L05-457 | 12P14 | 222 | 6 | 74 | . | . | . | . | . | . |
| L05-457 | L01-299 | 440 | 2 | 39 | . | . | . | . | . | . |
| L05-457 | L99-233 | 686 | 37 | 92 | . | . | . | . | . | . |
| L05-457 | L99-233 | 467 | 27 | 94 | . | . | . | . | . | . |
| L07-057 | 12P1 | 428 | 1 | 32 | . | . | . | . | . | . |
| L08-090 | 12P1 | 1420 | 7 | 39 | . | . | . | . | . | . |
| L09-099 | HOCP96-540 | 626 | 8 | 54 | . | . | . | . | . | . |
| L09-099 | HOCP96-540 | 459 | 8 | 60 | . | . | . | . | . | . |
| L09-099 | L06-001 | 210 | 2 | 48 | . | . | . | . | . | . |
| L09-099 | L06-001 | 430 | 7 | 59 | . | . | . | . | . | . |
| L09-099 | L10-141 | 204 | 3 | 57 | . | . | . | . | . | . |
| L09-099 | L11-172 | 185 | 2 | 50 | . | . | . | . | . | . |
| L09-099 | L11-190 | 231 | 0 | 15 | . | . | . | . | . | . |
| L09-123 | L06-001 | 408 | 1 | 32 | . | . | . | . | . | . |
| L09-131 | 12P11 | 1312 | 39 | 77 | . | . | . | . | . | . |
| L09-131 | 12P12 | 476 | 26 | 93 | . | . | . | . | . | . |
| L09-131 | HOCP96-540 | 433 | 9 | 67 | . | . | . | . | . | . |
| L09-131 | HOCP96-540 | 328 | 6 | 62 | . | . | . | . | . | . |
| L09-131 | HOCP96-561 | 192 | 14 | 96 | . | . | . | . | . | . |
| L09-131 | L01-299 | 213 | 5 | 69 | . | . | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| L09-131 | L07-057 | 413 | 14 | 81 | . | . | . | . | . | . |
| L09-131 | L99-233 | 222 | 0 | 15 | . | . | . | . | . | . |
| L10-138 | 12P1 | 434 | 12 | 75 | . | . | . | . | . | . |
| L10-141 | 12P11 | 481 | 2 | 36 | . | . | . | . | . | . |
| L10-141 | 12P6 | 444 | 1 | 32 | . | . | . | . | . | . |
| L10-141 | 12P7 | 440 | 0 | 15 | . | . | . | . | . | . |
| L10-148 | 12P16 | 175 | 0 | 15 | . | . | . | . | . | . |
| L10-148 | L05-448 | 1107 | 0 | 15 | . | . | . | . | . | . |
| L10-148 | LCP85-384 | 818 | 0 | 15 | . | . | . | . | . | . |
| L10-156 | 12P6 | 391 | 0 | 15 | . | . | . | . | . | . |
| L10-156 | L99-226 | 855 | 48 | 93 | . | . | . | . | . | . |
| L10-163 | 12P10 | 223 | 0 | 15 | . | . | . | . | . | . |
| L10-163 | L99-226 | 350 | 1 | 34 | . | . | . | . | . | . |
| L11-167 | HOCP96-561 | 417 | 12 | 76 | . | . | . | . | . | . |
| L11-168 | HOCP09-800 | 90 | 0 | 15 | . | . | . | . | . | . |
| L11-168 | L99-226 | 447 | 2 | 36 | . | . | . | . | . | . |
| L11-169 | L05-448 | 251 | 20 | 98 | . | . | . | . | . | . |
| L11-171 | 12P15 | 437 | 0 | 15 | . | . | . | . | . | . |
| L11-173 | L94-428 | 234 | 0 | 15 | . | . | . | . | . | . |
| L11-174 | L05-448 | 483 | 3 | 42 | . | . | . | . | . | . |
| L11-174 | L06-001 | 313 | 3 | 48 | . | . | . | . | . | . |
| L11-180 | HOCP96-540 | 391 | 0 | 15 | . | . | . | . | . | . |
| L11-182 | 12P16 | 207 | 0 | 15 | . | . | . | . | . | . |
| L11-183 | L01-299 | 225 | 8 | 84 | . | . | . | . | . | . |
| L11-183 | L06-001 | 195 | 17 | 99 | . | . | . | . | . | . |
| L11-183 | L09-099 | 182 | 2 | 50 | . | . | . | . | . | . |
| L11-183 | L99-226 | 215 | 2 | 46 | . | . | . | . | . | . |
| L11-189 | 12P16 | 357 | 10 | 75 | . | . | . | . | . | . |
| L97-128 | HOCP96-540 | 499 | 5 | 48 | . | . | . | . | . | . |
| L97-128 | L01-299 | 463 | 0 | 15 | . | . | . | . | . | . |
| L98-207 | HOCP96-540 | 426 | 2 | 39 | . | . | . | . | . | . |
| L98-207 | L01-299 | 385 | 1 | 34 | . | . | . | . | . | . |
| L98-207 | L09-099 | 217 | 4 | 62 | . | . | . | . | . | . |
| L98-207 | L99-226 | 229 | 0 | 15 | . | . | . | . | . | . |
| L98-207 | L99-233 | 698 | 9 | 54 | . | . | . | . | . | . |
| L98-207 | LCP85-384 | 192 | 0 | 15 | . | . | . | . | . | . |
| L98-209 | HOCP04-838 | 325 | 9 | 75 | . | . | . | . | . | . |
| L99-233 | 12P1 | 698 | 16 | 69 | . | . | . | . | . | . |
| L99-233 | 12P11 | 181 | 3 | 60 | . | . | . | . | . | . |
| L99-233 | 12P2 | 273 | 0 | 15 | . | . | . | . | . | . |
| L99-233 | 12P3 | 200 | 0 | 15 | . | . | . | . | . | . |
| L99-233 | 12P6 | 355 | 27 | 96 | . | . | . | . | . | . |
| LCP81-010 | HOCP04-838 | 143 | 0 | 15 | . | . | . | . | . | . |
| LCP81-010 | HOCP96-540 | 921 | 18 | 66 | . | . | . | . | . | . |
| LCP85-384 | L01-283 | 166 | 0 | 15 | . | . | . | . | . | . |
| LCP85-384 | L99-233 | 411 | 9 | 68 | . | . | . | . | . | . |
| N27 | HOCP04-847 | 232 | 3 | 54 | . | . | . | . | . | . |

Table 6. Continue

| | | | 1 st Line | | 2 nd Line | | Increases | | Assignments | |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | Male | Survive | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile | No | Rank Percentile |
| N27 | L05-448 | 933 | 22 | 71 | . | . | . | . | . | . |
| N27 | L06-001 | 1764 | 42 | 71 | . | . | . | . | . | . |
| N27 | L07-057 | 439 | 6 | 56 | . | . | . | . | . | . |
| N27 | L99-226 | 1444 | 50 | 83 | . | . | . | . | . | . |
| N27 | L99-233 | 474 | 0 | 15 | . | . | . | . | . | . |
| N27 | L99-233 | 827 | 21 | 73 | . | . | . | . | . | . |

Table 7. Plant weight and sugar values from the 2012 crossing series first stubble cross appraisal test at the Sugar Research Station in 2014.

| Cross | Female | Male | # plants | Plot Weight Avg. | Plant/Weight. (Kg/Plant) | TRS |
|---|---|---|---|---|---|---|
| XL12-187 | HOCP04-847 | L08-090 | 56 | 448 | 8.0 | 207 |
| XL12-025 | L05-448 | L08-090 | 47 | 273 | 5.8 | 205 |
| XL12-448 | HO08-709 | L06-001 | 55 | 485 | 8.8 | 183 |
| XL12-379 | HO06-563 | L11-190 | 28 | 318 | 11.3 | 179 |
| XL12-126 | L09-099 | L10-141 | 42 | 193 | 4.6 | 158 |
| XL12-459 | HO07-613 | L08-090 | 19 | 150 | 7.9 | 156 |
| XL12-416 | HO05-961 | L01-299 | 50 | 288 | 5.8 | 144 |
| XL12-221 | L09-099 | L06-001 | 46 | 418 | 9.1 | 142 |
| XL12-196 | HOCP01-517 | L07-057 | 47 | 268 | 5.7 | 139 |
| XL12-381 | L09-099 | L11-190 | 37 | 403 | 10.9 | 136 |
| XL12-531 | L11-167 | L99-226 | 40 | 370 | 9.3 | 134 |
| XL12-183 | L09-131 | L99-226 | 48 | 260 | 5.4 | 134 |
| XL12-219 | HO08-717 | L06-001 | 52 | 145 | 2.8 | 125 |
| XL12-388 | L11-169 | L05-448 | 51 | 335 | 6.6 | 118 |
| XL12-482 | L09-099 | L06-001 | 51 | 365 | 7.2 | 112 |
| XL12-511 | HO09-832 | L11-182 | 52 | 260 | 5.0 | 110 |
| XL12-433 | L11-174 | L05-448 | 32 | 118 | 3.7 | 76 |
| XL12-432 | L10-148 | L05-448 | 24 | 100 | 4.2 | 69 |
| XL12-527 | L11-168 | HOCP09-800 | 21 | 45 | 2.1 | 60 |
| XL12-515 | HO06-530 | L11-182 | 34 | 175 | 5.1 | 24 |

# 2014 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM NURSERY AND INFIELD VARIETY TRIALS

Michael J. Pontif[1], Collins Kimbeng[1],
Gert Hawkins[1], David Sexton[1], Alphonse Coco[1], and Sonny Viator[2]
[1]Sugar Research Station and [2]Iberia Research Station

Edwis Dufrene, William H. White, Michael J. Duet, and Francis J. Adams
USDA-ARS Sugarcane Research Unit

Five years after the initial crossing 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.

The primary 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 planted at three on-station locations (USDA-ARS - Ardoyne Farm, Iberia Research Station, and Sugar Research Station) during the year of assignment, and at four to five additional but different off-station locations the year after assignment. The off-station nurseries are Newton Cane, Inc. (Bunkie), Michael Melancon (Cecilia), and Landry Farms (Paincourtville), along with two infield trial locations at Blackberry Farms (Vacherie), nd Donnie Vallot (Abbeville). Both the LSU and USDA varieties were planted at each location. The locations, soil types, dates of planting and dates of harvest are listed in Table 1.

The on-station nursery trials were planted in single row (6-foot centers), 16-foot plots with 4-foot alleys. The off-station nurseries were planted in single row, 20-foot plots with 4-foot alleys. The infield tests were planted in two-row, 24-foot plots with 4-foot alleys. The experimental design for both nursery and infield tests was a randomized complete block with two replications per location. At least four commercial check varieties, HoCP96-540, L99-226, L01-299, and / or L01-283, L03-371 or HoCP04-838 were planted in nursery and infield tests for comparison. Recommended cultural practices were followed at all test locations.

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

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

The 2014 sugarcane crop experienced cold and wet conditions during January through April, which led to a slow start for the cane crop. In June and July South Louisiana experienced generally favorable conditions but with lower than average rainfall. August was the turning point for the cane crop, its warmer weather led to rapid growth helping the crop overcome a slow start. Fortunately, the Louisiana sugar industry was spared any storms spawned by tropical weather conditions in 2014. However, the crop did experience a freeze in late November 2014. Although there were several experiments harvested after the freeze these appeared not to be adversely affected because temperatures had remained cool minimizing any effects of stalk damage on juice deterioration. Overall, the 2014 harvest season went exceptionally well and the majority of the Louisiana crop was harvested by the end of December.

The leading variety grown in Louisiana in 2014 was HoCP96-540, which occupied 37% of the state's sugarcane acreage. Therefore, HoCP96-540 was used as a standard for comparison and is highlighted in the tables. To adjust for missing data, the statistical analysis calculated least square means (SAS 9 Proc Mixed). Mean separation used least square means probability differences where P=0.05. Varieties that are significantly higher or lower than HoCP96-540 are denoted by a plus (+) or minus (-), found next to the mean 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. 2014 Location, soil texture, and planting and harvest dates for the nursery and infield tests.

| | | | | | Harvest Date | Varieties | |
|---|---|---|---|---|---|---|---|
| Series | Location† | Stage | Soil Texture | Planting Date | 2014 | No. Planted | No. Harvested |
| 2009 | Newton Cane, Inc. | Nursery | Norwood silt loam | 08/26/10 | 11/05/14 | 43 | 3 |
| 2009 | Landry Farms | Nursery | Commerce silt loam | 09/15/10 | 10/17/14 | 43 | 3 |
| 2010 | Blackberry Farms | Infield | Commerce silt loam | 08/26/11 | 10/17/14 | 21 | 3 |
| 2010 | Donnie Vallot Farm | Infield | Patoutville silt loam | 09/22/11 | 12/04/14 | 21 | 3 |
| 2010 | Newton Cane, Inc. | Nursery | Norwood silt loam | 08/24/11 | 11/18/14 | 28 | 1 |
| 2010 | Michael Melancon | Nursery | Loreauville silt loam | 08/18/11 | 10/16/14 | 28 | 1 |
| 2010 | Landry Farms | Nursery | Commerce silt loam | 08/29/11 | 11/19/14 | 28 | 1 |
| 2011 | Sugar Research Station | Nursery | Commerce silt loam | 10/13/11 | 11/24/14 | 25 | 4 |
| 2011 | Ardoyne Farm – U.S.D.A | Nursery | Commerce silt loam | 10/17/11 | 10/31/14 | 25 | 4 |
| 2011 | Iberia Research Station | Nursery | Baldwin silty clay | 10/21/11 | 10/29/14 | 25 | 4 |
| 2011 | Donnie Vallot Farms | Infield | Patoutville silt loam | 09/10/12 | 12/04/14 | 13 | 4 |
| 2011 | Blackberry Farms | Infield | Commerce silt loam | 08/17/12 | 11/19/14 | 13 | 4 |
| 2011 | Newton Cane, Inc. | Nursery | Norwood silt loam | 08/22/12 | 11/18/14 | 54 | 9 |
| 2011 | Michael Melancon | Nursery | Loreauville silt loam | 09/11/12 | 10/29/14 | 54 | 9 |
| 2011 | Landry Farms | Nursery | Sharkey silty clay loam | 09/27/12 | 11/20/14 | 54 | 9 |
| 2012 | Sugar Research Station | Nursery | Commerce silt loam | 10/25/12 | 12/03/14 | 40 | 3 |
| 2012 | Ardoyne Farm – U.S.D.A. | Nursery | Commerce silt loam | 11/02/12 | 12/12/14 | 40 | 3 |
| 2012 | Iberia Research Station | Nursery | Baldwin silty clay | 10/23/12 | 12/08/14 | 40 | 3 |
| 2012 | Blackberry Farms | Infield | Commerce silt loam | 08/30/13 | 11/19/14 | 21 | 7 |
| 2012 | Donnie Vallot Farms | Infield | Patoutville silt loam | 09/03/13 | 12/04/14 | 21 | 7 |
| 2012 | Newton Cane, Inc | Nursery | Norwood silt loam | 08/27/13 | 11/05/14 | 58 | 20 |
| 2012 | Michael Melancon | Nursery | Loreauville silt loam | 08/20/13 | 11/18/14 | 58 | 20 |
| 2012 | Landry Farms | Nursery | Sharkey silty clay loam | 08/22/13 | 11/21/14 | 58 | 20 |
| 2013 | Sugar Research Station | Nursery | Commerce silt loam | 10/29/13 | 12/04/14 | 30 | 17 |
| 2013 | Ardoyne Farm – U.S.D.A. | Nursery | Commerce silt loam | 10/31/13 | 12/11/14 | 30 | 17 |
| 2013 | Iberia Research Station | Nursery | Baldwin silty clay | 11/06/13 | 12/08/14 | 30 | 17 |
| 2013 | Blackberry Farms | Infield | Commerce silt loam | 08/26/14 | | 34 | |
| 2013 | Donnie Vallot Farms | Infield | Patoutville silt loam | 09/11/14 | | 34 | |
| 2013 | Newton Cane, Inc. | Nursery | Norwood silt loam | 08/20/14 | | 67 | |
| 2013 | Michael Melancon | Nursery | Loreauville silt loam | 08/22/14 | | 67 | |
| 2013 | Landry Farms | Nursery | Sharkey silty clay lo | 08/19/14 | | 67 | |
| 2014 | Sugar Research Station | Nursery | Commerce silt loam | 10/27/14 | | 33 | |
| 2014 | Ardoyne Farm – U.S.D.A | Nursery | Commerce silt loam | 10/30/14 | | 33 | |
| 2014 | Iberia Research Station | Nursery | Baldwin silty clay | 10/28/14 | | 33 | |

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

Table 2. Nursery third-stubble means of the 2009 "Ho", "HoCP" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP96-540 | 4704 | 21.8 | 212 | 2.16 | 21054 | ------- |
| L 99-226 | 15511 + | 63.5 | 243 + | 2.64 + | 47916 + | ------- |
| L 99-233 | 11732 + | 53.7 | 218 | 2.06 | 52091 + | ------- |
| L 01-283 | 12442 + | 48.8 | 256 + | 2.02 | 48461 + | ------- |
| L 01-299 | 12132 + | 49.3 | 246 + | 2.01 | 49368 + | ------- |
| HoCP 09-804 | 9315 | 37.8 | 247 + | 1.65 - | 45920 + | ------- |
| Ho 09-840 | 7575 | 32.8 | 231 | 1.33 - | 49550 + | ------- |

Table 3. Nursery third-stubble means of the 2009 "Ho", "HoCP" assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP96-540 | 6066 | 25.2 | 244 | 1.56 | 32126 | ------- |
| L 99-226 | 6228 | 25.7 | 249 | 1.97 | 25229 | ------- |
| L 99-233 | 6688 | 29.4 | 228 | 1.49 | 39567 | ------- |
| L 01-283 | 10314 | 41.3 | 250 | 1.52 | 54813 + | ------- |
| L 01-299 | 10537 | 41.7 | 260 | 1.52 | 53906 + | ------- |
| HoCP 09-804 | 6494 | 26.2 | 249 | 1.30 | 40293 | ------- |
| Ho 09-840 | 7721 | 30.4 | 253 | 1.35 | 45375 | ------- |

Table 4. Nursery third-stubble means of the 2009 "Ho", "HoCP" assignment series across 2 locations (Newton and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP96-540 | 5385 | 23.5 | 228 | 1.86 | 26590 | ------- |
| L 99-226 | 10869 | 44.6 | 246 | 2.30 + | 36572 | ------- |
| L 99-233 | 9210 | 41.6 | 223 | 1.77 | 45829 | ------- |
| L 01-283 | 11378 | 45.0 | 253 | 1.77 | 51637 | ------- |
| L 01-299 | 11334 | 45.5 | 253 | 1.76 | 51637 | ------- |
| HoCP 09-804 | 7905 | 32.0 | 248 | 1.47 | 43106 | ------- |
| Ho 09-840 | 7648 | 31.6 | 242 | 1.34 - | 47462 | ------- |

Table 5. Nursery second-stubble means of the 2010 "L" assignment series on a, Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 5325 | 20.3 | 262 | 1.77 | 23232 | 12.5 |
| L 99-226 | 9348 | 33.7 | 280 | 2.39 + | 27588 | 11.9 |
| L 01-299 | 8698 | 29.9 | 291 + | 1.69 | 35756 | 12 |
| L 03-371 | 10922 | 40.3 | 269 | 1.86 | 41927 | 11.5 |
| HoCP 04-838 | 9829 | 35.1 | 281 | 1.77 | 40656 | 13.5 |
| L 10-147 | 6826 | 26 | 263 | 1.69 | 30311 | 11.2 |

Table 6. Nursery second-stubble means of the 2010 "L" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 5969 | 29.1 | 206 | 1.81 | 32126 | 11 |
| L 99-226 | 15302 + | 59.5 + | 258 + | 2.88 + | 41201 | 12.2 |
| L 01-299 | 9785 | 44 | 222 | 1.77 | 49913 | 12.5 |
| L 03-371 | 11532 + | 49.6 + | 232 + | 2.25 + | 44105 | 10.6 |
| HoCP 04-838 | 10745 + | 45.7 + | 235 + | 1.9 | 48642 | 13.9 + |
| L 10-147 | 9276 | 42.8 | 217 | 2.04 | 41927 | 10.4 |

Table 7. Nursery second-stubble means of the 2010 "L" assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 7661 | 37.5 | 205 | 1.87 | 40293 | 11 |
| L 99-226 | 15670 + | 62.2 + | 252 + | 2.38 | 52454 + | 12.3 |
| L 01-299 | 9638 | 46.1 | 209 | 1.65 | 56265 + | 12.4 |
| L 03-371 | 9734 | 40.2 | 243 + | 1.52 | 52998 + | 10.1 |
| HoCP 04-838 | 11365 + | 48.6 | 233 + | 1.51 | 64433 + | 12.3 |
| L 10-147 | 10529 + | 47.2 | 224 | 1.73 | 54450 + | 11.1 |

Table 8. Nursery second-stubble means of the 2010 "L" assignment series across 3 locations (Newton, Melancon and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 6318 | 29 | 224 | 1.81 | 31883 | 11.5 |
| L99-226 | 13440 + | 51.8 + | 263 + | 2.55 + | 40414 + | 12.2 |
| L 01-299 | 9374 + | 40 + | 241 | 1.7 | 47311 + | 12.3 |
| L 03-371 | 10729 + | 43.4 + | 248 + | 1.88 | 46343 + | 10.8 |
| HoCP 04-838 | 10646 + | 43.1 + | 250 + | 1.73 | 51243 + | 13.2 + |
| L 10-147 | 8877 + | 38.6 + | 235 | 1.82 | 42229 + | 10.9 |

Table 9. Nursery first-stubble means of the 2011 "Ho" and "L" assignment series on a, Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8893 | 33.3 | 267 | 2.13 | 31400 | 12.1 |
| L 99-226 | 10866 | 37.2 | 292 + | 1.99 | 37208 | 13.1 |
| L 01-299 | 9209 | 34.8 | 266 | 1.72 | 40112 + | 13.2 |
| L 03-371 | 8469 | 30.3 | 279 | 1.57 | 38660 + | 11.4 |
| L 11-168 | 7189 | 25.0 | 287 + | 1.67 | 30129 | 13.1 |
| L 11-172 | 4500 | 16.3 | 276 | 1.5 | 21780 - | 13.0 |
| L 11-183 | 9829 | 35.2 | 280 | 1.99 | 35393 | 11.7 |
| L 11-187 | 7474 | 24.8 | 301 + | 1.58 | 31400 | 12.6 |
| Ho 11-511 | 8711 | 30.9 | 279 | 2.12 | 28677 | 12.0 |
| Ho 11-512 | 9736 | 31.9 | 305 + | 1.77 | 35937 | 11.2 |
| Ho 11-515 | 8592 | 30.1 | 285 + | 1.51 | 39930 + | 12.6 |
| Ho 11-532 | 10147 | 35.3 | 287 + | 1.71 | 41201 + | 12.9 |
| Ho 11-556 | 11224 | 38.4 | 293 + | 1.71 | 45012 + | 12.8 |

Table 10. Nursery first-stubble means of the 2011 "Ho" and "L" assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8896 | 47.1 | 190 | 2.58 | 36119 | 10.4 |
| L 99-226 | 13590 | 56.4 | 241 + | 2.83 | 40112 | 11.6 |
| L 01-299 | 10784 | 48.8 | 221 + | 2.05 | 47916 + | 11.4 |
| L 03-371 | 10884 | 48.9 | 222 + | 2.07 | 47009 + | 9.2 |
| L 11-168 | 8877 | 42.8 | 205 | 2.45 | 35211 | 11.9 + |
| L 11-172 | 6772 | 34.9 | 194 | 2.06 | 33941 | 10.7 |
| L 11-183 | 11025 | 48.0 | 230 + | 2.24 | 43016 | 11.3 |
| L 11-187 | 12156 | 53.7 | 226 + | 2.3 | 46827 + | 11.9 + |
| Ho 11-511 | 8268 | 40.4 | 206 | 2.57 | 31218 | 12.0 + |
| Ho 11-512 | 11398 | 45.5 | 251 + | 2.52 | 36300 | 11.6 |
| Ho 11-515 | 9778 | 47.2 | 207 | 2.32 | 40656 | 10.5 |
| Ho 11-532 | 9706 | 44.4 | 218 + | 2.24 | 39567 | 11.3 |
| Ho 11-556 | 10237 | 47.6 | 215 + | 1.85 | 51365 + | 10.6 |

Table 11. Nursery first-stubble means of the 2011 "Ho" and "L" assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 4552 | 22.9 | 199 | 1.97 | 23414 | ------- |
| L 99-226 | 7291 | 32.9 | 222 + | 2.17 | 30311 | ------- |
| L 01-299 | 7946 | 37.1 | 213 | 1.89 | 39204 + | ------- |
| L 03-371 | 6415 | 31.7 | 204 | 1.81 | 35574 + | ------- |
| L 11-168 | 4972 | 23.6 | 211 | 1.56 - | 30492 + | ------- |
| L 11-172 | 4565 | 20.2 | 226 + | 2.00 | 20328 | ------- |
| L 11-183 | 5853 | 28.3 | 207 | 1.83 | 31037 | ------- |
| L 11-187 | 5797 | 27.9 | 208 | 1.54 - | 36300 + | ------- |
| Ho 11-511 | 5940 | 27.2 | 218 + | 2.01 - | 26499 | ------- |
| Ho 11-512 | 7415 | 31.7 | 234 + | 1.74 - | 36482 + | ------- |
| Ho 11-515 | 6666 | 30.3 | 219 + | 1.61 - | 37571 + | ------- |
| Ho 11-532 | 7765 | 35.2 | 220 + | 1.72 | 40838 + | ------- |
| Ho 11-556 | 6220 | 27.0 | 231 + | 1.56 - | 34667 + | ------- |

Table 12. Nursery first-stubble means of the 2011 “Ho” and “L” assignment series across 3 locations (Newton, Melancon and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 7447 | 34.4 | 218 | 2.23 | 30311 | 11.21 |
| L 99-226 | 10583 + | 42.2 + | 252 + | 2.33 | 35877 | 12.37 |
| L 01-299 | 9313 + | 40.2 | 233 | 1.88 - | 42411 + | 12.28 |
| L 03-371 | 8589 | 37.0 | 235 | 1.82 - | 40414 + | 10.31 |
| L 11-168 | 7013 | 30.5 | 234 | 1.89 - | 31944 | 12.50 |
| L 11-172 | 5279 - | 23.8 - | 232 | 1.85 - | 25350 | 11.83 |
| L 11-183 | 8902 | 37.2 | 239 + | 2.02 | 36482 + | 11.49 |
| L 11-187 | 8476 | 35.5 | 245 + | 1.81 - | 38176 + | 12.23 |
| Ho 11-511 | 7640 | 32.8 | 234 | 2.23 | 28798 | 11.99 |
| Ho 11-512 | 9516 + | 36.4 | 263 + | 2.01 | 36240 + | 11.43 |
| Ho 11-515 | 8345 | 35.9 | 237 + | 1.81 - | 39386 + | 11.55 |
| Ho 11-532 | 9206 + | 38.3 | 242 + | 1.89 - | 40535 + | 12.10 |
| Ho 11-556 | 9227 + | 37.7 | 246 + | 1.70 - | 43681 + | 11.69 |

Table 13. Nursery plantcane means of the 2012 “Ho”, “HoCP”, and “L” assignment series on a Baldwin silty clay soil at Melancon Farms in Henderson, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8464 | 39.7 | 214 | 2.52 | 31400 | 11.9 |
| L 99-226 | 9956 | 46.3 | 215 | 2.87 | 32307 | 13.3 |
| L 01-283 | 8552 | 37.5 | 228 + | 1.99 - | 37752 | 13.7 + |
| L 01-299 | 7303 | 34.7 | 210 | 2.29 | 30401 | 12.2 |
| HoCP 04-838 | 8002 | 37.4 | 214 | 1.96 - | 38206 | 13.7 + |
| L 12-201 | 7256 | 31.9 | 227 + | 2.48 | 25864 | 10.8 |
| L 12-202 | 7972 | 35.1 | 227 + | 2.28 | 31127 | 13.9 + |
| L 12- 227 | 7124 | 33.1 | 216 | 2.51 | 26953 | 15.0 + |
| Ho 12-612 | 9433 | 43.6 | 217 | 2.31 | 37571 | 15.0 + |
| Ho 12-615 | 9316 | 40.9 | 228 + | 1.71 - | 48007 + | 13.6 + |
| Ho 12-616 | 8646 | 35.0 | 247 + | 2.12 | 33124 | 14.8 + |
| Ho 12-617 | 8470 | 40.7 | 206 | 1.66 - | 49005 + | 11.2 |
| Ho 12-626 | 10535 | 48.1 | 219 | 2.34 | 41110 + | 12.1 |
| Ho 12-627 | 11486 + | 48.3 | 238 + | 2.38 | 40475 + | 13.1 |
| Ho 12-630 | 7526 | 38.4 | 196 - | 2.00 - | 38569 + | 13.2 |
| Ho 12-633 | 8238 | 34.2 | 241 + | 1.9 - | 36663 | 14.5 + |
| Ho 12-638 | 7452 | 33.6 | 222 | 1.86 - | 36119 | 15.0 + |
| HoCP 12-640 | 7106 | 33.1 | 215 | 2.13 | 31037 | 12.6 |
| HoCP 12-641 | 8936 | 42.2 | 212 | 2.12 | 39839 + | 12.7 |
| HoCP 12-643 | 5790 - | 26.5 - | 217 | 1.68 - | 31309 | 11.2 |
| HoCP 12-647 | 7674 | 33.8 | 227 + | 2.15 | 31490 | 12.2 |
| HoCP 12-649 | 7842 | 34.0 | 230 + | 2.06 | 33124 | 12.0 |
| HoCP 12-656 | 7231 | 31.5 | 230 + | 1.64 - | 38478 + | 12.2 |
| HoCP 12-667 | 9035 | 41.0 | 220 | 2.22 | 36754 | 13.6 + |
| HoCP 12-671 | 9253 | 39.6 | 234 + | 2.29 | 34667 | 10.6 |
| HoCP 12-673 | 8464 | 39.7 | 214 | 2.52 | 31400 | 11.9 |

Table 14. Nursery plantcane means of the 2012 “Ho”, “HoCP”, and “L” assignment series on a Moreland silt loam soil at Newton Cane, Inc. in Bunkie, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 10259 | 39.1 | 262 | 2.82 | 27770 | ------- |
| L 99-226 | 16592 + | 54.7 + | 303 + | 3.04 | 35756 | ------- |
| L 01-283 | 13023 | 47.3 | 274 | 2.30 - | 41201 + | ------- |
| L 01-299 | 10824 | 36.9 | 290 | 2.07 - | 38660 + | ------- |
| HoCP 04-838 | 10423 | 38.9 | 267 | 2.10 - | 36935 + | ------- |
| L 12-201 | 11084 | 40.3 | 275 | 2.55 | 31581 | ------- |
| L 12-202 | 13174 | 52.1 + | 253 | 2.70 | 38569 + | ------- |
| L 12- 227 | 9582 | 34.0 | 282 | 2.79 | 24503 | ------- |
| Ho 12-612 | 9612 | 32.5 | 291 + | 2.18 - | 31400 | ------- |
| Ho 12-615 | 13996 + | 54.9 + | 255 | 1.98 - | 55539 + | ------- |
| Ho 12-616 | 11428 | 39.0 | 293 + | 2.45 - | 31853 | ------- |
| Ho 12-617 | 11702 | 42.1 | 278 | 1.76 - | 47825 + | ------- |
| Ho 12-626 | 13630 | 51.8 | 263 | 2.18 - | 47553 + | ------- |
| Ho 12-627 | 13682 | 52.2 | 260 | 2.81 | 38750 + | ------- |
| Ho 12-630 | 8431 - | 34.4 | 247 | 2.30 - | 29857 | ------- |
| Ho 12-633 | 10438 | 39.8 | 263 | 2.10 - | 38024 + | ------- |
| Ho 12-638 | 8459 - | 35.7 | 238 - | 1.75 - | 40838 + | ------- |
| HoCP 12-640 | 9430 | 34.2 | 275 | 1.66 - | 41382 + | ------- |
| HoCP 12-641 | 11014 | 41.3 | 267 | 2.30 - | 36209 + | ------- |
| HoCP 12-643 | 11927 | 42.5 | 278 | 1.95 - | 43469 + | ------- |
| HoCP 12-647 | 11688 | 46.6 | 251 | 2.15 - | 43832 + | ------- |
| HoCP 12-649 | 11378 | 46.1 | 244 | 2.29 - | 38115 + | ------- |
| HoCP 12-656 | 12695 | 47.5 | 268 | 2.14 - | 44558 + | ------- |
| HoCP 12-667 | 9998 | 38.7 | 259 | 2.15 - | 35937 | ------- |
| HoCP 12-671 | 10935 | 44.1 | 249 | 2.56 | 34213 | ------- |
| HoCP 12-673 | 10259 | 39.1 | 262 | 2.82 | 27770 | ------- |

Table 15. Nursery plantcane means of the 2012 “Ho”, “HoCP”, and “L” assignment series on a Commerce silt loam soil at Landry Farms in Paincourtville, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 5414 | 31.5 | 172 | 2.16 | 29312 | 10.9 |
| L 99-226 | 10088 + | 47.8 | 210 + | 2.49 | 38660 | 12.2 |
| L 01-283 | 7515 | 35.6 | 211 + | 1.87 | 38297 | 11.4 |
| L 01-299 | 7183 | 38.4 | 185 | 2.32 | 32670 | 12.6 + |
| HoCP 04-838 | 9244 + | 48.5 | 190 | 2.6 | 37480 | 14.3 + |
| L 12-201 | 8863 + | 42.8 | 208 + | 2.67 | 32398 | 10.7 |
| L 12-202 | 9181 + | 47.8 | 194 | 2.73 | 35030 | 13.3 + |
| L 12- 227 | 6831 | 35.3 | 195 + | 2.57 | 27497 | 14.3 + |
| Ho 12-612 | 6873 | 39.0 | 178 | 2.17 | 35937 | 12.6 + |
| Ho 12-615 | 6579 | 37.3 | 176 | 1.78 | 41927 + | 11.9 |
| Ho 12-616 | 6165 | 32.2 | 191 | 2.22 | 29040 | 14.4 + |
| Ho 12-617 | 6595 | 37.9 | 174 | 1.59 | 48007 + | 9.5 - |
| Ho 12-626 | 7671 | 40.2 | 193 | 2.26 | 35120 | 12.3 |
| Ho 12-627 | 10359 + | 50.9 | 204 + | 2.32 | 44468 + | 12.3 |
| Ho 12-630 | 5948 | 30.9 | 193 | 2.16 | 28677 | 12.8 + |
| Ho 12-633 | 8095 | 44.2 | 181 | 2.38 | 37026 | 11.7 |
| Ho 12-638 | 7230 | 45.0 | 161 | 2.08 | 43016 + | 12.8 + |
| HoCP 12-640 | 8068 | 44.5 | 180 | 2.06 | 43379 + | 10.9 |
| HoCP 12-641 | 7634 | 41.6 | 183 | 2.43 | 34939 | 12.3 |
| HoCP 12-643 | 8385 | 40.7 | 206 + | 2.09 | 39023 | 11.1 |
| HoCP 12-647 | 8561 + | 43.4 | 197 + | 1.99 | 43379 + | 13.9 + |
| HoCP 12-649 | 6098 | 34.6 | 179 | 2.21 | 30946 | 11.8 |
| HoCP 12-656 | 11567 + | 52.9 | 219 + | 2.03 | 51909 + | 12.3 |
| HoCP 12-667 | 7088 | 35.1 | 202 + | 1.95 | 35937 | 13.3 + |
| HoCP 12-671 | 8108 | 43.9 | 186 | 2.34 | 37389 | 9.1 - |
| HoCP 12-673 | 5414 | 31.5 | 172 | 2.16 | 29312 | 10.9 |

Table 16. Nursery plantcane means of the 2012 “Ho”, “HoCP”, and “L” assignment series across 3 locations (Newton, Melancon and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8046 | 36.8 | 216 | 2.50 | 29494 | 11.4 |
| L 99-226 | 12212 + | 49.6 + | 243 | 2.80 | 35574 | 12.7 |
| L 01-283 | 9697 | 40.1 | 238 | 2.05 - | 39083 + | 12.5 |
| L 01-299 | 8376 | 36.9 | 226 | 2.26 | 33910 | 12.4 |
| HoCP 04-838 | 9223 | 41.6 | 224 | 2.22 | 37540 + | 14.0 + |
| L 12-201 | 9068 | 38.3 | 237 | 2.57 | 29948 | 10.7 |
| L 12-202 | 10109 + | 45.0 | 225 | 2.57 | 34909 | 13.6 + |
| L 12- 227 | 7846 | 34.1 | 231 | 2.62 | 26318 | 14.7 + |
| Ho 12-612 | 8806 | 39.7 | 227 | 2.24 | 34969 | 13.8 + |
| Ho 12-615 | 9964 | 44.3 | 220 | 1.82 - | 48491 + | 12.8 |
| Ho 12-616 | 8746 | 35.4 | 244 | 2.26 | 31339 | 14.6 + |
| Ho 12-617 | 8922 | 40.2 | 219 | 1.67 - | 48279 + | 10.4 |
| Ho 12-626 | 10612 + | 46.7 + | 225 | 2.26 | 41261 + | 12.2 |
| Ho 12-627 | 11870 + | 50.5 + | 235 | 2.45 | 41231 + | 12.7 |
| Ho 12-630 | 7302 | 34.6 | 212 | 2.15 - | 32368 | 13.0 + |
| Ho 12-633 | 8924 | 39.4 | 228 | 2.13 - | 37238 + | 13.1 + |
| Ho 12-638 | 7714 | 38.1 | 207 | 1.90 - | 39991 + | 13.9 + |
| HoCP 12-640 | 8201 | 37.3 | 223 | 1.95 - | 38599 + | 11.7 |
| HoCP 12-641 | 9195 | 41.7 | 221 | 2.28 | 36996 + | 12.5 |
| HoCP 12-643 | 8701 | 36.6 | 233 | 1.90 - | 37934 + | 11.2 |
| HoCP 12-647 | 9308 | 41.3 | 225 | 2.09 - | 39567 + | 13.0 + |
| HoCP 12-649 | 8291 | 37.2 | 219 | 2.17 - | 34062 | 11.9 |
| HoCP 12-656 | 10498 + | 43.9 | 239 | 1.93 - | 44982 + | 12.2 |
| HoCP 12-667 | 8707 | 38.3 | 227 | 2.11 - | 36209 + | 13.5 + |
| HoCP 12-671 | 9432 | 42.5 | 223 | 2.40 | 35423 | 9.9 - |
| HoCP 12-673 | 8046 | 36.8 | 216 | 2.50 | 29494 | 11.4 |

Table 17. Infield and nursery second-stubble means of the 2009 "Ho" and "HoCP" and 2010 "L", assignment series across 5 locations (Blackberry, Melancon, Newton, Westfield, and Donnie Vallot Farms) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 7430 | 33.9 | 225 | 2.03 | 27275 | 12.0 |
| L 99-226 | 11918 + | 46.9 | 256 + | 2.63 | 31531 | 12.5 |
| L 01-299 | 9435 + | 41.0 | 236 | 1.68 | 37696 + | 12.5 |
| L 03-371 | 10362 + | 41.7 | 249 + | 1.93 | 35542 + | 11.0 - |
| HoCP 04-838 | 9774 + | 39.9 | 248 + | 1.76 | 38702 + | 12.9 + |
| HoCP 09-804 | 10340 + | 41.3 | 254 + | 1.54 | 39087 + | 12.9 + |
| Ho 09-840 | 9113 | 37.7 | 248 + | 1.39 | 41809 + | 11.6 |
| L 10-147 | 9207 + | 38.9 | 243 + | 1.88 | 33512 + | 11.3 |

Table 18. Infield and nursery first-stubble means of the 2011 "L" and "Ho" assignment series across 5 locations (Blackberry, Melancon, Newton, Sugarland Acres, and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8954 | 39.8 | 225 | 2.24 | 26437 | 12.2 |
| L 99-226 | 11476 + | 44.8 | 257 + | 2.38 | 28763 | 12.8 |
| L 01-299 | 11721 + | 49.1 + | 238 + | 1.92 - | 35504 + | 12.6 |
| L 03-371 | 9824 | 40.3 | 245 + | 1.91 - | 32968 + | 10.5 - |
| L 11-168 | 8198 - | 34.0 - | 242 + | 1.86 - | 27478 | 12.9 |
| L 11-172 | 7108 - | 30.8 - | 234 | 2.00 - | 22591 | 12.9 |
| L 11-183 | 10609 + | 42.1 | 250 + | 2.07 | 30056 | 11.4 |
| L 11-187 | 9777 | 39.7 | 249 + | 1.92 - | 30369 | 12.5 |
| Ho 11-511 | 9115 | 37.7 | 241 + | 2.29 | 23083 | 12.4 |
| Ho 11-512 | 10991 + | 41.3 | 269 + | 2.06 | 30525 | 11.8 |
| Ho 11-515 | 9820 | 40.8 | 243 + | 1.87 - | 33671 + | 12.0 |
| Ho 11-532 | 10681 + | 43.2 | 248 + | 1.95 - | 34820 + | 12.5 |
| Ho 11-556 | 10702 + | 42.6 | 253 + | 1.76 - | 37966 + | 12.1 |

Table 19. Infield and nursery plantcane means of the 2012 "L", assignment series across 5 locations (Blackberry, Melancon, Newton, Sugarland Acres, and Westfield) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 9027 | 38.4 | 232 | 2.46 | 24843 | 11.8 |
| L 99-226 | 12218 + | 47.0 + | 260 + | 2.67 | 28136 | 12.3 |
| L 01-299 | 10528 + | 40.1 | 259 + | 1.97 - | 31443 + | 11.8 |
| L 03-371 | 9111 | 37.7 | 240 | 2.18 - | 27563 | 12.9 + |
| L 12-201 | 8773 | 35.8 | 248 | 1.81 - | 30067 | 12.5 |
| L 12-202 | 9974 | 39.2 | 254 + | 2.59 | 24291 | 10.5 + |
| L 12- 227 | 10874 + | 44.6 | 244 | 2.49 | 27146 | 13.0 + |

Table 20. Nursery plantcane means of the 2013 "L" assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 11454 | 54.5 | 210 | 2.80 | 39023 | 11.7 |
| L 99-226 | 14640 | 67.1 | 219 | 3.44 | 39023 | 11.2 |
| L 01-299 | 12248 | 57.6 | 213 | 3.23 | 35393 | 12.5 |
| HoCP 04-838 | 14343 | 64.3 | 223 | 2.87 | 44468 | 13.0 |
| L 13-234 | 10161 | 48.8 | 209 | 2.23 | 43560 | 12.4 |
| L 13-236 | 12664 | 52.3 | 243 + | 2.94 | 35619 | 13.1 |
| L 13-240 | 11422 | 47.0 | 242 + | 2.85 | 32443 | 12.6 |
| L 13-241 | 8868 | 38.1 | 232 | 2.52 | 30174 - | 11.7 |
| L 13-242 | 13928 | 60.1 | 231 | 3.30 | 36073 | 13.4 + |
| L 13-243 | 14335 | 72.9 | 198 | 3.54 | 41064 | 11.6 |
| L 13-245 | 6818 | 30.5 - | 223 | 2.15 | 28586 - | 11.3 |
| L 13-246 | 10868 | 46.4 | 233 + | 2.12 | 43787 | 13.3 + |
| L 13-250 | 12090 | 57.6 | 208 | 2.44 | 47190 | 15.0 + |
| L 13-251 | 15270 | 67.4 | 227 | 3.38 | 39930 | 13.6 + |
| L 13-254 | 7829 | 34.2 - | 229 | 1.63 - | 42199 | 12.9 + |
| L 13-256 | 8203 | 38.6 | 213 | 1.93 - | 40384 | 13.4 + |
| L 13-257 | 14442 | 60.8 | 238 + | 3.17 | 38115 | 11.5 |
| L 13-258 | 8096 | 43.8 | 183 - | 2.65 | 32897 | 14.1 + |
| L 13-259 | 9447 | 41.0 | 230 | 2.16 | 37888 | 12.1 |
| L 13-260 | 11525 | 52.0 | 222 | 2.35 | 44241 | 13.5 + |
| L 13-263 | 13687 | 61.2 | 221 | 2.39 | 50593 + | 13.4 + |

Table 21. Nursery plantcane means of the 2013 “L” assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 10189 | 46.2 | 222 | 2.63 | 34939 | 10.9 |
| L 99-226 | 13692 | 58.0 | 237 | 3.37 + | 34712 | 10.3 |
| L 01-299 | 8061 | 35.0 | 232 | 2.14 | 32670 | 12.1 |
| HoCP 04-838 | 13540 | 58.5 | 232 | 2.76 | 43106 | 12.7 + |
| L 13-234 | 11013 | 46.4 | 237 | 2.30 | 40157 | 12.9 + |
| L 13-236 | 7730 | 30.7 | 252 + | 2.24 | 27679 | 12.2 |
| L 13-240 | 7288 | 29.8 - | 244 + | 2.46 | 24276 | 11.5 |
| L 13-241 | 9409 | 40.6 | 232 | 2.72 | 29948 | 10.5 |
| L 13-242 | 8632 | 36.9 | 234 | 2.52 | 29267 | 12.9 + |
| L 13-243 | 11326 | 48.5 | 236 | 2.91 | 32670 | 11.0 |
| L 13-245 | 10326 | 40.8 | 253 + | 2.45 | 33351 | 10.7 |
| L 13-246 | 9878 | 38.5 | 257 + | 2.14 | 36073 | 10.9 |
| L 13-250 | 10709 | 44.5 | 240 + | 1.94 - | 46283 + | 13.7 + |
| L 13-251 | 13397 | 61.6 | 217 | 3.15 + | 39249 | 12.1 |
| L 13-254 | 7350 | 31.7 | 232 | 1.84 - | 34485 | 10.7 |
| L 13-256 | 8474 | 33.7 | 251 + | 1.95 - | 34712 | 12.9 + |
| L 13-257 | 10069 | 44.9 | 225 | 3.05 + | 29494 | 11.1 |
| L 13-258 | 6009 - | 27.6 - | 218 | 2.34 | 23595 - | 12.7 + |
| L 13-259 | 7710 | 31.4 | 241 + | 1.77 - | 35166 | 12.7 + |
| L 13-260 | 10991 | 46.2 | 238 | 2.37 | 39023 | 12.3 |
| L 13-263 | 9065 | 39.8 | 228 | 2.16 | 36981 | 13.5 + |

Table 22. Nursery plantcane means of the 2013 “L” assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 7187 | 28.2 | 255 | 1.95 | 29040 | 10.5 |
| L 99-226 | 11500 + | 43.0 + | 267 | 2.46 | 34939 | 11.3 |
| L 01-299 | 7949 | 31.3 | 254 | 2.01 | 31309 | 11.4 + |
| HoCP 04-838 | 11167 + | 43.4 + | 257 | 2.39 | 36300 + | 12.2 + |
| L 13-234 | 8292 | 32.2 | 258 | 1.89 | 34031 | 11.9 + |
| L 13-236 | 8703 | 31.4 | 278 | 2.06 | 30174 | 12.1 + |
| L 13-240 | 6132 | 23.0 | 268 | 2.40 | 19284 - | 11.5 + |
| L 13-241 | 7078 | 26.4 | 267 | 2.12 | 24956 | 11.2 |
| L 13-242 | 7655 | 30.8 | 249 | 2.09 | 29494 | 12.9 + |
| L 13-243 | 10034 + | 40.8 + | 247 | 2.63 + | 30855 | 11.1 |
| L 13-245 | 5867 | 21.1 | 278 | 1.73 | 24729 | 10.8 |
| L 13-246 | 4574 | 15.9 - | 289 + | 1.73 | 18377 - | 11.4 + |
| L 13-250 | 6851 | 26.6 | 258 | 1.76 | 30174 | 14.3 + |
| L 13-251 | 11672 + | 44.4 + | 263 | 2.66 + | 33578 | 12.1 + |
| L 13-254 | 5509 | 20.8 | 267 | 1.46 | 28359 | 10.7 |
| L 13-256 | 6980 | 27.3 | 256 | 1.77 | 31309 | 12.4 + |
| L 13-257 | 10991 + | 45.5 + | 241 | 2.59 + | 35166 | 12.0 + |
| L 13-258 | 7066 | 30.8 | 231 | 1.92 | 31989 | 13.3 + |
| L 13-259 | 5957 | 21.9 | 272 | 1.53 | 28586 | 12.7 + |
| L 13-260 | 7888 | 31.3 | 251 | 1.79 | 34939 | 12.8 + |
| L 13-263 | 8721 | 33.3 | 260 | 1.92 | 34712 | 13.0 + |

Table 23. Nursery plantcane means of the 2013 "L" assignment series across 3 locations (St.Gabriel, Iberia and U.S.D.A.- Ardoyne Farms) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 9610 | 43.0 | 229 | 2.46 | 34334 | 11.0 |
| L 99-226 | 13277 + | 56.0 + | 241 | 3.09 + | 36224 | 10.9 |
| L 01-299 | 9419 | 41.3 | 233 | 2.46 | 33124 | 12.0 + |
| HoCP 04-838 | 13017 + | 55.4 + | 237 | 2.67 | 41291 + | 12.6 + |
| L 13-234 | 9822 | 42.5 | 235 | 2.14 | 39249 | 12.4 + |
| L 13-236 | 9699 | 38.1 | 258 + | 2.41 | 31158 | 12.5 + |
| L 13-240 | 8281 | 33.3 - | 251 + | 2.57 | 25334 - | 11.9 + |
| L 13-241 | 8452 | 35.0 | 244 | 2.45 | 28359 | 11.1 |
| L 13-242 | 10071 | 42.6 | 238 | 2.64 | 31611 | 13.1 + |
| L 13-243 | 11898 + | 54.1 + | 227 | 3.03 + | 34863 | 11.3 |
| L 13-245 | 7670 | 30.8 - | 252 + | 2.11 - | 28889 | 10.9 |
| L 13-246 | 8440 | 33.6 - | 260 + | 1.99 - | 32746 | 11.9 + |
| L 13-250 | 9883 | 42.9 | 235 | 2.05 - | 41216 + | 14.4 + |
| L 13-251 | 13447 + | 57.8 + | 236 | 3.06 + | 37586 | 12.6 + |
| L 13-254 | 6896 - | 28.9 - | 243 | 1.64 - | 35014 | 11.4 |
| L 13-256 | 7886 | 33.2 - | 240 | 1.88 - | 35468 | 12.9 + |
| L 13-257 | 11834 + | 50.4 + | 235 | 2.94 + | 34258 | 11.5 |
| L 13-258 | 7057 - | 34.0 | 211 - | 2.30 | 29494 | 13.3 + |
| L 13-259 | 7705 | 31.4 - | 248 + | 1.82 - | 33880 | 12.5 + |
| L 13-260 | 10134 | 43.2 | 237 | 2.17 | 39401 | 12.9 + |
| L 13-263 | 10491 | 44.8 | 236 | 2.16 | 40762 | 13.3 + |

Table 24. Nursery first-stubble means of the 2012 "L" assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 11993 | 56.3 | 213 | 2.70 | 41745 | 11.3 |
| L 99-226 | 17856 | 75.6 | 231 | 3.22 | 47190 | 11.9 |
| L 01-299 | 12432 | 59.2 | 210 | 2.25 | 52408 | 12.9 - |
| L 03-371 | 12494 | 54.9 | 226 | 2.14 | 51274 | 10.8 |
| L 12-201 | 15638 | 70.3 | 224 | 3.22 | 43560 | 12.3 |
| L 12-202 | 11600 | 49.7 | 233 | 3.08 | 32897 | 13.7 + |
| L 12-227 | 12135 | 54.0 | 225 | 2.69 | 40611 | 14.6 + |

Table 25. Nursery first-stubble means of the 2012 "L" assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 8641 | 35.9 | 241 | 2.09 | 34485 | 11.0 |
| L 99-226 | 11597 + | 45.9 + | 253 | 2.42 | 37888 | 12.3 + |
| L 01-299 | 11647 + | 47.1 + | 247 | 1.89 | 49913 + | 13.4 + |
| L 03-371 | 13256 + | 56.0 + | 236 | 1.87 | 59895 + | 11.7 |
| L 12-201 | 12103 + | 49.9 + | 243 | 2.64 + | 37888 | 10.9 |
| L 12-202 | 10349 + | 41.8 | 248 | 2.33 | 36527 | 12.4 + |
| L 12-227 | 13480 + | 53.8 + | 250 | 2.49 | 43333 | 13.4 + |

Table 26. Nursery first-stubble means of the 2012 "L" assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 12714 | 51.3 | 248 | 2.49 | 41291 | 11.2 |
| L 99-226 | 12790 | 49.9 | 257 | 2.94 + | 34258 | 12.2 + |
| L 01-299 | 15333 | 64.2 | 239 | 2.32 | 55131 + | 12.2 + |
| L 03-371 | 12489 | 48.7 | 257 | 1.98 - | 49005 | 11.1 |
| L 12-201 | 17509 | 69.0 | 254 | 3.04 + | 45829 | 10.2 - |
| L 12-202 | 14734 | 57.3 | 257 | 2.27 | 50366 | 12.6 + |
| L 12-227 | 13359 | 52.8 | 253 | 2.65 | 40157 | 13.2 + |

Table 27. Nursery first-stubble means of the 2012 "L" assignment series across 3 locations (St. Gabriel, Iberia and U.S.D.A. - Ardoyne Farms) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 11116 | 47.8 | 234 | 2.42 | 39174 | 11.2 |
| L 99-226 | 13991 | 57.1 | 247 + | 2.86 | 39779 | 12.2 |
| L 01-299 | 13137 | 56.8 | 232 | 2.15 | 52484 + | 12.8 + |
| L 03-371 | 12746 | 53.2 | 240 | 2.00 | 53391 + | 11.2 |
| L 12-201 | 15083 | 63.0 | 240 | 2.97 | 42426 | 11.2 |
| L 12-202 | 12228 | 49.6 | 246 + | 2.56 | 39930 | 12.9 + |
| L 12-227 | 12991 | 53.5 | 243 | 2.61 | 41367 | 13.7 + |

Table 28. Nursery second-stubble means of the 2011 "L" assignment series on a Commerce silt loam soil at Sugar Research Station in St. Gabriel, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 4823 | 28.0 | 173 | 2.16 | 25864 | 10.7 |
| L 99-226 | 12536 | 63.5 | 196 | 2.76 | 45602 | 12.4 |
| L 01-299 | 10310 | 56.2 | 184 | 2.34 | 47417 | 12.9 |
| L 03-371 | 7774 | 43.9 | 177 | 2.04 | 42879 | 10.6 |
| HoCP 04-838 | 9215 | 47.3 | 195 | 1.99 | 47870 | 11.3 |
| L11-168 | 4987 | 28.4 | 176 | 1.87 | 30174 | 12.1 |
| L11-172 | 8468 | 47.7 | 178 | 2.41 | 39930 | 12.2 |
| L11-183 | 8479 | 41.5 | 204 | 2.10 | 39476 | 10.8 |
| L11-187 | 6741 | 35.8 | 190 | 1.89 | 37888 | 12.7 |

Table 29. Nursery second-stubble means of the 2011 "L" assignment series on a Commerce silt loam soil at U.S.D.A-Ardoyne Farm in Chacahoula, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 7783 | 33.1 | 233 | 1.78 | 36981 | ------- |
| L 99-226 | 13132 | 49.6 | 265 + | 2.60 + | 38115 | ------- |
| L 01-299 | 10015 | 37.8 | 265 + | 1.68 | 45148 | ------- |
| L 03-371 | 11267 | 43.0 | 263 + | 1.68 | 51047 | ------- |
| HoCP 04-838 | 8725 | 33.6 | 259 + | 1.62 | 41518 | ------- |
| L11-168 | 8718 | 33.1 | 262 + | 1.56 | 43106 | ------- |
| L11-172 | 9655 | 36.5 | 264 + | 1.87 | 39023 | ------- |
| L11-183 | 8478 | 32.8 | 258 + | 1.66 | 40611 | ------- |
| L11-187 | 10632 | 38.2 | 278 + | 1.69 | 45148 | ------- |

Table 30. Nursery second-stubble means of the 2011 "L" assignment series on a Baldwin silty clay soil at Iberia Research Station in Jeanerette, Louisiana in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 3842 | 16.7 | 230 | 1.59 | 21099 | ------- |
| L 99-226 | 8915 + | 35.8 + | 249 | 2.22 + | 32443 | ------- |
| L 01-299 | 10531 + | 42.4 + | 249 | 1.78 | 49005 + | ------- |
| L 03-371 | 8652 + | 33.8 + | 256 + | 1.81 | 37434 + | ------- |
| HoCP 04-838 | 8789 + | 34.5 + | 255 + | 1.61 | 42879 + | ------- |
| L11-168 | 6979 + | 27.0 + | 258 + | 1.43 | 38115 + | ------- |
| L11-172 | 5028 | 22.5 | 224 | 2.02 + | 22234 | ------- |
| L11-183 | 8711 + | 37.7 + | 230 | 1.64 | 45829 + | ------- |
| L11-187 | 8243 + | 31.6 + | 262 + | 1.61 | 39249 + | ------- |

Table 31. Nursery second-stubble means of the 2011 "L" assignment series across 3 locations (St. Gabriel, Iberia and U.S.D.A.- Ardoyne Farms) in 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar Per Ton | Stalk Weight | Stalk Number | Fiber |
|---|---|---|---|---|---|---|
| | (lbs./A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) | (%) |
| HoCP 96-540 | 5483 | 26.0 | 212 | 1.84 | 27981 | 10.7 |
| L 99-226 | 11527 + | 49.6 + | 236 | 2.53 + | 38720 + | 12.4 |
| L 01-299 | 10286 + | 45.5 + | 232 | 1.93 | 47190 + | 12.9 |
| L 03-371 | 9231 + | 40.2 + | 232 | 1.84 | 43787 + | 10.6 |
| HoCP 04-838 | 8910 + | 38.4 + | 236 | 1.74 | 44089 + | 11.3 |
| L11-168 | 6895 | 29.5 | 232 | 1.62 | 37132 | 12.1 |
| L11-172 | 7717 | 35.6 | 222 | 2.10 + | 33729 | 12.2 |
| L11-183 | 8556 + | 37.3 | 231 | 1.80 | 41972 + | 10.8 |
| L11-187 | 8539 + | 35.2 | 243 | 1.73 | 40762 + | 12.7 |

# 2014 LOUISIANA "Ho" NURSERY AND INFIELD VARIETY TRIALS

E. O. Dufrene, M. J. Duet, F. J. Adams, and W. H. White
USDA-ARS, Sugarcane Research Unit (SRU)
Houma, LA

M. J. Pontiff and G. L. Hawkins
LSU AgCenter Sugar Research Station
St. Gabriel, LA

In the Sugarcane Research Unit's sugarcane variety program, promising experimental varieties are assigned permanent "HoCP" or "Ho" numbers three years after selection in the seedling stage. These varieties are then planted in replicated yield trials at SRU's Ardoyne Farm in Schriever and at the LSU AgCenter's Iberia Research Station in Jeanerette and Sugar Research Station in St. Gabriel. The following year, experimental varieties advanced for further testing are combined with varieties from the LSU AgCenter program ("L" series) and planted in replicated nursery yield trials on commercial farms (Paincourtville, Cecilia, and Bunkie, LA) that collectively represent the different regions of the sugarcane belt. From this stage on, varieties from the SRU and LSU AgCenter are included in all yield tests (infield and outfield trials) and yield estimates are based on plot weights. Two years after assignment, infield trials are planted at three locations (USDA's Ardoyne Farm in Schriever and commercial farms located in Vacherie and Abbeville), and seed plots are established at three primary stations and twelve outfield locations.

The SRU's nursery test plots planted during the year of assignment employ a randomized complete block design with two replications. Plots are 16 feet long by six feet (one row) wide with a four-foot alley between plots. A minimum of three commercial varieties are planted in each test for comparison purposes. In addition to experimental commercial varieties, clones from the SRU Recurrent Selection for Borers (RSB) program are included in nursery trials. Yield data collected on RSB clones give breeders additional agronomic data to aid in selection of parents for use in the breeding program. The year after assignment, varieties from SRU'S program are combined with varieties from the LSU program and planted in nurseries on commercial farms. The plot lengths in these tests are increased from 16 feet to 20 feet.

In the spring and summer, researchers rate nursery test plots for yield traits such as population, height, diameter, erectness, etc. Mature, millable stalks are counted in each plot in late July or August. A 10-stalk sample is hand-cut from plots of active varieties during the harvest season. Samples from USDA nurseries are taken to the Juice and Milling Quality Laboratory at the USDA Ardoyne Farm, where they are weighed to determine stalk weight and processed for sucrose analysis. Brix and pol values are used to estimate the yield of theoretical recoverable sugar (TRS) per ton of cane. Estimated yields of cane and sugar per acre, and number of stalks per acre are calculated based on results from juice analyses, mature millable stalk counts, and mean stalk weight. Varieties with yields equal or higher than the control varieties (both cane tonnage and sugar per ton) and not appearing susceptible to diseases are advanced for further testing.

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

Table 1 lists planting and harvest dates of USDA nursery and infield evaluations. Results of infield and nursery trials are presented in Tables 2 to 24. Statistical analyses were done for each test and for each series combined across locations using PROC MIXED procedures in SAS (version 9.1). For purposes of comparison, the check variety, HoCP 96-540, currently the leading variety in acreage in the state, is highlighted in each table. Yield values that are significantly higher or lower (P=0.05) than values for HoCP 96-540 are noted with a '+' or '-', respectively.

Table 1. Planting and harvest dates of "Ho" nursery & infield tests in 2014.

| Series | Location[1/] | Soil Series [2/] | Test type | Planting Date | Harvest Dates | | |
|---|---|---|---|---|---|---|---|
| | | | | | 2012 | 2013 | 2014 |
| 2009 | AFH | Sc | Infield | 9/28/11 | 11/13 | 11/22 | 11/12 |
| 2009 | BLK | Csl | Infield | 8/26/11 | 12/13 | 12/17 | 10/17 |
| 2009 | VAL | Pasl | Infield | 9/22/11 | 12/12 | 12/09 | 12/04 |
| 2011 | AFH | Csl | Nursery | 10/20/11 | 12/10 | 10/30 | 10/29 |
| 2011 | IRS | Bsc | Nursery | 10/21/11 | 11/14 | 11/19 | 10/23 |
| 2011 | STG | Sc | Nursery | 10/25/11 | 12/06 | - | - |
| 2010 | AFH | Sc | Infield | 10/30/12 | | 11/22 | - |
| 2010 | BLK | Csl | Infield | 8/17/12 | | 11/12 | 11/19 |
| 2010 | VAL | Pasl | Infield | 9/10/12 | | 12/09 | 12/04 |
| 2012 | AFH | Csl | Nursery | 10/17/12 | | 12/16 | 11/18 |
| 2012 | IRS | Bsc | Nursery | 10/29/12 | | 12/12 | 11/21 |
| 2012 | STG | Sc | Nursery | 10/19/12 | | 12/10 | 11/25 |
| 2011 | AFH | Sc | Infield | 9/30/13 | | | 11/12 |
| 2011 | BLK | Csl | Infield | 8/30/13 | | | 11/19 |
| 2011 | VAL | Pasl | Infield | 9/03/13 | | | 12/4 |
| 2013 | AFH | Csl | Nursery | 11/06/13 | | | 12/11 |
| 2013 | IRS | Bsc | Nursery | 11/13/13 | | | 11/24 |
| 2013 | STG | Sc | Nursery | 11/08/13 | | | 12/10 |
| 2012 | AFH | | | 9/25/14 | | | |
| 2012 | BLK | | | 8/26/14 | | | |
| 2012 | VAL | | | 9/11/14 | | | |
| 2014 | AFH | | | 10/21/14 | | | |
| 2014 | IRS | | | 10/23/14 | | | |
| 2014 | STG | | | 10/24/14 | | | |

[1/] AFH = Ardoyne Farm heavy soil and AFL = Ardoyne Farm Light soil in Schriever, BLK = Blackberry Farms in Vacherie, , IRS = Iberia Research Station in Jeanerette, STG = St. Gabriel Research Station in St. Gabriel, VAL = Vallot Farm in Abbeville.

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

Table 2. Infield second-stubble means of the 2009 "Ho" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 4560 | 22.3 | 204 | 1.86 | 24164 | 11.7 |
| L 99-226 | 8511 + | 34.8 + | 245 + | 1.76 | 39618 + | 12.5 |
| L 01-299 | 8150 + | 34.2 + | 239 + | 1.38 - | 49830 + | 13.1 |
| L 03-371 | 5246 | 21.7 | 244 + | 1.38 - | 31349 | 11.6 |
| HoCP 04-838 | 5329 | 21.9 | 243 + | 1.21 - | 36234 | 12.7 |
| HoCP 09-804 | 4262 | 18.2 | 233 | 1.01 - | 36229 | 13.0 |
| Ho 09-840 | 5808 | 22.8 | 255 + | 1.24 - | 36836 | 12.4 |

Table 3. Infield second-stubble means of the 2009 "Ho" and 2010 "L" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 9248 | 47.9 | 193 | 2.36 | 40806 | 12.0 |
| L 99-226 | 9025 | 41.6 | 216 + | 2.51 | 34044 | 12.0 |
| L 01-299 | 8689 | 45.8 | 190 | 1.59 - | 58340 | 12.6 |
| L 03-371 | 9110 | 41.5 | 218 + | 1.87 | 44086 | 10.7 |
| HoCP 04-838 | 8679 | 40.0 | 217 + | 1.77 | 45512 | 12.0 |
| HoCP 09-804 | 10872 | 44.4 | 245 + | 1.52 - | 59324 | 12.4 |
| Ho 09-840 | 9827 | 43.2 | 227 + | 1.42 - | 61032 | 12.1 |
| L 10-147 | 11511 | 50.4 | 228 + | 1.73 - | 59313 | 11.8 |

Table 4. Infield second-stubble means of the 2009 "HoCP" and 2010 "L" assignment series on a Patoutville silt loam soil at Vallot Farm in Abbeville, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 8948 | 34.5 | 260 | 2.36 | 29826 | 13.5 |
| L 99-226 | 10244 | 37.2 | 275 | 2.99 + | 24950 | 14.1 |
| L 01-299 | 10365 | 39.0 | 266 | 1.70 - | 46143 + | 13.0 |
| L 03-371 | 10512 + | 37.1 | 283 + | 2.13 | 34895 | 12.2 |
| HoCP 04-838 | 8253 | 30.2 | 273 | 1.85 - | 32782 | 13.0 |
| HoCP 09-804 | 9552 | 36.6 | 261 | 1.74 - | 43117 + | 14.0 |
| Ho 09-840 | 8144 | 30.6 | 267 | 1.54 - | 39986 | 11.6 - |
| L 10-147 | 7895 | 28.0 - | 282 + | 2.20 | 25442 | 11.8 - |

Table 5. Infield second -stubble means of the 2009 "HoCP" assignment series across three locations (Ardoyne Farm, Blackberry Farms, and Vallot Farm) in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 7585 | 34.9 | 219 | 2.19 | 31599 | 12.4 |
| L 99-226 | 9260 | 37.9 | 245 + | 2.42 | 32871 | 12.9 |
| L 01-299 | 9068 | 39.7 | 232 | 1.56 - | 51438 + | 12.9 |
| L 03-371 | 8289 | 33.4 | 248 + | 1.79 - | 36777 | 11.5 |
| HoCP 04-838 | 7420 | 30.7 | 244 + | 1.61 - | 38176 | 12.6 |
| HoCP 09-804 | 8229 | 33.1 | 247 + | 1.42 - | 46223 + | 13.1 |
| Ho 09-840 | 7926 | 32.2 | 250 + | 1.40 - | 45951 + | 12.1 |

Table 6. Infield first-stubble means of the 2011 "L" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 13421 | 56.7 | 237 | 2.18 | 53569 | 13.5 |
| L 99-226 | 13135 | 51.8 | 253 + | 2.44 | 42551 | 13.5 |
| L 01-299 | 15613 | 63.9 | 244 | 1.97 | 65107 | 12.8 |
| L 03-371 | 13237 | 53.7 | 246 | 2.13 | 51931 | 10.9 - |
| L 11-168 | 11467 | 46.2 | 248 + | 1.78 | 51895 | 13.3 |
| L 11-172 | 10678 | 44.7 - | 239 | 2.18 | 40952 | 13.3 |
| L 11-183 | 14352 | 53.5 | 268 + | 2.06 | 51973 | 12.0 - |
| L 11-187 | 14413 | 56.0 | 258 + | 1.81 | 62441 | 13.4 |

Table 7. Infield first-stubble means of the 2011 "L" assignment series on a Patoutville silt loam soil at Vallot Farm in Abbeville, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 9009 | 39.1 | 231 | 2.35 | 34693 | 13.0 |
| L 99-226 | 12497 | 45.5 | 274 + | 2.49 | 36624 | 13.2 |
| L 01-299 | 15051 + | 61.0 + | 246 | 1.96 | 62239 + | 13.2 |
| L 03-371 | 10114 | 36.9 | 275 + | 1.96 | 38043 | 10.5 - |
| L 11-168 | 8486 | 32.6 | 259 + | 1.86 | 34911 | 13.3 |
| L 11-172 | 9023 | 38.1 | 237 | 2.27 | 33561 | 14.6 + |
| L 11-183 | 11988 | 45.5 | 264 + | 2.21 | 41218 | 10.5 - |
| L 11-187 | 9044 | 36.0 | 251 | 2.38 | 33088 | 12.1 |

Table 8. Infield first-stubble means of the 2011 "L" assignment series across two locations (Blackberry Farms and Vallot Farm) in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 11215 | 47.9 | 234 | 2.27 | 44131 | 13.3 |
| L 99-226 | 12816 | 48.7 | 264 + | 2.46 | 39587 | 13.3 |
| L 01-299 | 15332 + | 62.4 + | 245 | 1.97 | 63673 + | 13.0 |
| L 03-371 | 11676 | 45.3 | 260 + | 2.04 | 44987 | 10.7 - |
| L 11-168 | 9976 | 39.4 | 254 | 1.82 - | 43403 | 13.3 |
| L 11-172 | 9851 | 41.4 | 238 | 2.23 | 37256 | 14.0 |
| L 11-183 | 13170 | 49.5 | 266 + | 2.14 | 46596 | 11.2 - |
| L 11-187 | 11729 | 46.0 | 254 | 2.09 | 47765 | 12.8 |

Table 9. Infield plant-cane means of the 2011 "Ho" assignment series on a Sharkey clay soil at Ardoyne Farm in Schriever, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 8714 | 41.8 | 209 | 3.00 | 28312 | 11.2 |
| L 99-226 | 11132 | 50.4 | 218 | 3.28 | 30731 | 12.3 |
| L 01-283 | 11128 | 45.0 | 247 + | 2.41 - | 37322 | 11.8 |
| L 01-299 | 9034 | 37.7 | 240 + | 2.53 | 29822 | 12.8 |
| HoCP 04-838 | 12675 + | 50.7 | 250 + | 2.26 - | 44979 + | 13.0 |
| Ho 11-511 | 11897 | 48.6 | 245 + | 2.90 | 33709 | 11.8 |
| Ho 11-512 | 12664 + | 43.6 | 291 + | 2.98 | 29597 | 11.6 |
| Ho 11-515 | 12473 + | 47.1 | 264 + | 2.61 | 36372 | 11.1 |
| Ho 11-532 | 11706 | 44.8 | 261 + | 2.20 - | 40928 + | 12.4 |
| Ho 11-556 | 14189 + | 53.1 + | 267 + | 2.12 - | 50598 + | 12.2 |

Table 10. Infield plant-cane means of the 2011 "Ho" and 2012 "L" assignment series on a Commerce silt loam soil at Blackberry Farms in Vacherie, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 12133 | 45.8 | 262 | 2.74 | 33362 | 11.8 |
| L 99-226 | 13806 | 48.9 | 285 + | 2.39 | 41012 | 11.2 |
| L 01-283 | 15416 | 51.5 | 299 + | 1.90 - | 54555 + | 10.6 |
| L 01-299 | 11760 | 46.8 | 251 | 1.94 - | 48343 | 13.1 |
| HoCP 04-838 | 10823 | 39.8 | 273 | 1.91 - | 41530 | 12.4 |
| Ho 11-511 | 15926 | 53.3 | 299 + | 2.25 - | 48594 | 11.1 |
| Ho 11-512 | 19246 + | 60.8 + | 315 + | 2.23 - | 55888 + | 9.9 |
| Ho 11-515 | 14743 | 52.8 | 279 | 1.92 - | 54991 + | 11.4 |
| Ho 11-532 | 13699 | 53.5 | 257 | 2.07 - | 52091 + | 13.6 |
| Ho 11-556 | 10553 | 39.7 | 265 | 1.59 - | 49910 | 12.3 |
| L 12-201 | 13316 | 47.2 | 282 | 2.82 | 33706 | 9.6 |
| L 12-202 | 14717 | 53.7 | 275 | 2.28 - | 47065 | 11.8 |
| L 12-227 | 11114 | 42.0 | 264 | 2.62 | 32066 | 13.6 |

Table 11. Infield plant-cane means of the 2011 "Ho" and 2012 "L" assignment series on a Patoutville silt loam soil at Vallot Farms in Abbeville, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 8863 | 35.7 | 249 | 2.07 | 34469 | 12.6 |
| L 99-226 | 10646 | 37.1 | 287 + | 2.58 | 28920 | 12.4 |
| L 01-283 | 8134 | 28.6 | 284 + | 1.79 | 32225 | 11.6 |
| L 01-299 | 8443 | 31.6 | 267 | 2.04 | 31047 | 13.1 |
| HoCP 04-838 | 6545 | 24.7 - | 265 | 2.05 | 24249 | 13.4 |
| Ho 11-511 | 8874 | 32.8 | 271 + | 2.38 | 27564 | 13.1 |
| Ho 11-512 | 9464 | 31.1 | 301 + | 2.25 | 29435 | 12.3 |
| Ho 11-515 | 8663 | 33.2 | 262 | 1.99 | 33581 | 12.3 |
| Ho 11-532 | 9086 | 35.8 | 254 | 2.01 | 36911 | 13.9 |
| Ho 11-556 | 8676 | 30.8 | 281 + | 1.92 | 32244 | 12.3 |
| L 12-201 | 9351 | 33.6 | 278 + | 2.44 | 27609 | 11.1 |
| L 12-202 | 9328 | 34.5 | 270 + | 2.48 | 27893 | 12.9 |
| L 12-227 | 7849 | 28.8 | 272 + | 2.34 | 25155 | 14.1 |

Table 12. Infield plant-cane means of the 2011 "Ho" and "HoCP" assignment series across three locations (Ardoyne Farm, Blackberry Farms, and Vallot Farm) in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 9903 | 41.1 | 240 | 2.60 | 32048 | 11.8 |
| L 99-226 | 11861 | 45.5 | 263 | 2.75 | 33554 | 12.0 |
| L 01-283 | 11559 | 41.7 | 277 + | 2.03 - | 41367 | 11.4 |
| L 01-299 | 9746 | 38.7 | 253 | 2.17 - | 36404 | 13.0 |
| HoCP 04-838 | 10015 | 38.4 | 263 | 2.07 - | 36920 | 12.9 |
| Ho 11-511 | 12233 | 44.9 | 272 + | 2.51 | 36622 | 12.0 |
| Ho 11-512 | 13791 + | 45.1 | 302 + | 2.49 | 38306 | 11.3 |
| Ho 11-515 | 11960 | 44.3 | 268 + | 2.17 - | 41648 | 11.6 |
| Ho 11-532 | 11497 | 44.7 | 257 | 2.09 - | 43310 + | 13.3 + |
| Ho 11-556 | 11139 | 41.2 | 271 + | 1.88 - | 44250 + | 12.3 |

Table 13. Infield plant-cane means of the 2011 "L" assignment series across two locations (Blackberry Farms and Vallot Farm) in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre | Fiber |
|---|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) | (%) |
| HoCP 96-540 | 10498 | 40.8 | 255 | 2.41 | 33916 | 12.2 |
| L 99-226 | 12226 | 43.0 | 286 + | 2.49 | 34966 | 11.8 |
| L 01-283 | 11775 | 40.1 | 292 + | 1.84 - | 43390 | 11.1 |
| L 01-299 | 10102 | 39.2 | 259 | 1.99 - | 39695 | 13.1 |
| HoCP 04-838 | 8684 | 32.3 | 269 | 1.98 - | 32890 | 12.9 |
| Ho 11-511 | 12400 | 43.1 | 285 + | 2.31 | 38079 | 12.1 |
| Ho 11-512 | 14355 | 45.9 | 308 + | 2.24 | 42661 | 11.1 |
| Ho 11-515 | 11703 | 43.0 | 271 | 1.95 - | 44286 | 11.9 |
| Ho 11-532 | 11392 | 44.7 | 255 | 2.04 | 44501 | 13.8 + |
| Ho 11-556 | 9614 | 35.3 | 273 | 1.75 - | 41077 | 12.3 |
| L 12-201 | 11334 | 40.4 | 280 + | 2.63 | 30657 | 10.3 - |
| L 12-202 | 12022 | 44.1 | 273 | 2.38 | 37479 | 12.4 |
| L 12-227 | 9481 | 35.4 | 268 | 2.48 | 28611 | 13.9 + |

Table 14. Nursery second-stubble means of the 2011 "Ho" and "HoCP" assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 8745 | 38.0 | 230 | 1.92 | 39703 |
| L 99-226 | 9887 | 41.2 | 238 | 2.20 + | 37434 |
| L 01-299 | 8920 | 34.5 | 258 + | 1.43 - | 48438 |
| L 03-371 | 10332 | 38.5 | 269 + | 1.48 - | 52068 |
| HoCP 04-838 | 8520 | 31.4 | 271 + | 1.56 - | 40724 |
| Ho 11-511 | 9205 | 35.7 | 255 | 2.16 | 33527 |
| Ho 11-512 | 9967 | 33.0 | 301 + | 1.76 | 37775 |
| Ho 11-515 | 8111 | 32.8 | 248 | 1.46 - | 45148 |
| Ho 11-529 | 5582 - | 19.9 - | 281 + | 1.06 - | 37434 |
| Ho 11-532 | 9829 | 36.2 | 270 + | 1.62 - | 44354 |
| Ho 11-556 | 9440 | 36.0 | 265 + | 1.56 - | 46283 |
| Ho 11-573 | 11827 + | 46.5 | 254 | 2.01 | 46283 |
| Ho 11-9627[3/] | 5797 - | 25.7 - | 227 | 1.00 - | 50707 |
| Ho 11-9628[3/] | 6805 | 32.0 | 214 | 1.25 - | 51728 |
| Ho 11-9629[3/] | 8529 | 37.2 | 230 | 1.53 - | 49005 |
| Ho 11-9630[3/] | 7256 | 27.3 - | 265 + | 1.32 - | 41858 |

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

Table 15. Nursery second-stubble means of the 2011 "Ho" and "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 8422 | 42.8 | 196 | 2.47 | 35052 |
| L 99-226 | 15039 + | 59.1 + | 256 + | 2.82 | 41745 |
| L 01-299 | 14057 + | 57.3 + | 245 + | 1.93 - | 59328 + |
| L 03-371 | 9849 | 38.8 | 254 + | 1.67 - | 46623 + |
| HoCP 04-838 | 10230 | 38.6 | 266 + | 1.61 - | 47984 + |
| Ho 11-511 | 10262 | 42.1 | 244 + | 2.19 | 38455 |
| Ho 11-512 | 11981 + | 42.6 | 280 + | 1.96 - | 43106 + |
| Ho 11-515 | 9478 | 38.7 | 244 + | 1.67 - | 46396 + |
| Ho 11-532 | 12038 + | 47.0 | 256 + | 1.79 - | 52862 + |
| Ho 11-556 | 7201 | 29.8 - | 242 + | 1.48 - | 40270 |
| Ho 11-573 | 9816 | 38.3 | 257 + | 2.18 | 35052 |
| Ho 11-9627[3/] | 7136 | 33.1 | 216 | 1.10 - | 60462 + |
| Ho 11-9628[3/] | 8433 | 44.2 | 191 | 1.41 - | 62844 + |
| Ho 11-9629[3/] | 7832 | 45.4 | 175 | 1.37 - | 66361 + |
| Ho 11-9630[3/] | 9415 | 38.9 | 242 + | 1.65 - | 47303 + |

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

Table 16. Nursery second-stubble means of the 2011 "Ho" and "HoCP" assignment series across two locations (Ardoyne Farm & Iberia Research Station) in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 8583 | 40.4 | 213 | 2.20 | 37378 |
| L 99-226 | 12463 | 50.1 | 247 + | 2.51 | 39590 |
| L 01-299 | 11489 | 45.9 | 252 + | 1.68 - | 53883 + |
| L 03-371 | 10090 | 38.6 | 262 + | 1.57 - | 49345 + |
| HoCP 04-838 | 9375 | 35.0 | 268 + | 1.59 - | 44354 |
| Ho 11-511 | 9724 | 38.8 | 250 + | 2.15 | 36144 |
| Ho 11-512 | 10974 | 37.8 | 291 + | 1.86 | 40440 |
| Ho 11-515 | 8794 | 35.7 | 246 + | 1.56 - | 45772 |
| Ho 11-532 | 10933 | 41.6 | 263 + | 1.70 - | 48608 |
| Ho 11-556 | 8320 | 32.9 | 253 + | 1.52 - | 43276 |
| Ho 11-573 | 10982 | 42.4 | 259 + | 2.11 | 40027 |
| Ho 11-9627[3/] | 6467 | 29.4 | 221 | 1.05 - | 55584 + |
| Ho 11-9628[3/] | 7619 | 38.1 | 202 | 1.33 - | 57286 + |
| Ho 11-9629[3/] | 8180 | 41.3 | 202 | 1.45 - | 57683 + |
| Ho 11-9630[3/] | 8336 | 33.1 | 254 + | 1.48 - | 44581 |

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

Table 17. Nursery first-stubble means of the 2012 "Ho" and "HoCP" assignment series on a Commerce silt loam soil at the Ardoyne Farm in Schriever, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 7535 | 32.7 | 231 | 2.04 | 32216 |
| L 99-226 | 9889 | 36.2 | 272 + | 2.72 + | 28246 |
| L 01-299 | 6394 | 25.6 | 251 | 1.67 | 30628 |
| L 03-371 | 7372 | 29.8 | 248 | 1.65 | 36073 |
| Ho 11-9403 | 8840 | 32.3 | 272 + | 1.69 | 38455 |
| Ho 12-612 | 7922 | 30.9 | 257 + | 1.70 | 36300 |
| Ho 12-615 | 8957 | 33.8 | 265 + | 1.91 | 36300 |
| Ho 12-616 | 7356 | 27.1 | 272 + | 1.86 | 29153 |
| Ho 12-626 | 10939 + | 38.8 | 281 + | 1.61 | 48551 + |
| Ho 12-627 | 7663 | 27.9 | 274 + | 1.58 | 35166 |
| Ho 12-630 | 7353 | 27.3 | 268 + | 2.03 | 27225 |
| Ho 12-633 | 8434 | 33.0 | 256 + | 1.78 | 37094 |
| Ho 12-638 | 6967 | 25.1 | 276 + | 1.80 | 27906 |
| HoCP 12-640 | 8305 | 34.3 | 242 | 2.07 | 33464 |
| HoCP 12-641 | 6165 | 24.5 | 251 | 1.69 | 29040 |
| HoCP 12-643 | 6486 | 27.7 | 234 | 1.81 | 30855 |
| HoCP 12-647 | 8129 | 30.4 | 268 + | 1.56 | 38909 |
| HoCP 12-649 | 6941 | 24.3 | 286 + | 1.44 - | 33804 |
| HoCP 12-656 | 6474 | 26.0 | 249 | 1.65 | 31536 |
| HoCP 12-667 | 9763 | 35.0 | 280 + | 1.94 | 36187 |
| HoCP 12-671 | 11021 + | 41.8 | 264 + | 2.22 | 37661 |
| HoCP 12-673 | 7522 | 28.6 | 263 + | 1.94 | 29607 |
| Ho 12-9631[3/] | 4388 - | 20.5 - | 214 | 2.20 | 18831 - |
| Ho 12-9632[3/] | 8478 | 31.2 | 267 + | 2.36 | 26318 |
| Ho 12-9633[3/] | 8275 | 30.4 | 273 + | 1.85 | 32670 |
| Ho 12-9634[3/] | 7615 | 36.7 | 208 | 1.60 | 46169 + |

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

Table 18. Nursery first-stubble means of the 2012 "Ho" and "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 12943 | 50.8 | 256 | 2.44 | 41858 |
| L 99-226 | 18425 + | 63.6 + | 290 + | 3.21 + | 39703 |
| L 01-299 | 13693 | 50.7 | 270 | 2.04 | 49686 |
| L 03-371 | 11368 | 40.7 | 281 + | 1.93 - | 42312 |
| Ho 12-612 | 11360 | 40.4 | 282 + | 2.40 | 33691 |
| Ho 12-615 | 12860 | 47.8 | 267 | 1.79 - | 53429 + |
| Ho 12-616 | 14069 | 46.9 | 298 + | 2.58 | 35960 |
| Ho 12-626 | 14223 | 51.9 | 273 | 2.18 | 47757 |
| Ho 12-627 | 12952 | 43.5 | 298 + | 2.05 | 42426 |
| Ho 12-630 | 11173 | 42.4 | 263 | 2.18 | 39023 |
| Ho 12-633 | 12929 | 49.7 | 260 | 2.27 | 44014 |
| Ho 12-638 | 11251 | 41.4 | 271 | 2.07 | 40043 |
| HoCP 12-640 | 10141 | 40.2 | 252 | 1.93 - | 41632 |
| HoCP 12-641 | 9770 | 35.5 - | 275 | 1.78 - | 39817 |
| HoCP 12-643 | 14899 | 54.7 | 274 | 2.42 | 45035 |
| HoCP 12-647 | 7966 - | 29.1 - | 274 | 1.41 - | 41291 |
| HoCP 12-649 | 12169 | 43.3 | 281 + | 2.09 | 41518 |
| HoCP 12-656 | 13639 | 49.3 | 277 + | 2.32 | 42539 |
| HoCP 12-667 | 16658 + | 56.6 | 294 + | 2.68 | 42312 |
| HoCP 12-671 | 10298 | 37.9 - | 272 | 2.24 | 33804 |
| HoCP 12-673 | 13994 | 50.4 | 279 + | 2.41 | 41632 |
| Ho 12-9631[3/] | 9129 - | 37.7 - | 242 | 2.80 | 26998 - |
| Ho 12-9632[3/] | 13257 | 49.6 | 268 | 3.46 + | 28700 - |
| Ho 12-9633[3/] | 8930 - | 32.1 - | 279 + | 1.96 - | 32783 - |
| Ho 12-9634[3/] | 8991 - | 38.2 - | 235 | 1.86 - | 41064 |

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

Table 19. Nursery first-stubble means of the 2012 "Ho" and "HoCP" assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 9029 | 39.1 | 231 | 2.25 | 34598 |
| L 99-226 | 13876 + | 57.3 + | 242 | 2.98 + | 38569 |
| L 01-299 | 13709 + | 53.7 | 255 + | 2.25 | 47871 |
| L 03-371 | 9705 | 37.7 | 257 + | 1.91 | 39703 |
| Ho 12-612 | 10136 | 43.2 | 235 | 2.33 | 37094 |
| Ho 12-615 | 15412 + | 63.3 + | 242 | 2.23 | 56265 + |
| Ho 12-616 | 10747 | 39.6 | 268 + | 2.13 | 37208 |
| Ho 12-626 | 12161 | 51.1 | 238 | 1.84 - | 56378 + |
| Ho 12-627 | 11643 | 47.3 | 244 | 2.12 | 44241 |
| Ho 12-630 | 9199 | 36.7 | 251 | 2.57 | 28700 |
| Ho 12-633 | 10235 | 42.3 | 242 | 2.13 | 40384 |
| Ho 12-638 | 5792 | 23.4 | 246 | 1.82 | 25410 |
| HoCP 12-640 | 8383 | 37.0 | 225 | 2.03 | 36640 |
| HoCP 12-641 | 11479 | 50.7 | 225 | 2.17 | 46283 |
| HoCP 12-643 | 12161 | 47.7 | 254 | 2.27 | 41972 |
| HoCP 12-647 | 6861 | 27.0 | 254 | 1.59 - | 34258 |
| HoCP 12-649 | 8583 | 35.9 | 236 | 2.04 | 34485 |
| HoCP 12-656 | 8753 | 35.0 | 248 | 2.20 | 31536 |
| HoCP 12-667 | 11420 | 43.5 | 262 + | 2.00 | 43560 |
| HoCP 12-671 | 8784 | 35.8 | 243 | 2.10 | 33918 |
| HoCP 12-673 | 8069 | 35.0 | 229 | 2.17 | 31989 |
| Ho 12-9631[3/] | 6586 | 31.9 | 207 - | 2.76 + | 23255 |
| Ho 12-9632[3/] | 12093 | 48.5 | 250 | 2.90 + | 34031 |
| Ho 12-9633[3/] | 7525 | 30.3 | 248 | 1.95 | 31309 |
| Ho 12-9634[3/] | 7930 | 40.2 | 197 - | 1.67 - | 48211 |

Table 20. Nursery first-stubble means of the 2011 "Ho" and "HoCP" assignment series across locations (Ardoyne Farm, Iberia Research Station, & Sugar Research Station) in 2014.

| Variety | Sugar/ acre (lbs.) | Tons/ acre (tons) | Sugar/ ton (lbs.) | Weight/ stalk (lbs.) | Stalks/ acre (no.) |
|---|---|---|---|---|---|
| HoCP 96-540 | 9836 | 40.9 | 239 | 2.24 | 36224 |
| L 99-226 | 14063 + | 52.4 + | 268 + | 2.97 + | 35506 |
| L 01-299 | 11265 | 43.4 | 259 + | 1.99 | 42728 |
| L 03-371 | 9482 | 36.1 | 262 + | 1.83 - | 39363 |
| Ho 12-612 | 9806 | 38.2 | 258 + | 2.14 | 35695 |
| Ho 12-615 | 11938 | 46.4 | 258 + | 1.95 | 47400 + |
| Ho 12-616 | 10724 | 37.8 | 279 + | 2.19 | 34107 |
| Ho 12-626 | 12441 + | 47.3 | 264 + | 1.88 - | 50896 + |
| Ho 12-627 | 10608 | 38.7 | 274 + | 1.90 - | 40101 |
| Ho 12-630 | 9241 | 35.5 | 261 + | 2.26 | 31649 |
| Ho 12-633 | 10533 | 41.7 | 253 | 2.06 | 40497 |
| Ho 12-638 | 8338 | 31.3 | 266 + | 1.92 | 32386 |
| HoCP 12-640 | 8943 | 37.2 | 240 | 2.01 | 37245 |
| HoCP 12-641 | 8769 | 35.2 | 252 | 1.85 - | 37057 |
| HoCP 12-643 | 11182 | 43.3 | 254 | 2.16 | 39287 |
| HoCP 12-647 | 7652 | 28.8 - | 265 + | 1.52 - | 38153 |
| HoCP 12-649 | 9231 | 34.5 | 268 + | 1.86 - | 36603 |
| HoCP 12-656 | 9749 | 37.3 | 258 + | 2.05 | 36081 |
| HoCP 12-667 | 12613 + | 45.0 | 279 + | 2.20 | 40686 |
| HoCP 12-671 | 10034 | 38.5 | 259 + | 2.19 | 35128 |
| HoCP 12-673 | 10132 | 38.8 | 259 + | 2.19 | 35050 |
| Ho 11-9403 | 10983 | 40.6 | 272 + | 1.91 | 42333 |
| Ho 12-9631[3/] | 6701 - | 30.0 - | 221 - | 2.59 + | 23028 - |
| Ho 12-9632[3/] | 11276 | 43.1 | 261 + | 2.90 + | 29683 |
| Ho 12-9633[3/] | 8243 | 30.9 - | 266 + | 1.92 - | 32254 |
| Ho 12-9634[3/] | 8179 | 38.4 | 213 - | 1.71 - | 45148 + |

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

Table 21. Nursery plant cane means of the 2013 "Ho" and "HoCP" assignment series on a Sharkey clay soil at the Ardoyne Farm in Schriever, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 14788 | 58.9 | 248 | 2.71 | 43333 |
| L 99-226 | 17574 | 69.9 | 252 | 3.57 | 39249 |
| L 01-283 | 12557 | 51.4 | 243 | 2.48 | 41178 |
| L 01-299 | 10529 - | 41.4 - | 254 | 2.45 | 34372 |
| HoCP 04-838 | 12497 | 48.4 | 258 | 2.60 | 37208 |
| Ho 11-9403 | 12032 | 50.0 | 240 | 2.34 | 42879 |
| Ho 13-700 | 12876 | 52.9 | 246 | 2.56 | 41064 |
| Ho 13-701 | 13794 | 56.8 | 248 | 3.58 + | 31309 - |
| Ho 13-703 | 10936 | 45.2 | 242 | 2.57 | 35279 |
| Ho 13-705 | 14580 | 54.6 | 268 | 2.41 | 45715 |
| Ho 13-707 | 13575 | 53.4 | 254 | 2.68 | 39817 |
| Ho 13-708 | 16859 | 64.2 | 263 | 3.35 + | 38342 |
| Ho 13-710 | 11044 | 42.2 - | 262 | 2.25 | 37548 |
| Ho 13-711 | 13309 | 51.5 | 259 | 2.57 | 40384 |
| Ho 13-713 | 11650 | 44.1 | 264 | 2.57 | 34598 |
| Ho 13-714 | 13762 | 53.2 | 259 | 2.76 | 38569 |
| Ho 13-715 | 12832 | 52.0 | 247 | 2.45 | 42426 |
| Ho 13-720 | 12527 | 47.5 | 264 | 2.56 | 37208 |
| HoCP 13-721 | 13754 | 52.0 | 265 | 2.49 | 41745 |
| HoCP 13-723 | 11840 | 43.6 | 272 + | 2.38 | 37094 |
| HoCP 13-726 | 14263 | 52.9 | 269 | 2.84 | 37548 |
| HoCP 13-730 | 12694 | 49.9 | 254 | 2.96 | 33691 - |
| HoCP 13-731 | 12135 | 49.1 | 247 | 2.10 - | 46850 |
| HoCP 13-733 | 14489 | 52.4 | 277 + | 2.37 | 44694 |
| HoCP 13-734 | 12161 | 51.7 | 235 | 2.94 | 35279 |
| HoCP 13-736 | 13978 | 60.2 | 233 | 2.82 | 42879 |
| HoCP 13-737 | 15136 | 54.4 | 278 + | 2.77 | 38682 |
| HoCP 13-738 | 12850 | 47.9 | 269 | 2.49 | 38342 |
| Ho 13-739 | 17119 | 60.1 | 285 + | 2.99 | 40043 |
| HoCP 13-740 | 11443 | 46.8 | 245 | 2.49 | 37548 |
| HoCP 13-742 | 12961 | 53.3 | 243 | 2.72 | 39249 |
| Ho 13-745 | 7931 - | 32.5 - | 245 | 2.30 | 28133 - |
| HoCP 13-747 | 11052 | 41.8 - | 265 | 2.23 | 37434 |
| Ho 13-748 | 11058 | 44.5 | 248 | 2.52 | 35279 |
| HoCP 13-749 | 11928 | 45.0 | 265 | 2.46 | 36981 |
| HoCP 13-751 | 10071 - | 41.5 - | 243 | 2.32 | 35846 |
| HoCP 13-752 | 13593 | 56.9 | 239 | 2.94 | 38796 |
| HoCP 13-754 | 12120 | 48.3 | 251 | 2.84 | 34145 |
| HoCP 13-755 | 13342 | 53.9 | 250 | 2.49 | 43106 |

Table 21. (Continued)

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 13-756 | 11028 | 43.3 | 255 | 2.24 | 38569 |
| HoCP 13-758 | 15426 | 58.9 | 262 | 2.94 | 39930 |
| HoCP 13-761 | 12120 | 49.3 | 245 | 2.26 | 43447 |
| Ho 13-762 | 10955 | 42.3 - | 259 | 2.74 | 31082 - |
| HoCP 13-763 | 10149 - | 38.4 - | 264 | 2.30 | 33351 - |
| HoCP 13-765 | 13483 | 48.6 | 278 + | 2.73 | 35619 |
| HoCP 13-766 | 12437 | 56.2 | 221 - | 3.14 | 35733 |
| HoCP 13-767 | 13028 | 52.3 | 249 | 2.48 | 42199 |
| Ho 13-769 | 13991 | 56.2 | 248 | 2.56 | 44127 |
| HoCP 13-770 | 13236 | 53.2 | 247 | 2.15 - | 49232 |
| HoCP 13-771 | 10888 | 42.4 - | 256 | 1.99 - | 42993 |
| HoCP 13-772 | 13132 | 50.2 | 261 | 2.43 | 41291 |
| HoCP 13-774 | 13896 | 50.2 | 277 + | 2.37 | 42426 |
| HoCP 13-775 | 13480 | 53.7 | 252 | 2.62 | 40724 |
| HoCP 13-777 | 12226 | 45.5 | 269 | 2.61 | 35052 |
| HoCP 13-778 | 13887 | 48.2 | 287 + | 2.42 | 39703 |
| Ho 13-9635[3/] | 10772 | 49.7 | 218 - | 2.91 | 34031 |
| Ho 13-9636[3/] | 8084 - | 44.0 | 183 - | 2.29 | 38455 |
| Ho 13-9637[3/] | 9873 - | 38.9 - | 254 | 1.53 - | 51047 |

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

Table 22. Nursery plant-cane means of the 2013 "Ho" and "HoCP" assignment series on a Baldwin silty clay soil at the Iberia Research Station in Jeanerette, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 9370 | 34.4 | 274 | 2.23 | 30742 |
| L 99-226 | 8179 | 28.5 | 287 | 2.47 | 23141 |
| L 01-283 | 6355 | 21.9 - | 283 | 1.76 - | 25977 |
| L 01-299 | 9793 | 35.4 | 279 | 1.86 | 37775 |
| HoCP 04-838 | 6490 | 24.7 | 260 | 2.08 | 24503 |
| Ho 11-9403 | 8419 | 30.7 | 271 | 1.75 - | 34939 |
| Ho 13-700 | 8991 | 31.4 | 285 | 1.66 - | 37775 |
| Ho 13-701 | 9812 | 34.8 | 283 | 2.86 + | 24276 |
| Ho 13-703 | 7420 | 27.3 | 270 | 1.68 - | 31989 |
| Ho 13-705 | 10754 | 36.6 | 295 | 1.92 | 38342 |
| Ho 13-707 | 9917 | 36.3 | 274 | 2.20 | 33010 |
| Ho 13-708 | 11846 | 41.3 | 287 | 2.95 + | 28019 |
| Ho 13-710 | 10480 | 36.3 | 289 | 2.04 | 35619 |
| Ho 13-711 | 5735 - | 19.8 - | 291 | 1.64 - | 24276 |

Table 22. (Continued)

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| Ho 13-713 | 8542 | 29.5 | 290 | 1.78 - | 33351 |
| Ho 13-714 | 7565 | 24.6 | 307 + | 1.91 | 26204 |
| Ho 13-715 | 7786 | 28.0 | 278 | 1.58 - | 34712 |
| Ho 13-720 | 8053 | 27.2 | 296 | 1.75 - | 31082 |
| HoCP 13-721 | 6942 | 23.6 | 295 | 1.54 - | 30628 |
| HoCP 13-723 | 9535 | 31.6 | 302 | 1.94 | 32557 |
| HoCP 13-726 | 9618 | 31.2 | 309 + | 1.90 | 33124 |
| HoCP 13-730 | 5888 - | 20.7 - | 284 | 1.86 | 23028 |
| HoCP 13-731 | 11953 | 43.2 | 280 | 1.78 - | 48098 |
| HoCP 13-733 | 6926 | 23.2 | 298 | 1.38 - | 33918 |
| HoCP 13-734 | 9504 | 34.4 | 277 | 2.28 | 30174 |
| HoCP 13-736 | 9943 | 34.9 | 285 | 2.15 | 32897 |
| HoCP 13-737 | 9284 | 33.0 | 281 | 2.01 | 33010 |
| HoCP 13-738 | 8656 | 30.0 | 289 | 2.02 | 30628 |
| Ho 13-739 | 6249 | 22.3 - | 280 | 1.98 | 22688 |
| HoCP 13-740 | 11756 | 40.1 | 293 | 1.91 | 41972 |
| HoCP 13-742 | 7769 | 28.0 | 272 | 2.27 | 25637 |
| Ho 13-745 | 8316 | 31.4 | 264 | 1.89 | 33237 |
| HoCP 13-747 | 9495 | 33.4 | 285 | 1.78 - | 37548 |
| Ho 13-748 | 6149 | 22.4 - | 274 | 2.02 | 22234 |
| HoCP 13-749 | 8908 | 32.2 | 275 | 2.42 | 27338 |
| HoCP 13-751 | 8541 | 31.6 | 271 | 1.78 - | 35279 |
| HoCP 13-752 | 9121 | 35.9 | 254 | 2.23 | 32443 |
| HoCP 13-754 | 10213 | 34.6 | 294 | 2.56 | 26998 |
| HoCP 13-755 | 12003 | 38.5 | 312 + | 2.00 | 39136 |
| HoCP 13-756 | 7755 | 27.3 | 285 | 1.74 - | 31309 |
| HoCP 13-758 | 11918 | 40.1 | 297 | 2.20 | 36640 |
| HoCP 13-761 | 8630 | 33.2 | 260 | 2.06 | 32330 |
| Ho 13-762 | 8129 | 28.6 | 279 | 1.96 | 28700 |
| HoCP 13-763 | 6443 | 23.2 | 270 | 1.87 | 24956 |
| HoCP 13-765 | 10122 | 33.5 | 302 | 2.27 | 29607 |
| HoCP 13-766 | 9912 | 37.1 | 268 | 2.87 + | 26318 |
| HoCP 13-767 | 7402 | 26.3 | 280 | 1.92 | 26998 |
| Ho 13-769 | 9504 | 32.2 | 292 | 1.87 | 34258 |
| HoCP 13-770 | 9255 | 33.9 | 274 | 1.90 | 35506 |
| HoCP 13-771 | 11354 | 38.7 | 292 | 1.93 | 40157 |
| HoCP 13-772 | 8210 | 32.2 | 255 | 2.20 | 29267 |
| HoCP 13-774 | 7388 | 25.8 | 288 | 2.40 | 21440 |
| HoCP 13-775 | 12272 | 42.4 | 290 | 2.13 | 40043 |
| HoCP 13-777 | 6591 | 22.5 - | 290 | 2.17 | 21099 |
| HoCP 13-778 | 8499 | 27.9 | 304 + | 1.78 - | 31876 |

Table 22. (Continued)

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| Ho 13-9635[3/] | 7902 | 31.1 | 252 | 2.29 | 27452 |
| Ho 13-9636[3/] | 6412 | 28.1 | 224 - | 1.87 | 30968 |
| Ho 13-9637[3/] | 5890 - | 22.4 - | 261 | 1.41 - | 31649 |

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

Table 23. Nursery plant cane means of the 2013 "Ho" and "HoCP" assignment series on a Commerce silt loam soil at the Sugar Research Station in St. Gabriel, LA in 2014.

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 96-540 | 12749 | 50.2 | 254 | 3.05 | 33010 |
| L 99-226 | 15734 | 65.6 | 244 | 3.46 | 37661 |
| L 01-283 | 10181 | 36.9 | 274 | 2.65 | 28133 |
| L 01-299 | 12586 | 47.2 | 267 | 2.19 - | 43106 |
| HoCP 04-838 | 13547 | 49.2 | 277 | 2.37 - | 41064 |
| Ho 11-9403 | 13359 | 51.6 | 259 | 2.40 - | 43333 |
| Ho 13-700 | 13502 | 53.5 | 251 | 2.72 | 39023 |
| Ho 13-701 | 12820 | 53.9 | 239 | 3.26 | 33351 |
| Ho 13-703 | 7640 | 31.3 | 245 | 2.06 - | 30401 |
| Ho 13-705 | 11999 | 45.1 | 264 | 2.25 - | 39703 |
| Ho 13-707 | 13538 | 56.2 | 240 | 2.70 | 41745 |
| Ho 13-708 | 12759 | 52.2 | 244 | 3.06 | 33918 |
| Ho 13-710 | 13749 | 50.7 | 273 | 2.35 - | 43106 |
| Ho 13-711 | 12561 | 45.0 | 279 | 2.31 - | 38909 |
| Ho 13-713 | 11151 | 42.5 | 262 | 2.05 - | 41178 |
| Ho 13-714 | 13180 | 52.5 | 251 | 2.61 | 40270 |
| Ho 13-715 | 11107 | 42.4 | 261 | 2.34 - | 35619 |
| Ho 13-720 | 13510 | 47.1 | 287 + | 2.58 | 36527 |
| HoCP 13-721 | 12764 | 53.1 | 245 | 2.44 - | 43560 |
| HoCP 13-723 | 13665 | 47.6 | 286 + | 2.22 - | 42993 |
| HoCP 13-726 | 11045 | 42.0 | 263 | 2.15 - | 38796 |
| HoCP 13-730 | 13105 | 52.1 | 253 | 2.72 | 38569 |
| HoCP 13-731 | 10598 | 44.8 | 241 | 2.08 - | 42993 |
| HoCP 13-733 | 10494 | 40.4 | 258 | 2.18 - | 36867 |
| HoCP 13-734 | 10638 | 41.0 | 259 | 2.58 | 31989 |
| HoCP 13-736 | 7210 - | 41.8 | 172 - | 2.30 - | 36300 |
| HoCP 13-737 | 9502 | 37.0 | 257 | 2.12 - | 35052 |
| HoCP 13-738 | 12837 | 48.4 | 265 | 3.00 | 32443 |
| Ho 13-739 | 13744 | 53.2 | 258 | 3.12 | 34031 |
| HoCP 13-740 | 19013 + | 82.2 + | 227 | 2.92 | 56038 + |

Table 23. (Continued)

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 13-742 | 12465 | 52.3 | 238 | 2.73 | 38682 |
| Ho 13-745 | 11198 | 45.3 | 246 | 2.34 - | 38455 |
| HoCP 13-747 | 11399 | 43.7 | 261 | 2.22 - | 39703 |
| Ho 13-748 | 16279 | 65.0 | 251 | 2.85 | 45602 |
| HoCP 13-749 | 11838 | 47.0 | 251 | 2.28 - | 41064 |
| HoCP 13-751 | 10067 | 39.8 | 253 | 2.27 - | 35166 |
| HoCP 13-752 | 12183 | 51.3 | 237 | 2.84 | 36187 |
| HoCP 13-754 | 13991 | 53.2 | 263 | 3.49 | 30515 |
| HoCP 13-755 | 15122 | 56.6 | 270 | 2.53 | 44468 |
| HoCP 13-756 | 13451 | 54.1 | 249 | 2.27 - | 47644 + |
| HoCP 13-758 | 16141 | 58.1 | 278 | 2.66 | 44127 |
| HoCP 13-761 | 12973 | 47.3 | 274 | 2.41 - | 39249 |
| Ho 13-762 | 10150 | 39.5 | 257 | 2.14 - | 37661 |
| HoCP 13-763 | 9670 | 41.4 | 234 | 1.89 - | 44014 |
| HoCP 13-765 | 10279 | 38.0 | 270 | 2.35 - | 32330 |
| HoCP 13-766 | 9165 | 52.6 | 174 - | 3.10 | 33918 |
| HoCP 13-767 | 9526 | 37.3 | 253 | 2.42 - | 31649 |
| Ho 13-769 | 18322 + | 66.7 | 276 | 2.92 | 45375 |
| HoCP 13-770 | 10872 | 47.6 | 229 | 2.48 - | 38115 |
| HoCP 13-771 | 11622 | 43.8 | 265 | 2.24 - | 39249 |
| HoCP 13-772 | 11734 | 45.9 | 255 | 2.64 | 35393 |
| HoCP 13-774 | 8900 | 32.2 | 276 | 2.16 - | 30515 |
| HoCP 13-775 | 14245 | 54.4 | 261 | 2.70 | 40384 |
| HoCP 13-777 | 17388 | 66.6 | 259 | 2.80 | 46963 |
| HoCP 13-778 | 11057 | 41.5 | 267 | 2.27 - | 36640 |
| Ho 13-9635 | 9325 | 42.3 | 220 - | 2.45 - | 34712 |
| Ho 13-9636 | 11321 | 61.8 | 183 - | 2.54 | 47871 |
| Ho 13-9637 | 8151 | 33.4 | 243 | 1.49 - | 45148 |
| HoCP 13-770 | 10872 | 47.6 | 229 | 2.48 - | 38115 |
| HoCP 13-771 | 11622 | 43.8 | 265 | 2.24 - | 39249 |
| HoCP 13-772 | 11734 | 45.9 | 255 | 2.64 | 35393 |
| HoCP 13-774 | 8900 | 32.2 | 276 | 2.16 - | 30515 |
| HoCP 13-775 | 14245 | 54.4 | 261 | 2.70 | 40384 |
| HoCP 13-777 | 17388 | 66.6 | 259 | 2.80 | 46963 |
| HoCP 13-778 | 11057 | 41.5 | 267 | 2.27 - | 36640 |
| Ho 13-9635[3/] | 9325 | 42.3 | 220 - | 2.45 - | 34712 |
| Ho 13-9636[3/] | 11321 | 61.8 | 183 - | 2.54 | 47871 + |
| Ho 13-9637[3/] | 8151 | 33.4 | 243 | 1.49 - | 45148 |

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

Table 24. Nursery plant cane means of the 2013 “Ho” and “HoCP” assignment series across locations (Ardoyne Farm, Iberia Research Station, and Sugar Research Station) in 2014.

| Variety | Sugar/ acre (lbs.) | Tons/ acre (tons) | Sugar/ ton (lbs.) | Weight/ stalk (lbs.) | Stalks/ acre (no.) |
|---|---|---|---|---|---|
| HoCP 96-540 | 12302 | 47.8 | 258 | 2.66 | 35695 |
| L 99-226 | 13829 | 54.6 | 261 | 3.16 + | 33351 |
| L 01-283 | 9698 | 36.7 - | 267 | 2.29 - | 31763 |
| L 01-299 | 10969 | 41.4 | 266 | 2.17 - | 38418 |
| HoCP 04-838 | 10845 | 40.7 | 265 | 2.35 | 34258 |
| Ho 11-9403 | 11270 | 44.1 | 257 | 2.16 - | 40384 |
| Ho 13-700 | 11790 | 45.9 | 260 | 2.31 - | 39287 |
| Ho 13-701 | 12142 | 48.5 | 257 | 3.23 + | 29645 |
| Ho 13-703 | 8665 - | 34.6 - | 252 | 2.10 - | 32557 |
| Ho 13-705 | 12444 | 45.4 | 276 | 2.19 - | 41253 |
| Ho 13-707 | 12343 | 48.6 | 256 | 2.53 | 38191 |
| Ho 13-708 | 13821 | 52.5 | 264 | 3.12 + | 33426 |
| Ho 13-710 | 11758 | 43.1 | 275 | 2.21 - | 38758 |
| Ho 13-711 | 10535 | 38.7 | 276 | 2.17 - | 34523 |
| Ho 13-713 | 10448 | 38.7 | 272 | 2.13 - | 36376 |
| Ho 13-714 | 11502 | 43.4 | 272 | 2.42 | 35014 |
| Ho 13-715 | 10575 | 40.8 | 262 | 2.12 - | 37586 |
| Ho 13-720 | 11363 | 40.6 | 282 + | 2.30 - | 34939 |
| HoCP 13-721 | 11153 | 42.9 | 268 | 2.15 - | 38644 |
| HoCP 13-723 | 11680 | 41.0 | 287 + | 2.18 - | 37548 |
| HoCP 13-726 | 11642 | 42.0 | 280 + | 2.29 - | 36489 |
| HoCP 13-730 | 10562 | 40.9 | 264 | 2.51 | 31763 |
| HoCP 13-731 | 11562 | 45.7 | 256 | 1.99 - | 45980 + |
| HoCP 13-733 | 10636 | 38.7 | 278 | 1.98 - | 38493 |
| HoCP 13-734 | 10767 | 42.4 | 257 | 2.60 | 32481 |
| HoCP 13-736 | 10377 | 45.6 | 230 - | 2.42 | 37359 |
| HoCP 13-737 | 11307 | 41.5 | 272 | 2.30 - | 35582 |
| HoCP 13-738 | 11448 | 42.1 | 274 | 2.50 | 33804 |
| Ho 13-739 | 12371 | 45.2 | 275 | 2.70 | 32254 |
| HoCP 13-740 | 14071 | 56.3 | 255 | 2.44 | 45186 + |
| HoCP 13-742 | 11065 | 44.5 | 251 | 2.57 | 34523 |
| Ho 13-745 | 9148 - | 36.4 - | 252 | 2.18 - | 33275 |
| HoCP 13-747 | 10648 | 39.6 | 271 | 2.08 - | 38228 |
| Ho 13-748 | 11162 | 44.0 | 257 | 2.46 | 34372 |
| HoCP 13-749 | 10891 | 41.4 | 264 | 2.39 | 35128 |
| HoCP 13-751 | 9559 | 37.7 | 255 | 2.12 - | 35430 |
| HoCP 13-752 | 11632 | 48.1 | 244 | 2.67 | 35808 |
| HoCP 13-754 | 12108 | 45.4 | 269 | 2.96 | 30553 |

Table 24. (Continued)

| Variety | Sugar/ acre | Tons/ acre | Sugar/ ton | Weight/ stalk | Stalks/ acre |
|---|---|---|---|---|---|
| | (lbs.) | (tons) | (lbs.) | (lbs.) | (no.) |
| HoCP 13-755 | 13489 | 49.7 | 277 | 2.34 | 42237 |
| HoCP 13-756 | 10745 | 41.5 | 263 | 2.08 - | 39174 |
| HoCP 13-758 | 14495 | 52.4 | 279 + | 2.60 | 40233 |
| HoCP 13-761 | 11241 | 43.3 | 260 | 2.24 - | 38342 |
| Ho 13-762 | 9745 | 36.8 - | 265 | 2.28 - | 32481 |
| HoCP 13-763 | 8754 - | 34.3 - | 256 | 2.02 - | 34107 |
| HoCP 13-765 | 11295 | 40.0 | 283 + | 2.45 | 32519 |
| HoCP 13-766 | 10505 | 48.6 | 221 - | 3.03 + | 31989 |
| HoCP 13-767 | 9985 | 38.7 | 261 | 2.27 - | 33615 |
| Ho 13-769 | 13939 | 51.7 | 272 | 2.45 | 41253 |
| HoCP 13-770 | 11121 | 44.9 | 250 | 2.18 - | 40951 |
| HoCP 13-761 | 11241 | 43.3 | 260 | 2.24 - | 38342 |
| Ho 13-762 | 9745 | 36.8 - | 265 | 2.28 - | 32481 |
| HoCP 13-763 | 8754 - | 34.3 - | 256 | 2.02 - | 34107 |
| HoCP 13-765 | 11295 | 40.0 | 283 + | 2.45 | 32519 |
| HoCP 13-766 | 10505 | 48.6 | 221 - | 3.03 + | 31989 |
| HoCP 13-767 | 9985 | 38.7 | 261 | 2.27 - | 33615 |
| HoCP 13-771 | 11288 | 41.6 | 271 | 2.05 - | 40800 |
| HoCP 13-772 | 11025 | 42.8 | 257 | 2.42 | 35317 |
| HoCP 13-774 | 10061 | 36.1 - | 280 + | 2.31 - | 31460 |
| HoCP 13-775 | 13332 | 50.2 | 268 | 2.48 | 40384 |
| HoCP 13-777 | 12068 | 44.9 | 273 | 2.53 | 34372 |
| HoCP 13-778 | 11148 | 39.2 | 286 + | 2.16 - | 36073 |
| Ho 13-9635[3/] | 9333 - | 41.0 | 230 - | 2.55 | 32065 |
| Ho 13-9636[3/] | 8606 - | 44.6 | 197 - | 2.23 - | 39098 |
| Ho 13-9637[3/] | 7971 - | 31.6 - | 253 | 1.47 - | 42615 |

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

# 2014 LOUISIANA SUGARCANE VARIETY DEVELOPMENT PROGRAM OUTFIELD VARIETY TRIALS

David Sexton and Collins Kimbeng
Sugar Research Station

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

Windell Jackson, Herman Waguespack, Jr. and Brian Ball
American Sugar Cane League

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

To be considered for release, an experimental variety must equal or exceed the performance of commercial varieties with regard to yield and harvestability across locations, crops, and years. Accurate varietal evaluation requires overall yield performance information in addition to performance under adverse harvest conditions. The objective of this report is to provide overall and specific location yield data by crop for the 2014 outfield tests. Included are multi-year yield analyses for appropriate test varieties.

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

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

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

The most widely grown variety in Louisiana in 2013 was HoCP96-540, occupying 37% of the state's acreage. Accordingly for comparison, HoCP96-540 is used as the check variety in all comparisons and is highlighted in the tables. To adjust for missing data, the SAS analysis

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

Twenty experimental varieties representing the 2012 assignment series were introduced to outfield locations for seed increase in 2014 (Table 1). Ten experimental and seven commercial varieties were planted at 12 outfield locations. Thirty-nine tests were harvested in 2014 including twelve plantcane, twelve first-stubble, eleven second-stubble, and four third-stubble crops (Table 2).

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

The Louisiana sugar industry experienced cold and wet conditions during January through April, which led to a slow start for the cane crop. In June and July South Louisiana experienced favorable conditions with less rainfall. August was the turning point for the cane crop, warmer weather led to rapid growth. The Louisiana sugar industry was spared of tropical activity in 2014. The 2014 grinding season in Louisiana began on September 25, 2014. The grinding season was excellent with and extended dry time frame. However, an early season freeze occurred in mid-November. The freeze caused the sugar content of the crop to drop, but even with the freeze event, Louisiana had a record sugar recovery of 232 lbs./ton of cane. All tests were harvested by the last full week of December. The last raw sugar factory ended its processing season on January 10, 2015.

Ho 07-613 was released in the spring of 2014, and was harvested in plantcane through third stubble crops in 2014. Experimental varieties HoCP09-804 and Ho09-840 were harvested in plantcane through first stubble in 2014, and will be considered for release in the spring of 2016.

---

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

Table 1. Commercial and experimental varieties planted in the outfield in 2014.

| Commercial Varieties | | Experimental Varieties | | Experimental Varieties Introduced to the Outfield | | | |
|---|---|---|---|---|---|---|---|
| HoCP96-540 | HoCP04-838 | HoCP09-804 | L11-187 | L12-201 | Ho12-616 | Ho12-638 | HoCP12-649 |
| L99-226 | Ho07-613 | HoCP09-840 | Ho11-511 | L12-202 | Ho12-626 | HoCP12-640 | HoCP12-656 |
| HoCP00-950 | | L11-168 | Ho11-515 | L12-227 | Ho12-627 | HoCP12-641 | HoCP12-667 |
| L01-283 | | L11-172 | Ho11-532 | Ho12-612 | Ho12-630 | HoCP12-643 | HoCP12-671 |
| L01-299 | | L11-183 | Ho11-556 | Ho12-615 | Ho12-633 | HoCP12-647 | HoCP12-673 |

Table 2. Harvest and planting dates for all outfield locations harvested in 2014.

| Location | Parish | Plantcane | | | First-stubble | | Second-stubble | | Third-stubble | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2014 Planting Date | 2014 Harvest Date | 2013 Planting Date | 2014 Harvest Date | 2012 Planting Date | 2014 Harvest Date | 2011 Planting Date | 2014 Harvest Date | 2010 Planting Date |
| A. Landry | Iberville | 08/27 | 11/12 | 09/06 | 11/12 | 09/25 | ** | 08/11 | ** | 08/16 |
| Allains | St. Mary | 10/13 | 11/11 | 09/19 | 11/10 | 09/27 | 11/10 | 08/31 | 11/11 | 09/17 |
| Alma | Pointe Coupee | 10/09 | 12/02 | 08/28 | 12/02 | 08/17 | 10/31 | 09/14 | 10/31 | 09/13 |
| Bon Secour | St. James | 09/09 | 12/01 | 08/29 | 11/24 | 09/07 | 12/01 | 09/13 | 11/24 | 09/15 |
| Brunswick | Pointe Coupee | 09/17 | 11/25 | 09/04 | 11/25 | 09/05 | 11/25 | 09/09 | ** | 09/02 |
| F. Martin | St. Mary | 10/08 | 11/21 | 10/05 | 11/21 | 09/26 | 10/30 | 09/15 | ** | 09/10 |
| Glenwood | Assumption | 10/07 | 11/28 | 08/23 | 11/04 | 09/24 | 11/04 | 09/01 | ** | 09/20 |
| Lanaux | St. John | 08/25 | 11/13 | 09/10 | 11/13 | 08/23 | 11/13 | 08/31 | ** | 09/23 |
| Levert-St. John | St. Martin | 09/10 | 11/20 | 09/03 | 11/20 | 09/06 | 11/20 | 09/02 | ** | 09/09 |
| Magnolia | Terrebonne | 10/27 | 11/26 | 11/05 | 11/26 | 09/11 | 11/26 | 09/21 | ** | 09/16 |
| Mary | Lafourche | 10/28 | 12/22 | 09/17 | 11/03 | 09/12 | 11/03 | 10/11 | ** | 09/24 |
| R. Hebert | Iberia | 09/29 | 12/18 | 09/05 | 12/18 | 09/25 | 10/10 | 09/16 | 10/10 | 09/01 |

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

Table 3. Plantcane sugar per acre for eight commercial and two experimental varieties at twelve outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (lbs./A) | | | | | | |
| HoCP96-540 | 8082 | 8611 | 6112 | 10205 | 5657 | 9329 | 8799 | 7601 | 8609 | 8665 | 9219 | 7534 | 8202 |
| L99-226 | 10514 | 8985 | 6283 | 10981 | 6203 | 9380 | 9320 | 8916 | 10362 | 11612 + | 8911 | 10742 + | 9351 + |
| HoCP00-950 | 9965 | 9585 | 7229 | 11560 | 6553 | 8620 | 9343 | 7480 | 9737 | 10584 + | 10253 | 10029 + | 9245 + |
| L01-283 | 9860 | 10187 | 5778 | 10312 | 5979 | 9827 | 6909 - | 8029 | 8527 | 9037 | 9280 | 9542 + | 8606 |
| L01-299 | 9581 | 8522 | 5640 | 10177 | 4506 | 9941 | 7814 | 7487 | 8307 | 7307 | 9657 | 7453 | 8033 |
| L03-371 | 8595 | 8509 | 6868 | 10112 | 6953 | 8326 | 8565 | 9169 | 7827 | 9882 | 9677 | 10031 + | 8710 |
| HoCP04-838 | 9241 | 10001 | 7530 | 10557 | 5650 | 8411 | 7838 | 8221 | 8966 | 10137 | 10049 | 8937 | 8795 + |
| Ho07-613 | 8623 | 8950 | 6113 | 11112 | 5222 | 9640 | 8201 | 9132 | 7171 | 9642 | 10037 | 9254 + | 8591 |
| HoCP09-804 | 9898 | 9672 | 5633 | 10257 | 5692 | 10858 | 7506 | 7668 | 9230 | 9922 | 9597 | 9075 + | 8751 |
| Ho09-840 | 9161 | 8277 | 6751 | 10395 | 5059 | 8960 | 7140 - | 7611 | 9327 | 8315 | 8364 | 10012 + | 8281 |

Table 4. Plantcane cane yield for eight commercial and two experimental varieties at twelve outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (tons/A) | | | | | | |
| HoCP96-540 | 29.0 | 36.1 | 26.1 | 38.2 | 24.8 | 41.7 | 35.0 | 29.3 | 34.3 | 35.0 | 37.5 | 30.6 | 33.1 |
| L99-226 | 33.6 | 33.7 | 26.2 | 39.6 | 25.5 | 37.2 | 33.1 | 31.4 | 36.0 | 40.1 | 32.3 - | 36.7 | 33.8 |
| HoCP00-950 | 30.8 | 33.0 | 24.8 | 36.7 | 24.5 | 32.3 | 30.5 - | 24.8 | 32.6 | 36.0 | 37.1 | 31.3 | 31.2 - |
| L01-283 | 31.4 | 34.9 | 21.6 | 32.6 | 22.4 | 38.4 | 25.2 - | 28.0 | 29.2 | 32.5 | 36.3 | 34.0 | 30.5 - |
| L01-299 | 31.6 | 34.0 | 24.0 | 36.4 | 18.8 | 39.9 | 31.9 | 28.3 | 30.5 | 30.2 | 37.2 | 28.9 | 31.0 - |
| L03-371 | 27.1 | 29.8 - | 27.7 | 34.8 | 27.6 | 33.7 | 30.0 - | 29.7 | 27.0 | 34.6 | 33.4 - | 36.3 | 31.0 - |
| HoCP04-838 | 29.0 | 35.8 | 29.0 | 37.2 | 22.4 | 34.2 | 29.9 - | 27.6 | 31.7 | 37.6 | 36.0 | 32.4 | 31.9 |
| Ho07-613 | 27.3 | 34.0 | 23.1 | 36.1 | 20.9 | 37.7 | 29.7 - | 30.0 | 26.2 | 34.1 | 36.7 | 32.7 | 30.7 - |
| HoCP09-804 | 32.7 | 36.2 | 21.6 | 35.2 | 22.7 | 40.8 | 27.8 - | 26.9 | 32.7 | 34.7 | 35.4 | 33.2 | 31.7 |
| Ho09-840 | 30.5 | 30.6 - | 26.3 | 36.7 | 19.4 | 36.5 | 27.1 - | 25.8 | 33.6 | 31.3 | 31.3 - | 35.4 | 30.4 - |

Table 5. Plantcane sugar per ton for eight commercial and two experimental varieties at twelve outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (lbs./tons) | | | | | | |
| HoCP96-540 | 279 | 240 | 234 | 267 | 229 | 224 | 252 | 259 | 251 | 248 | 245 | 246 | 248 |
| L99-226 | 313 + | 266 + | 240 | 279 | 244 | 253 + | 282 + | 285 + | 287 + | 289 + | 276 + | 293 + | 275 + |
| HoCP00-950 | 324 + | 293 + | 289 + | 316 + | 267 + | 266 + | 306 + | 301 + | 299 + | 295 + | 276 + | 320 + | 296 + |
| L01-283 | 314 + | 293 + | 267 + | 316 + | 268 + | 256 + | 274 + | 289 + | 293 + | 279 + | 256 | 280 + | 282 + |
| L01-299 | 303 + | 255 | 236 | 280 | 243 | 249 + | 246 | 265 | 273 + | 244 | 260 | 258 | 259 + |
| L03-371 | 317 + | 286 + | 247 | 291 + | 253 + | 248 + | 286 + | 307 + | 291 + | 287 + | 290 + | 277 + | 281 + |
| HoCP04-838 | 318 + | 281 + | 258 + | 284 | 252 + | 246 + | 261 | 298 + | 282 + | 271 + | 280 + | 276 + | 276 + |
| Ho07-613 | 315 + | 265 | 265 + | 309 + | 251 + | 255 + | 276 + | 305 + | 273 + | 283 + | 273 + | 282 + | 279 + |
| HoCP09-804 | 303 + | 268 + | 261 + | 291 + | 251 + | 266 + | 270 + | 284 + | 282 + | 286 + | 271 + | 274 + | 276 + |
| Ho09-840 | 301 + | 272 + | 257 + | 284 | 264 + | 245 + | 263 | 295 + | 277 + | 266 | 267 + | 284 + | 273 + |

Table 6. Plantcane stalk weight for eight commercial and two experimental varieties at twelve outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (lbs.) | | | | | | |
| HoCP96-540 | 2.26 | 2.53 | 2.27 | 2.45 | 2.04 | 2.75 | 2.35 | 2.66 | 2.31 | 2.58 | 2.61 | 2.64 | 2.45 |
| L99-226 | 3.12 + | 3.62 + | 2.77 + | 2.88 + | 2.61 + | 3.25 | 2.83 + | 2.97 | 2.82 + | 2.89 | 3.03 | 3.07 | 2.99 + |
| HoCP00-950 | 2.25 | 2.15 | 1.99 | 2.05 - | 2.36 | 2.31 | 1.94 - | 2.75 | 2.23 | 2.11 | 2.20 | 2.38 | 2.23 - |
| L01-283 | 2.30 | 2.33 | 2.02 | 1.87 - | 1.92 | 2.23 | 2.03 | 2.25 - | 1.84 - | 2.35 | 2.14 | 2.06 | 2.11 - |
| L01-299 | 2.13 | 2.28 | 2.27 | 2.08 - | 2.08 | 2.35 | 2.27 | 2.13 - | 1.94 | 2.42 | 2.38 | 2.68 | 2.25 - |
| L03-371 | 2.13 | 2.64 | 2.24 | 1.90 - | 2.09 | 2.44 | 2.07 | 2.31 | 1.58 - | 2.34 | 2.12 | 2.65 | 2.21 - |
| HoCP04-838 | 2.18 | 2.22 | 2.19 | 1.88 - | 1.79 | 2.14 - | 2.21 | 2.17 - | 1.65 - | 2.48 | 2.21 | 2.51 | 2.14 - |
| Ho07-613 | 2.53 | 2.56 | 2.14 | 2.27 | 2.19 | 2.68 | 2.44 | 2.38 | 2.19 | 2.43 | 2.98 | 2.72 | 2.46 |
| HoCP09-804 | 1.99 | 2.20 | 1.73 - | 1.73 - | 1.67 | 2.15 - | 1.74 - | 1.95 - | 1.56 - | 2.07 | 1.86 - | 2.15 | 1.90 - |
| Ho09-840 | 1.70 - | 1.71 - | 1.51 - | 1.52 - | 1.56 - | 1.60 - | 1.48 - | 1.61 - | 1.50 - | 2.31 | 1.30 - | 1.95 - | 1.65 - |

Table 7. Plantcane stalk number for eight commercial and two experimental varieties at twelve outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (stalks/A) | | | | | | |
| HoCP96-540 | 25677 | 28423 | 22975 | 31738 | 24042 | 30494 | 29982 | 22162 | 30528 | 27260 | 29065 | 23531 | 27156 |
| L99-226 | 21584 | 18710 - | 18842 | 27485 | 19805 | 23034 | 23710 | 21158 | 25747 | 28137 | 21718 | 24105 | 22836 - |
| HoCP00-950 | 27460 | 31054 | 25311 | 35723 | 20305 | 27801 | 32479 | 18501 | 29408 | 34121 | 33749 | 28102 | 28668 |
| L01-283 | 27286 | 30455 | 21227 | 34986 | 23539 | 35683 | 25377 | 25025 | 31667 | 28245 | 34401 | 33259 + | 29263 |
| L01-299 | 30396 | 29822 | 21221 | 35836 | 17897 | 34514 | 28613 | 26699 | 32137 | 25044 | 32237 | 21693 | 28009 |
| L03-371 | 25441 | 23025 | 24908 | 36928 | 26334 | 29007 | 29289 | 26219 | 34146 | 29837 | 32101 | 27588 | 28735 |
| HoCP04-838 | 26670 | 32200 | 26439 | 40091 | 24780 | 32413 | 27165 | 25573 | 38555 | 30226 | 32672 | 25987 | 30231 + |
| Ho07-613 | 21948 | 27172 | 21941 | 31755 | 19127 | 28535 | 24446 | 25273 | 23873 | 29272 | 25284 | 24946 | 25298 |
| HoCP09-804 | 33052 + | 32806 | 24923 | 41076 + | 27051 | 38115 | 31933 | 27657 | 43693 + | 34241 | 38379 | 31009 | 33661 + |
| Ho09-840 | 35770 + | 36319 | 35255 + | 48611 + | 24678 | 45493 + | 36778 + | 32213 + | 44718 + | 27239 | 49598 + | 36495 + | 37764 + |

Table 8. First-stubble sugar per acre for two experimental and eight commercial varieties at ten outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (lbs./A) | | | | | | |
| HoCP96-540 | 10102 | 6214 | 5825 | 9149 | 5290 | 7118 | 7402 | 5697 | 5962 | 7531 | 9021 | 6616 | 7161 |
| L99-226 | 9775 | 8200 + | 8283 | 10444 | 6493 | 7640 | 8753 + | 8785 + | 9141 + | 8652 | 8558 | 10963 + | 8803 + |
| HoCP00-950 | 9984 | 6698 | 6517 | 9200 | 5708 | 7140 | 8311 | 6580 | 7454 + | 8043 | 11047 + | 10053 + | 8061 + |
| L01-283 | 10485 | 9902 + | 7133 | 9440 | 5566 | 9141 + | 8087 | 7584 + | 9079 + | 8685 | 10609 + | 10617 + | 8861 + |
| L01-299 | 11242 | 8957 + | 6994 | 10455 | 5701 | 7906 | 8613 + | 9291 + | 8573 + | 7943 | 11389 + | 10600 + | 8972 + |
| L03-371 | 10491 | 5325 | 7979 | 7639 | 5586 | 8589 + | 8396 | 7431 + | 7889 + | 8102 | 10623 + | 10085 + | 8178 + |
| HoCP04-838 | 9898 | 8268 + | 6405 | 8684 | 5288 | 7402 | 6996 | 5713 | 8697 + | 8182 | 8811 | ------- | 7784 + |
| Ho07-613 | 8655 | 6559 | 7326 | 9963 | 6379 | 8070 | 8799 + | 5292 | 8068 + | 7210 | 7971 | 7392 | 7640 |
| HoCP09-804 | 10228 | 9096 + | 5768 | 8914 | 5266 | 8760 + | 8998 + | 9180 + | 7784 + | 8463 | 10438 + | 10531 + | 8619 + |
| Ho09-840 | 9557 | 8307 + | 6640 | 8432 | 5025 | 7904 | 7922 | 8731 + | 8782 + | 7113 | 9132 | 9708 + | 8104 + |

Table 9. First-stubble cane yield for two experimental and eight commercial varieties at ten outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | (tons/A) | | | | | | | | | | | | |
| HoCP96-540 | 37.0 | 25.8 | 22.6 | 28.6 | 20.9 | 28.3 | 27.5 | 24.0 | 24.2 | 27.7 | 28.9 | 25.8 | 26.8 |
| L99-226 | 33.3 | 32.1 + | 28.4 | 29.8 | 24.9 | 30.5 | 28.8 | 31.0 + | 31.3 + | 28.8 | 27.1 | 36.5 + | 30.2 + |
| HoCP00-950 | 31.3 - | 24.0 | 22.4 | 26.9 | 20.2 | 22.7 - | 25.6 | 22.3 | 24.2 | 26.0 | 34.4 + | 32.9 + | 26.1 |
| L01-283 | 34.0 | 32.3 + | 22.9 | 27.2 | 19.9 | 31.1 | 26.4 | 27.5 | 31.5 + | 27.7 | 33.3 + | 36.9 + | 29.2 + |
| L01-299 | 38.7 | 33.2 + | 24.9 | 30.5 | 21.6 | 31.9 | 31.1 + | 36.6 + | 32.5 + | 29.4 | 34.7 + | 36.3 + | 31.8 + |
| L03-371 | 34.0 | 21.7 | 26.2 | 24.0 | 22.3 | 30.6 | 28.9 | 28.2 | 27.0 | 26.1 | 31.5 | 33.0 + | 27.8 |
| HoCP04-838 | 33.9 | 31.6 + | 22.3 | 26.9 | 20.6 | 27.0 | 23.7 - | 24.2 | 31.8 + | 28.0 | 27.0 | ------- | 27.4 |
| Ho07-613 | 28.9 - | 25.4 | 26.0 | 29.4 | 23.8 | 28.2 | 28.9 | 19.0 - | 26.9 | 24.4 | 25.1 - | 26.5 | 26.0 |
| HoCP09-804 | 34.2 | 32.4 + | 20.8 | 27.5 | 19.8 | 30.6 | 30.5 | 31.4 + | 27.0 | 28.6 | 33.7 + | 36.6 + | 29.4 + |
| Ho09-840 | 33.4 | 31.5 + | 23.6 | 27.8 | 17.9 | 30.5 | 27.5 | 30.3 + | 31.1 + | 24.9 | 29.8 | 35.7 + | 28.7 |

Table 10. First-stubble sugar per ton for two experimental and eight commercial varieties at ten outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | (lbs./tons) | | | | | | | | | | | | |
| HoCP96-540 | 274 | 241 | 257 | 320 | 253 | 252 | 270 | 238 | 247 | 272 | 312 | 256 | 266 |
| L99-226 | 294 + | 252 | 291 + | 351 + | 261 | 252 | 304 + | 284 + | 293 + | 300 + | 315 | 300 + | 291 + |
| HoCP00-950 | 319 + | 281 | 292 + | 342 + | 282 | 314 + | 324 + | 294 + | 308 + | 310 + | 321 | 306 + | 308 + |
| L01-283 | 309 + | 306 | 311 + | 347 + | 280 | 294 + | 306 + | 275 + | 289 + | 315 + | 320 | 288 + | 303 + |
| L01-299 | 290 + | 270 | 280 | 342 + | 262 | 248 | 277 | 255 | 267 + | 270 | 328 + | 292 + | 282 + |
| L03-371 | 310 + | 251 | 303 + | 320 | 249 | 281 + | 291 + | 263 | 295 + | 310 + | 339 + | 306 + | 293 + |
| HoCP04-838 | 292 + | 259 | 286 + | 323 | 257 | 275 + | 295 + | 237 | 274 + | 293 + | 327 + | ------- | 283 + |
| Ho07-613 | 299 + | 256 | 282 + | 339 + | 268 | 285 + | 305 + | 278 + | 300 + | 295 + | 318 | 280 + | 292 + |
| HoCP09-804 | 299 + | 281 | 277 | 324 | 266 | 286 + | 295 + | 292 + | 290 + | 296 + | 310 | 288 + | 292 + |
| Ho09-840 | 286 | 263 | 280 | 304 | 281 | 258 | 288 + | 288 + | 284 + | 286 | 306 | 272 + | 283 + |

Table 11. First-stubble stalk weight for two experimental and eight commercial varieties at ten outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (lbs.) | | | | | | |
| HoCP96-540 | 2.55 | 2.42 | 1.83 | 2.00 | 1.79 | 2.24 | 2.09 | 2.43 | 2.14 | 2.11 | 2.41 | 2.29 | 2.19 |
| L99-226 | 2.89 | 3.35 + | 2.51 + | 2.50 + | 2.09 | 2.48 | 2.83 + | 3.21 + | 2.49 | 2.53 | 2.66 | 2.81 | 2.69 + |
| HoCP00-950 | 2.07 | 2.06 | 1.64 | 1.84 | 1.94 | 1.82 - | 1.82 | 2.56 | 2.06 | 2.00 | 1.90 - | 2.50 | 2.02 - |
| L01-283 | 1.91 - | 1.88 - | 1.74 | 1.54 - | 1.41 - | 2.05 | 1.72 - | 1.94 - | 1.89 | 1.86 | 1.86 - | 2.23 | 1.84 - |
| L01-299 | 2.45 | 1.86 - | 1.74 | 1.97 | 1.73 | 2.15 | 1.77 | 2.11 | 2.08 | 2.35 | 1.73 - | 1.95 | 1.99 - |
| L03-371 | 1.85 - | 2.13 | 1.85 | 1.94 | 2.11 | 1.94 | 1.88 | 2.34 | 2.09 | 2.13 | 2.17 | 1.71 - | 2.01 - |
| HoCP04-838 | 1.98 - | 1.99 | 1.84 | 1.62 - | 1.41 - | 1.91 | 2.03 | 2.04 | 2.02 | 1.78 | 1.63 - | ------- | 1.85 - |
| Ho07-613 | 2.33 | 2.62 | 2.29 + | 1.79 | 1.81 | 2.08 | 2.80 + | 1.88 - | 2.20 | 2.09 | 2.18 | 2.01 | 2.17 |
| HoCP09-804 | 1.91 - | 1.96 | 1.60 | 1.62 - | 1.42 - | 1.97 | 1.75 - | 1.96 - | 1.68 | 1.52 | 1.63 - | 1.74 - | 1.73 - |
| Ho09-840 | 1.66 - | 1.76 - | 1.34 - | 1.45 - | 1.25 - | 1.54 - | 1.49 - | 1.59 - | 1.58 | 1.70 | 1.61 - | 1.67 - | 1.55 - |

Table 12. First-stubble stalk number for two experimental and eight commercial varieties at ten outfield locations in 2014.

| | Heavy | | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F.Martin | Landry | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | | (stalks/A) | | | | | | |
| HoCP96-540 | 28985 | 21718 | 24677 | 28765 | 23643 | 25385 | 26890 | 19896 | 23478 | 27379 | 24217 | 24152 | 24932 |
| L99-226 | 23142 | 19106 | 22642 | 24094 | 24441 | 25389 | 20540 - | 20756 | 25174 | 23546 | 20738 | 26050 | 22940 |
| HoCP00-950 | 30190 | 24056 | 28238 | 29864 | 20868 | 24956 | 28458 | 17451 | 23778 | 28031 | 36676 + | 26722 | 26607 |
| L01-283 | 36291 | 34549 + | 26396 | 36058 + | 28476 | 30500 | 30511 | 28932 + | 33310 | 29652 | 36117 + | 33626 | 32035 + |
| L01-299 | 33594 | 35781 + | 28601 | 31046 | 24970 | 29721 | 35642 + | 34834 + | 31772 | 26446 | 40273 + | 37929 + | 32551 + |
| L03-371 | 36650 | 20228 | 28152 | 24641 | 21298 | 31758 + | 31367 | 24062 | 25306 | 24690 | 29119 | 39355 + | 28052 + |
| HoCP04-838 | 35685 | 31899 + | 24506 | 33298 | 29635 | 28512 | 23362 - | 26057 | 31956 | 31960 | 33054 + | ------- | 30284 + |
| Ho07-613 | 24993 | 19426 | 22647 | 33078 | 26482 | 27272 | 20763 - | 20375 | 24378 | 25518 | 24033 | 26296 | 24605 |
| HoCP09-804 | 35930 | 33184 + | 26221 | 34212 | 27883 | 31211 | 35593 + | 32489 + | 32568 | 39230 | 41429 + | 42240 + | 34349 + |
| Ho09-840 | 41725 + | 36433 + | 35321 + | 38234 + | 28755 | 40019 + | 37425 + | 39200 + | 39239 + | 29459 | 37140 + | 43081 + | 37169 + |

Table 13. Second-stubble sugar per acre for nine commercial varieties at eleven outfield locations in 2014.

| | Heavy | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F. Martin | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | (lbs./A) | | | | | | | | | | | |
| HoCP96-540 | 8963 | 5351 | 6634 | 4647 | 6561 | 6158 | 4393 | 5015 | 5982 | 6666 | 5535 | 5991 |
| L99-226 | 10507 | 7413 + | 6617 | 4912 | 5891 | 7560 | 8048 + | 7052 + | 7921 | 7362 | 8351 | 7421 + |
| L99-233 | 9353 | 7713 + | 6190 | 2914 | 6091 | 6626 | 7726 + | 6686 + | 7507 | 7915 | 7472 | 6927 + |
| HoCP00-950 | 9920 | 8730 + | 6599 | ------- | 5363 | 7579 | 7092 + | 7067 + | 8145 | 9548 + | 10277 + | 7781 + |
| L01-299 | 10987 | 9187 + | 8537 | 5344 | 6480 | 7494 | 7842 + | 7316 + | 8170 | 9745 + | 7768 | 8079 + |
| L03-371 | 10543 | 6685 | 7489 | ------- | 6187 | 7591 | 8434 + | 6194 + | 8319 | 6683 | 4165 | 7028 + |
| HoCP04-838 | 9820 | 7548 + | 6800 | 4707 | 5096 | 6729 | 7380 + | 6608 + | 8885 | 10179 + | 5426 | 7227 + |
| Ho05-961 | 9327 | 7751 + | 7858 | 4142 | 5433 | 7184 | 7879 + | 6951 + | 8795 | 8836 + | 9340 + | 7591 + |
| Ho07-613 | 9388 | 6012 | 5207 | 3620 | 6305 | 7003 | 3636 | 6783 + | 7477 | 6095 | 4149 | 5971 |

Table 14. Second-stubble cane yield for nine commercial varieties at eleven outfield locations in 2014.

| | Heavy | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F. Martin | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | (tons/A) | | | | | | | | | | | |
| HoCP96-540 | 32.2 | 24.8 | 24.9 | 15.6 | 22.5 | 22.6 | 19.3 | 19.5 | 21.4 | 28.4 | 20.8 | 22.9 |
| L99-226 | 34.8 | 29.8 | 24.6 | 17.1 | 19.3 | 25.1 | 30.5 + | 24.7 + | 27.2 | 28.9 | 29.1 | 26.5 + |
| L99-233 | 33.3 | 31.8 + | 26.0 | 10.5 | 20.6 | 24.3 | 32.1 + | 24.2 + | 26.4 | 31.9 | 28.8 | 26.4 + |
| HoCP00-950 | 30.8 | 29.8 | 21.5 | ------- | 17.1 | 24.1 | 24.2 | 22.4 | 26.1 | 37.4 + | 32.8 + | 25.6 |
| L01-299 | 38.5 + | 36.1 + | 32.0 | 17.1 | 22.9 | 26.8 | 30.8 + | 27.6 + | 29.1 | 40.0 + | 28.6 | 30.0 + |
| L03-371 | 37.2 + | 28.3 | 28.1 | ------- | 20.5 | 26.8 | 31.6 + | 21.7 | 28.3 | 24.8 | 15.5 | 25.4 |
| HoCP04-838 | 33.0 | 28.9 | 24.8 | 17.1 | 18.2 | 23.0 | 27.8 + | 23.2 | 30.9 | 37.4 + | 21.1 | 26.0 + |
| Ho05-961 | 29.8 | 28.0 | 28.1 | 14.7 | 18.6 | 24.8 | 29.3 + | 24.3 + | 28.9 | 33.4 + | 32.4 + | 26.6 + |
| Ho07-613 | 31.0 | 24.2 | 19.7 | 12.4 | 20.5 | 23.5 | 14.1 | 22.9 | 25.6 | 21.9 - | 15.7 | 21.0 |

Table 15. Second-stubble sugar per ton for nine commercial varieties at eleven outfield locations in 2014.

| | Heavy | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F. Martin | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | (lbs./tons) | | | | | | |
| HoCP96-540 | 278 | 217 | 266 | 296 | 290 | 272 | 227 | 257 | 278 | 234 | 263 | 262 |
| L99-226 | 302 + | 250 + | 274 | 282 | 305 | 301 + | 265 + | 286 + | 291 | 257 | 287 | 282 + |
| L99-233 | 281 | 242 | 243 | 278 | 296 | 273 | 240 | 275 + | 284 | 249 | 258 | 265 |
| HoCP00-950 | 322 + | 294 + | 308 | ------- | 315 + | 316 + | 293 + | 315 + | 312 | 255 | 313 + | 306 + |
| L01-299 | 285 | 254 + | 267 | 312 | 284 | 280 | 255 + | 265 | 281 | 243 | 268 | 272 + |
| L03-371 | 284 | 236 | 267 | ------- | 303 | 283 | 267 + | 286 + | 294 | 269 | 265 | 277 + |
| HoCP04-838 | 297 + | 260 + | 274 | 276 | 279 | 293 + | 265 + | 285 + | 286 | 272 | 258 | 277 + |
| Ho05-961 | 313 + | 276 + | 279 | 281 | 292 | 290 + | 267 + | 287 + | 304 | 264 | 288 | 286 + |
| Ho07-613 | 303 + | 247 | 273 | 294 | 309 + | 298 + | 257 + | 297 + | 291 | 279 | 266 | 283 + |

Table 16. Second-stubble stalk weight for nine commercial varieties at eleven outfield locations in 2014.

| | Heavy | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F. Martin | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | (lbs.) | | | | | | |
| HoCP96-540 | 2.10 | 2.35 | 1.48 | 1.27 | 1.77 | 2.10 | 2.60 | 1.68 | 1.65 | 2.28 | 1.95 | 1.93 |
| L99-226 | 2.95 + | 3.12 + | 1.98 | 1.49 | 1.82 | 2.15 | 2.98 + | 1.92 | 2.20 | 2.48 | 2.66 + | 2.34 + |
| L99-233 | 1.94 | 1.99 | 1.39 | 1.08 | 1.42 | 1.80 | 2.04 - | 1.54 | 1.56 | 1.76 | 2.10 | 1.69 - |
| HoCP00-950 | 2.06 | 1.79 - | 1.59 | ------- | 1.43 | 1.98 | 2.19 - | 1.74 | 1.74 | 2.05 | 2.13 | 1.81 |
| L01-299 | 1.99 | 1.92 | 1.69 | 1.54 | 1.73 | 1.86 | 2.02 - | 1.66 | 1.62 | 1.93 | 1.92 | 1.81 |
| L03-371 | 2.33 | 1.82 | 1.71 | ------- | 1.71 | 1.93 | 2.09 - | 1.64 | 1.69 | 1.62 - | 1.64 | 1.76 |
| HoCP04-838 | 2.24 | 1.93 | 1.47 | 1.06 | 1.56 | 1.72 - | 2.12 - | 1.32 | 1.81 | 2.14 | 1.71 | 1.74 - |
| Ho05-961 | 1.92 | 2.17 | 1.63 | 1.05 | 1.35 | 1.64 - | 2.09 - | 1.62 | 1.95 | 1.99 | 1.84 | 1.75 - |
| Ho07-613 | 2.14 | 2.09 | 1.60 | 1.14 | 1.57 | 2.69 + | 1.74 - | 1.77 | 1.83 | 2.23 | 2.09 | 1.90 |

Table 17. Second-stubble stalk number for nine commercial varieties at eleven outfield locations in 2014.

| | Heavy | | | | | Light | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variety | Allains | Alma | F. Martin | Magnolia | Mary | Bon Secour | Brunswick | Glenwood | Lanaux | R.Hebert | St. John | Mean |
| | | | | | | (stalks/A) | | | | | | |
| HoCP96-540 | 31049 | 21467 | 34316 | 24959 | 25933 | 21526 | 14917 | 23461 | 2605 | 25095 | 21698 | 24589 |
| L99-226 | 23747 - | 19320 | 25163 | 23533 | 21281 | 23720 | 20521 | 25693 | 2492 | 23824 | 22090 | 23074 |
| L99-233 | 34272 | 32027 + | 37367 | 19600 | 30414 | 27207 | 31746 + | 31390 | 3412 | 36294 + | 27527 | 31088 + |
| HoCP00-950 | 30032 | 33696 + | 26956 | ------- | 25002 | 25077 | 22829 | 25788 | 3002 | 36526 + | 31697 + | 28498 + |
| L01-299 | 38743 + | 37379 + | 37872 | 22322 | 26617 | 28927 + | 31087 + | 34597 | 3796 | 41592 + | 29567 | 33333 + |
| L03-371 | 32360 | 31124 + | 33381 | ------- | 23796 | 28198 + | 31479 + | 26536 | 3344 | 30869 | 18518 | 28916 + |
| HoCP04-838 | 29619 | 30015 + | 33794 | 32270 | 23904 | 26940 | 26216 + | 36409 | 3483 | 35078 + | 24690 | 30446 + |
| Ho05-961 | 31034 | 25747 | 34970 | 27957 | 27830 | 30342 + | 28565 + | 29910 | 2991 | 33830 + | 35504 + | 30510 + |
| Ho07-613 | 29504 | 23220 | 24511 | 21510 | 26763 | 17389 | 16209 | 25828 | 2905 | 19782 | 15078 - | 22622 |

Table 18. Third-stubble sugar per acre for ten commercial varieties at four outfield locations in 2014.

| | Heavy | | Light | | |
|---|---|---|---|---|---|
| Variety | Allains | Alma | Bon Secour | R.Hebert | Mean |
| | | | (lbs./A) | | |
| HoCP96-540 | 6455 | 5760 | 7039 | 5317 | 6143 |
| L99-226 | 8632 | 5929 | 8196 + | ------- | 7465 + |
| L99-233 | 6047 | 6437 | 7655 | 8335 + | 7119 |
| HoCP00-950 | 7558 | 7016 + | 8360 + | 7848 + | 7696 + |
| L01-283 | 10350 | 7320 + | 9067 + | 8020 + | 8689 + |
| L01-299 | 8947 | 7586 + | 9135 + | 8484 + | 8538 + |
| L03-371 | 6784 | 7280 + | 9865 + | 6822 + | 7688 + |
| HoCP04-838 | 8053 | 6271 | 8652 + | 7179 + | 7539 + |
| Ho05-961 | 6630 | 5873 | 7543 | 5879 | 6481 |
| Ho07-613 | 6029 | 5768 | 7758 | 4304 - | 5965 |

Table 19. Third-stubble cane yield for ten commercial varieties at four outfield locations in 2014.

| | Heavy | | Light | | |
|---|---|---|---|---|---|
| Variety | Allains | Alma | Bon Secour | R.Hebert | Mean |
| | | | (tons/A) | | |
| HoCP96-540 | 21.3 | 24.1 | 26.9 | 28.6 | 25.2 |
| L99-226 | 27.2 | 24.8 | 27.1 | ------- | 27.8 |
| L99-233 | 20.5 | 26.6 | 28.2 | 39.7 + | 28.8 |
| HoCP00-950 | 22.6 | 24.5 | 27.6 | 33.3 + | 27.0 |
| L01-283 | 32.9 | 25.7 | 30.0 + | 36.2 + | 31.2 + |
| L01-299 | 30.0 | 30.0 + | 34.7 + | 40.7 + | 33.8 + |
| L03-371 | 22.2 | 28.4 + | 33.4 + | 31.4 | 28.9 |
| HoCP04-838 | 27.2 | 24.2 | 29.9 + | 31.3 | 28.2 |
| Ho05-961 | 21.5 | 22.0 | 26.1 | 26.3 | 24.0 |
| Ho07-613 | 18.9 | 22.2 | 25.9 | 21.4 - | 22.1 |

Table 20. Third-stubble sugar per ton for ten commercial varieties at four outfield locations in 2014.

| | Heavy | | Light | | |
|---|---|---|---|---|---|
| Variety | Allains | Alma | Bon Secour | R.Hebert | Mean |
| | | | (lbs./tons) | | |
| HoCP96-540 | 300 | 239 | 262 | 186 | 247 |
| L99-226 | 317 | 240 | 302 + | ------- | 269 + |
| L99-233 | 294 | 242 | 271 | 211 + | 255 |
| HoCP00-950 | 336 + | 289 + | 303 + | 237 + | 291 + |
| L01-283 | 315 | 286 + | 303 + | 221 + | 281 + |
| L01-299 | 299 | 255 | 264 | 209 + | 257 |
| L03-371 | 307 | 257 + | 295 + | 217 + | 269 + |
| HoCP04-838 | 296 | 260 + | 290 + | 230 + | 269 + |
| Ho05-961 | 309 | 268 + | 288 + | 225 + | 273 + |
| Ho07-613 | 316 | 260 + | 299 + | 203 | 270 + |

Table 21. Third-stubble stalk weight for ten commercial varieties at four outfield locations in 2014.

| | Heavy | | Light | | |
|---|---|---|---|---|---|
| Variety | Allains | Alma | Bon Secour | R.Hebert | Mean |
| | | | (lbs.) | | |
| HoCP96-540 | 1.93 | 1.97 | 2.30 | 2.41 | 2.15 |
| L99-226 | 2.44 | 2.39 | 2.76 + | ------- | 2.55 + |
| L99-233 | 1.81 | 1.84 | 1.85 - | 1.98 | 1.87 - |
| HoCP00-950 | 2.07 | 1.86 | 1.90 | 1.37 | 1.80 - |
| L01-283 | 1.85 | 1.61 | 1.60 - | 1.72 | 1.70 - |
| L01-299 | 2.05 | 1.86 | 1.77 - | 2.23 | 1.98 |
| L03-371 | 2.06 | 1.75 | 1.81 - | 2.07 | 1.92 |
| HoCP04-838 | 2.00 | 1.54 | 1.65 - | 2.09 | 1.82 - |
| Ho05-961 | 1.99 | 1.82 | 1.97 | 2.12 | 1.97 |
| Ho07-613 | 1.77 | 1.86 | 2.07 | 1.98 | 1.92 |

Table 22. Third-stubble stalk number for ten commercial varieties at four outfield locations in 2014.

| | Heavy | | Light | | |
|---|---|---|---|---|---|
| Variety | Allains | Alma | Bon Secour | R.Hebert | Mean |
| | | | (stalks/A) | | |
| HoCP96-540 | 21877 | 24728 | 23420 | 23909 | 23484 |
| L99-226 | 22320 | 20994 | 19712 | ------- | 22278 |
| L99-233 | 22321 | 29129 | 30703 | 40313 | 30617 |
| HoCP00-950 | 22865 | 26223 | 29518 | 82832 + | 40359 |
| L01-283 | 35712 | 32214 | 37906 | 42211 | 37011 |
| L01-299 | 29082 | 32137 | 41278 | 36622 | 34780 |
| L03-371 | 21460 | 34758 + | 37155 | 30640 | 31003 |
| HoCP04-838 | 27210 | 31257 | 36883 | 29880 | 31308 |
| Ho05-961 | 21698 | 24261 | 26502 | 24986 | 24362 |
| Ho07-613 | 20822 | 24552 | 25102 | 21646 | 23030 |

Table 23. Plantcane means from twelve outfield locations in 2014: Allains, Alma, Bon Secour, Brunswick, F. Martin, Glenwood, Lanaux, Landry, Magnolia, Mary, R. Hebert and St. John.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 8202 | 33.1 | 248 | 2.45 | 27156 |
| L99-226 | 9351 + | 33.8 | 275 + | 2.99 + | 22836 - |
| HoCP00-950 | 9245 + | 31.2 - | 296 + | 2.23 - | 28668 |
| L01-283 | 8606 | 30.5 - | 282 + | 2.11 - | 29263 |
| L01-299 | 8033 | 31.0 - | 259 + | 2.25 - | 28009 |
| L03-371 | 8710 | 31.0 - | 281 + | 2.21 - | 28735 |
| HoCP04-838 | 8795 + | 31.9 | 276 + | 2.14 - | 30231 + |
| Ho07-613 | 8591 | 30.7 - | 279 + | 2.46 | 25298 |
| HoCP09-804 | 8751 | 31.7 | 276 + | 1.90 - | 33661 + |
| Ho09-840 | 8281 | 30.4 - | 273 + | 1.65 - | 37764 + |

Table 24. First-stubble means from twelve outfield locations in 2014: Allains, Alma, Bon Secour, Brunswick, F. Martin, Glenwood, Lanaux, Landry, Magnolia, Mary, R. Hebert and St. John.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 7161 | 26.8 | 266 | 2.19 | 24932 |
| L99-226 | 8803 + | 30.2 + | 291 + | 2.69 + | 22940 |
| HoCP00-950 | 8061 + | 26.1 | 308 + | 2.02 - | 26607 |
| L01-283 | 8861 + | 29.2 + | 303 + | 1.84 - | 32035 + |
| L01-299 | 8972 + | 31.8 + | 282 + | 1.99 - | 32551 + |
| L03-371 | 8178 + | 27.8 | 293 + | 2.01 - | 28052 + |
| HoCP04-838 | 7936 + | 28.0 | 283 + | 1.87 - | 30390 + |
| Ho07-613 | 7640 | 26.0 | 292 + | 2.17 | 24605 |
| HoCP09-804 | 8619 + | 29.4 + | 292 + | 1.73 - | 34349 + |
| Ho09-840 | 8104 + | 28.7 | 283 + | 1.55 - | 37169 + |

Table 25. Second-stubble means from eleven outfield locations in 2014: Allains, Alma, Bon Secour, Brunswick, F. Martin, Glenwood, Lanaux, Magnolia, Mary, R. Hebert and St. John.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 5991 | 22.9 | 262 | 1.93 | 24589 |
| L99-226 | 7421 + | 26.5 + | 282 + | 2.34 + | 23074 |
| L99-233 | 6927 + | 26.4 + | 265 | 1.69 - | 31088 + |
| HoCP00-950 | 7781 + | 25.6 | 306 + | 1.81 | 28498 + |
| L01-299 | 8079 + | 30.0 + | 272 + | 1.81 | 33333 + |
| L03-371 | 7028 + | 25.4 | 277 + | 1.76 | 28916 + |
| HoCP04-838 | 7227 + | 26.0 + | 277 + | 1.74 - | 30446 + |
| Ho05-961 | 7591 + | 26.6 + | 286 + | 1.75 - | 30510 + |
| Ho07-613 | 5971 | 21.0 | 283 + | 1.90 | 22622 |

Table 26. Third-stubble means from four outfield locations in 2014: Allains, Alma, Bon Secour and R.Hebert

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 6143 | 25.2 | 247 | 2.15 | 23484 |
| L99-226 | 7465 + | 27.8 | 269 + | 2.55 + | 22278 |
| L99-233 | 7119 | 28.8 | 255 | 1.87 - | 30617 |
| HoCP00-950 | 7696 + | 27.0 | 291 + | 1.80 - | 40359 + |
| L01-283 | 8689 + | 31.2 + | 281 + | 1.70 - | 37011 |
| L01-299 | 8538 + | 33.8 + | 257 | 1.98 | 34780 |
| L03-371 | 7688 + | 28.9 | 269 + | 1.92 | 31003 |
| HoCP04-838 | 7539 + | 28.2 | 269 + | 1.82 - | 31308 |
| Ho05-961 | 6481 | 24.0 | 273 + | 1.97 | 24362 |
| Ho07-613 | 5965 | 22.1 | 270 + | 1.92 | 23030 |

Table 27. Combined plantcane means across outfield locations from 2010 to 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 8202 | 33.1 | 248 | 2.45 | 27156 |
| L99-226 | 9351 + | 33.8 | 275 + | 2.99 + | 22836 - |
| HoCP00-950 | 9245 + | 31.2 - | 296 + | 2.23 - | 28668 |
| L01-283 | 8606 | 30.5 - | 282 + | 2.11 - | 29263 |
| L01-299 | 8033 | 31.0 - | 259 + | 2.25 - | 28009 |
| L03-371 | 8710 | 31.0 - | 281 + | 2.21 - | 28735 |
| HoCP04-838 | 8795 + | 31.9 | 276 + | 2.14 - | 30231 + |
| Ho07-613 | 8591 | 30.7 - | 279 + | 2.46 | 25298 |
| HoCP09-804 | 8751 | 31.7 | 276 + | 1.90 - | 33661 + |
| Ho09-840 | 8281 | 30.4 - | 273 + | 1.65 - | 37764 + |

Table 28. Combined first-stubble means across outfield locations from 2011 to 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 7161 | 26.8 | 266 | 2.19 | 24932 |
| L99-226 | 8803 + | 30.2 + | 291 + | 2.69 + | 22940 |
| HoCP00-950 | 8061 + | 26.1 | 308 + | 2.02 - | 26607 |
| L01-283 | 8861 + | 29.2 + | 303 + | 1.84 - | 32035 + |
| L01-299 | 8972 + | 31.8 + | 282 + | 1.99 - | 32551 + |
| L03-371 | 8178 + | 27.8 | 293 + | 2.01 - | 28052 + |
| HoCP04-838 | 7784 + | 27.4 | 283 + | 1.85 - | 30284 + |
| Ho07-613 | 7640 | 26.0 | 292 + | 2.17 | 24605 |
| HoCP09-804 | 8619 + | 29.4 + | 292 + | 1.73 - | 34349 |
| Ho09-840 | 8104 + | 28.7 | 283 + | 1.55 - | 37169 |

Table 29. Combined second-stubble means across outfield locations from 2012 to 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 5991 | 22.9 | 262 | 1.93 | 24589 |
| L99-226 | 7421 + | 26.5 + | 282 + | 2.34 + | 23074 |
| L99-233 | 6927 + | 26.4 + | 265 | 1.69 - | 31088 + |
| HoCP00-950 | 7781 + | 25.6 | 306 + | 1.81 | 28498 + |
| L01-299 | 8079 + | 30.0 + | 272 + | 1.81 | 33333 + |
| L03-371 | 7028 + | 25.4 | 277 + | 1.76 | 28916 + |
| HoCP04-838 | 7227 + | 26.0 + | 277 + | 1.74 - | 30446 + |
| Ho05-961 | 7591 + | 26.6 + | 286 + | 1.75 - | 30510 + |
| Ho07-613 | 5971 | 21.0 | 283 + | 1.90 | 22622 |

Table 30. Combined third-stubble means across outfield locations from 2013 to 2014.

| Variety | Sugar per Acre | Cane Yield | Sugar per Ton | Stalk Weight | Stalk Number |
|---|---|---|---|---|---|
| | (lbs/A) | (tons/A) | (lbs/ton) | (lbs) | (stalks/A) |
| HoCP96-540 | 6143 | 25.2 | 247 | 2.15 | 23484 |
| L99-226 | 7465 + | 27.8 | 269 + | 2.55 + | 22278 |
| L99-233 | 7119 | 28.8 | 255 | 1.87 - | 30617 |
| HoCP00-950 | 7696 + | 27.0 | 291 + | 1.80 - | 40359 |
| L01-283 | 8689 + | 31.2 + | 281 + | 1.70 - | 37011 |
| L01-299 | 8538 + | 33.8 + | 257 | 1.98 | 34780 |
| L03-371 | 7688 + | 28.9 | 269 + | 1.92 | 31003 |
| HoCP04-838 | 7539 + | 28.2 | 269 + | 1.82 - | 31308 |
| Ho-05-961 | 6481 | 24.0 | 273 + | 1.97 | 24362 |
| Ho07-613 | 5965 | 22.1 | 270 + | 1.92 | 23030 |

## SUCROSE LABORATORY AT THE SUGAR RESEARCH STATION

Gert Hawkins, Michael Pontif and Collins Kimbeng
Sugar Research Station

The Sugar Research Station sucrose laboratory processed 2,904 samples during the 2014 harvest season (Table 1). Standard laboratory procedures were used to analyze 537 samples of which 237 were also processed through the Spectracane FT-NIR instrument. The juice was extracted via a Honiron sugarcane hydraulic press. Procedures included the use of Octapol® for clarification, with Brix being measured by refractometer and pol measured by saccharimeter (Autopol 880). The juice was extracted via a three-roller mill for 300 samples. Sucrose percent and theoretical recoverable sugar (lbs/ton of cane) was calculated based on the Brix and pol values. In addition 96 samples of sweet sorghum and 78 energy cane samples were analyzed for brix only. The juice was extracted via a three-roller mill. The sucrose laboratory processed samples from August 2014 to December 2014.

A total of 2,193 samples were analyzed using the Spectracane FT-NIR instrument of which 32 where sweet sorghum and 42 energy cane samples. The sample was prepared using a Dedini shredder then fed into the Spectracane unit containing NIR technology to analyze the sample for Brix, pol, fiber, moisture, purity, and theoretical recoverable sugar. Samples that were spectral outliers were automatically sent into a bin and reanalyzed using wet chemistry procedures.

Table 1. Number of sugarcane samples processed at the Sugar Research Station sucrose laboratory during the 2014 harvest season.

| Unit/Project Area | Leader | Number of Samples |
|---|---|---|
| Biological and Agricultural Engineering | Richard Bengtson | 6 |
| School of Plant, Environmental, and Soil Sciences | Magdi Selim | 6 |
| | Brenda Tubana | 437 |
| | Jim Wang | 14 |
| Iberia Research Station | Sonny Viator | 46 |
| Plant Pathology and Crop Physiology | Jeff Hoy | 299 |
| Macon Ridge | Josh Lofton | 36 |
| LCES | Albert Orgeron | 132 |
| LCES (Energy Cane) | Kenneth Gravois | 126 |
| LCES (Sugarcane) | Kenneth Gravois | 86 |
| Sugar Research Station/Variety Development | Line Trials | 771 |
| | Increase | 133 |
| | Nursery | 502 |
| | Genetics | 42 |
| | Energy Cane | 24 |
| Contract Services | | 100 |
| Audubon Sugar Institute (Energy Cane) | Shyue Lu | 16 |
| Rice Research Station (Sweet Sorghum) | Dustin Harrell | 16 |
| Iberia Research Station (Sweet Sorghum) | Sonny Viator | 32 |
| Macon Ridge | Wink Alison | 40 |
| School of Plant, Environmental, and Soil Sciences | Kun-Jun Han | 40 |
| TOTAL | | 2,904 |

# LAES SUGARCANE TISSUE CULTURE LABORATORY

Q.J.Xie[1], D. P. Fontenot[1], and K.A.Gravois[2]
[1]Certis USA, LLC and [2]Sugar Research Station

During the 2014-2015 production season, about 29,103 sugarcane plantlets regenerated in the Louisiana Agricultural Experiment Station Sugarcane Tissue Culture Laboratory, were turned over to Certis USA, LLC, Kleentek Div., for transplanting into the greenhouse at Houma. The number of plantlets transplanted for each cultivar are listed in Table one.

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

| Cultivar | Number of plantlets |
|---|---|
| HoCP 96-540 | 5,241 |
| HoCP00-950 | 863 |
| HoCP 04-838 | 5,544 |
| HoCP09-804 | 4,392 |
| HoCP09-840 | 2,232 |
| L 01-299 | 6,498 |
| L 01-283 | 2,664 |
| Ho07-613 | 1,669 |
| TOTAL | 29,103 |

# THE 2014 LOUISIANA SUGARCANE VARIETY SURVEY

Kenneth A. Gravois[1] and Benjamin L. Legendre[2]
[1] LSU Agricultural Center, Sugar Research Station, St. Gabriel, LA 70776
[2] LSU Agricultural Center, Audubon Sugar Institute, St. Gabriel, LA 70776
Email: kgravois@agcenter.lsu.edu

Each year a sugarcane variety survey is conducted by the county agents in the 23 sugarcane-growing parishes of Louisiana to determine the variety makeup and distribution across the state. There were no parish survey reports from Acadia, Cameron, Evangeline, or St. Landry parishes. The information presented in this survey was summarized from 19 individual parish reports. According to USDA Farm Service Agency (FSA), there were 409,594 acres planted to sugarcane in Louisiana in 2014. This survey was based on 99.3 percent of the acres reported by USDA-FSA.

Agents collected acreage according to variety and crop. Nine sugarcane varieties, HoCP 85-845, HoCP 96-540, L 99-226, L 99-233, HoCP 00-950, L 01-283, L 01-299, L 03-371, and HoCP 04-838 were listed along with "Others" in the survey. The category of "Others" included, but was not limited to, small acreages of LCP 85-384, CP 89-2143, Ho 95-988, L 97-128, Ho 05-961, and small increase acreages devoted to the newly released variety Ho 07-613, which was grown on primary and secondary seed-cane increase stations. The crop was divided into four categories, which included plant-cane, first-stubble, second-stubble and third-stubble and older crops. Additional information regarding parish acreage was collected as needed from the local and state FSA offices.

**Total State Acreage.** Actual area surveyed for each parish, region and the statewide total are shown in Table 1. Statewide, the area planted to sugarcane in 2014 was 409,594 acres according to state FSA records. A total of 406,645 acres comprised the sample for the 2014 variety survey. An estimated 382,970 acres were available for harvest for sugar, assuming 6.5% of the total acres were used for seed-cane.

**Sugarcane Distribution by Variety.** Statewide sugarcane acreage in percent by variety and crop is shown in Table 2. The leading variety for 2014 was HoCP 96-540, which occupied 37% of the Louisiana sugarcane acreage. This percentage was two points lower than HoCP 96-540's acreage in 2013 (Gravois and Legendre, 2014). L 01-299 was next in total acreage as it was planted on 22% of the state's acreage. The varieties planted in the next largest areas were L 99-226, L 01-283, HoCP 04-838, HoCP 00-950, and L 03-371, occupying 13%, 10%, 6%, 3%, and 3% of the state's acreage, respectively. All other varieties in the survey had each 2% or less of the planted area for the 2014 crop.

**Sugarcane Distribution by Region and Crop.** The total sugarcane acreage was highest for Teche region (173,136 acres); followed by the River-Bayou Lafourche region (165,309 acres); then the Northern region at 68,200 acres (Table 3). Total FSA reported sugarcane acreage decreased by 30,416 acres in 2014. The largest decrease was in the Northern region, which was more adversely affected by the cold winter and spring preceding the crop.

In 2014, 11.7% of the state's acreage was grown as third and older stubble crops, which was 0.5 percentage points lower than 2013. The cold and wet winter during 2013-2014 likely accounted for the decrease of acreage devoted to older stubble cane. In 2014, 29.0%, 30.2%, and 29.1% of the state's acreage was in a plant-cane, first stubble, and second stubble crops, respectively.

For the current survey, the River-Bayou Lafourche region had the greatest percentage of plant-cane (29.7%), with the northern region having the lowest percentage of plant-cane (26.3%). For the third and older stubble crops, the Bayou Teche region had the lowest percentage at 10.3%, whereas the northern region had the highest percentage at 15.4%.

**Sugarcane Distribution by Variety and Crop for the Three Regions.** HoCP 96-540 continued as the leading variety in all crops (plant-cane through third-stubble crops) for all regions in 2014 (Tables 4-6). HoCP 96-540 led the way in plant-cane acreage in the Bayou Teche, and Northern regions, with 40% and 34% of the plant-cane crop, respectively. L 01-299 occupied the majority of the plant-cane acres in the River-Bayou Lafourche region, with 35% of the total plant-cane acres. Although there has been some renewed interest in HoCP 85-845 and LCP 85-384 because of excellent stubbling ability, recent plantings of both varieties were down considerably. Most of the HoCP 85-845 acreage is planted in the more southerly areas of the Louisiana sugarcane growing area.

The largest variety trend in sugarcane acreage was the increased planting of L 01-299 and increased older stubble crops devoted to L 01-299. Conversely, the River-Bayou Lafourche and Northern growing areas planted more L 01-283 than the Bayou Teche region, 14 and 20%, respectively. HoCP 00-950 and L 01-283 are more suited to the better drained sandier soils that provide a less stressful growing environment, plus growers like the early maturity of these varieties.

**Variety Trends.** HoCP 96-540, released for commercial planting in 2003, now occupies 37% of the state's 2014 acreage, which is a decrease of two percentage points from the previous year. The variety continues to perform well, in spite of it's slow emergence due to the cold and wet winter and spring of 2014. Rust infections were limited in scope in 2014 due to below freezing temperatures during the winter, which killed all regrowth. No fungicide applications were necessary in Louisiana in 2014 for the control of brown rust.

L 99-226 decreased in acreage by 4 percentage points. The variety is difficult to plant due to

lodging and the amount of shucks (long leaves) on the variety. L 99-226 is moderately susceptible to brown rust. L 99-226 exhibits resistance to the sugarcane borer and its growth habit makes it competitive with most problem weeds. Sucrose content is very good in the variety, but cane yield at times has been disappointing. L 99-226 will likely continue to decrease in acreage.

L 99-233 also decreased in acreage in 2014 by 4 percentage points. Field yields of L 99-233 were not good and, the variety does not respond well to ripeners. This variety is no longer recommended for planting.

HoCP 00-950 was released for commercial planting in 2007, and it occupied 4% of the state's acreage in 2014). This variety has high sugar per ton of cane and is considered an early maturing variety. HoCP 00-950 does not grow as well in poorly drained areas and seems better suited to the sandier soils in the sugar belt. Some growers have been very pleased with the performance of HoCP 00-950, while others have discontinued its planting. The performance of this variety in 2014 was very good.

L 01-283 was released for commercial planting in 2008 and occupied 10% of the state's acreage in 2014. The variety has excellent stubbling ability, good sugar yield and erectness. Naturally occurring, environmentally induced off-types have been increasing in L 01-283. Growers are cautioned to watch the variety closely before making too rapid of an expansion. The variety is especially susceptible to late season sugarcane borer infestations when off-types are present.

L 01-299 was grown on 22% of the state's acreage. This variety was released in 2009 after superior sugar yields were obtained in the outfield variety trials. The variety is known for outstanding stubbling ability and is well suited for heavy land. The variety has an erect growth habit. L 01-299 can have difficulty establishing after planting in sandier soils, especially with high rainfall just after planting. The variety can pick up smut and growers are encouraged to monitor seed-cane sources for this disease. L 01-299 performed well in all crops for the 2014 grinding season and withstood the harsh winter of 2013-14. This variety will likely be widely planted again in 2015.

L 03-371, released in 2010, was not widely planted since its release. The variety is moderately susceptible to brown rust. L 03-371 is very susceptible to the sugarcane borer and should not be planted where insecticides cannot be applied. L 03-371 is no longer recommended for planting in Louisiana.

HoCP 04-838 was released in 2011. This new variety has very good sugar and cane yield potential, with its most notable attribute being cold tolerance. Field yields for HoCP 04-838 appear promising based on acreage harvested in 2014. The fiber content of HoCP 04-838 is just over 13%. Harvesting trials have been conducted with HoCP 04-838, and fiber content can be

managed by careful operation of combines. HoCP 04-838 will continue to be expanded more widely in 2015.

Ho 05-961 was released to the Louisiana sugar industry in 2012. Soon after its release, two diseases were found in the variety: s*ugarcane mosaic virus* and orange rust. It was decided that Ho 05-961 would not be distributed to growers from the secondary seed increase farms. Moderate levels of orange rust were again observed in the fall of 2014. Ho 05-961 is not recommended for planting.

The dominance of a single variety can lead to disease and insect shifts as was the case with brown rust and LCP 85-384 (Hoy, 2005) and HoCP 96-540. It has been fortunate that HoCP 96-540 was grown on less than 50% of the state's acreage each year that it has been planted. This has likely extended the life span of HoCP 96-540. With the release of 12 new sugarcane varieties since 2003, growers are encouraged to continue to plant a more balanced mix of varieties.

**ACKNOWLEDGMENTS**

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

**REFERENCES**

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

Gravois, K.A., and B.L. Legendre. 2014. The 2013 Louisiana sugarcane variety survey. Sugar Bull. 92(9):25-29.

Table 1. Total area planted to sugarcane in Louisiana by region and parish, 2014.[1, 2]

| Bayou Teche | | River-Bayou Lafourche | | Northern | |
|---|---|---|---|---|---|
| **Parish** | **Acres** | **Parish** | **Acres** | **Parish** | **Acres** |
| Acadia | NAR | Ascension | 16,668 | Avoyelles | 6,333 |
| Calcasieu | 470 | Assumption | 40,043 | Evangeline | NAR |
| Iberia | 53,445 | Iberville | 36,119 | Pointe Coupee | 38,417 |
| Jeff Davis | NAR | Lafourche | 26,679 | Rapides | 9,880 |
| Lafayette | 9,665 | St. Charles | 1,365 | St. Landry | NAR |
| St. Martin | 28,951 | St. James | 27,782 | West Baton Rouge | 13,570 |
| St. Mary | 45,799 | St. John | 7,125 | | |
| Vermilion | 34,807 | Terrebonne | 9,645 | | |
| Total | 173,136 | Total | 165,309 | Total | 68,200 |
| Total all regions: 406,645 | | | | | |

[1]Acreage based on information obtained in variety surveys from 19 parishes by the county agents in 2014

[2] NAR = No acres reported

Table 2. Estimated statewide sugarcane acreage percentage by variety and crop, all regions, 2014.[1]

| Variety | Plant-cane | First-stubble | Second-stubble | Third-stubble and older | Total |
|---|---|---|---|---|---|
| | ----------%---------- | | | | |
| HoCP 85-845 | <1 | 1 | 1 | <1 | 1 |
| HoCP 96-540 | 34 | 36 | 42 | 36 | 37 |
| L 99-226 | 8 | 14 | 18 | 13 | 13 |
| L 99-233 | <1 | 1 | 4 | 6 | 2 |
| HoCP 00-950 | 2 | 2 | 3 | 12 | 4 |
| L 01-283 | 9 | 9 | 8 | 20 | 10 |
| L 01-299 | 31 | 24 | 16 | 9 | 22 |
| L 03-371 | 1 | 5 | 4 | 2 | 3 |
| HoCP 04-838 | 13 | 7 | 2 | 1 | 6 |
| Other | 1 | 1 | 2 | 1 | 1 |
| Total acres<br>Percent of total crop | 117,759<br>29.0 | 122,941<br>30.2 | 118,400<br>29.1 | 47,545<br>11.7 | 406,645 |

[1] Based on information obtained in variety surveys from 19 parishes by county agents in 2014.

Table 3. Estimated sugarcane distribution by region and crop, 2014.[1]

| Crop | Bayou Teche | River-Bayou Lafourche | Northern | State Total |
|---|---|---|---|---|
| Plant-cane<br>Area (acres)<br>Percent (%) | 50,718<br>29.3 | 49,081<br>29.7 | 17,960<br>26.3 | 125,031<br>29.3 |
| | | | | |
| First-stubble<br>Area (acres)<br>Percent (%) | 52,857<br>30.5 | 49,292<br>29.8 | 20,792<br>30.5 | 132,180<br>31.0 |
| | | | | |
| Second-stubble<br>Area (acres)<br>Percent (%) | 51,085<br>29.5 | 48,351<br>29.2 | 18,965<br>27.8 | 117,934<br>27.6 |
| | | | | |
| Third-stubble and older<br>Area (acres)<br>Percent (%) | 18,477<br>10.7 | 18,585<br>11.2 | 10,483<br>15.4 | 51,909<br>12.2 |
| | | | | |
| Total area (acres)<br>Percent (%) | 173,136<br>42.3 | 165,309 40.7 | 68,200 16.8 | 406,645 |

[1] Based on information obtained in variety surveys from 19 parishes by county agents in 2014.

Table 4. Estimated area planted to sugarcane in percent by variety and crop for the Bayou Teche region, 2014.[1]

| Variety | Plant-cane crop (%) | First-stubble crop (%) | Second-stubble crop (%) | Third-stubble crop & older (%) | Total (%) |
|---|---|---|---|---|---|
| HoCP 85-845 | <1 | 1 | 1 | 1 | 1 |
| HoCP 96-540 | 40 | 42 | 48 | 47 | 44 |
| L 99-226 | 8 | 17 | 23 | 20 | 17 |
| L 99-233 | 0 | <1 | 2 | 3 | 1 |
| HoCP 00-950 | 3 | 2 | 3 | 9 | 3 |
| L 01-283 | 1 | 2 | 2 | 9 | 2 |
| L 01-299 | 31 | 22 | 13 | 6 | 20 |
| L 03-371 | 1 | 4 | 5 | 3 | 3 |
| HoCP 04-838 | 14 | 9 | 2 | <1 | 7 |
| Others | 1 | <1 | 1 | <1 | 1 |
| Totals | 100 | 100 | 100 | 100 | 100 |

[1] Based on information obtained in variety surveys from 6 parishes by county agents in 2014.

Table 5. Estimated area planted to sugarcane in percent by variety and crop for the River/Bayou Lafourche region, 2014.[1]

| Variety | Plant-cane crop (%) | First-stubble crop (%) | Second-stubble crop (%) | Third-stubble crop & older (%) | Total (%) |
|---|---|---|---|---|---|
| HoCP 85-845 | <1 | 1 | 1 | 1 | 1 |
| HoCP 96-540 | 28 | 32 | 38 | 32 | 33 |
| L 99-226 | 6 | 12 | 14 | 9 | 11 |
| L 99-233 | <1 | 2 | 7 | 13 | 4 |
| HoCP 00-950 | 2 | 2 | 3 | 14 | 4 |
| L 01-283 | 12 | 13 | 14 | 17 | 14 |
| L 01-299 | 35 | 26 | 15 | 10 | 24 |
| L 03-371 | 1 | 2 | 2 | 1 | 2 |
| HoCP 04-838 | 13 | 6 | 2 | 1 | 6 |
| Others | 1 | 3 | 3 | 2 | 2 |
| Totals | 100 | 100 | 100 | 100 | 100 |

[1] Based on information obtained in variety surveys from 8 parishes by county agents in 2014.

Table 6. Estimated area planted to sugarcane in percent by variety and crop for the Northern region, 2014[1]

| Variety | Plant-cane crop (%) | First-stubble crop (%) | Second-stubble crop (%) | Third-stubble crop & older (%) | Total (%) |
|---|---|---|---|---|---|
| HoCP 85-845 | 0 | 0 | 0 | 0 | 0 |
| HoCP 96-540 | 34 | 30 | 34 | 23 | 31 |
| L 99-226 | 12 | 9 | 11 | 8 | 10 |
| L 99-233 | 1 | <1 | 1 | 0 | 1 |
| HoCP 00-950 | 2 | 2 | 2 | 13 | 4 |
| L 01-283 | 20 | 16 | 11 | 42 | 20 |
| L 01-299 | 20 | 27 | 30 | 13 | 24 |
| L 03-371 | 2 | 13 | 9 | 1 | 7 |
| HoCP 04-838 | 8 | 3 | 1 | <1 | 4 |
| Others | 1 | <1 | <1 | <1 | 1 |
| Totals | 100 | 100 | 100 | 100 | 100 |

[1] Based on information obtained in variety surveys from 4 parishes by county agents in 2014.

Table 7. Louisiana sugarcane variety trends, by variety and years, all regions, 2010-2014[1]

| | Area planted to sugarcane by variety and years (%) | | | | | |
|---|---|---|---|---|---|---|
| **Variety** | **2010** | **2011** | **2012** | **2013** | **2014** | **1 yr. Change** |
| HoCP 85-845 | 1 | 1 | <1 | 2 | 1 | -1 |
| HoCP 96-540 | 48 | 43 | 39 | 39 | 37 | -2 |
| L 99-226 | 17 | 19 | 21 | 17 | 13 | -4 |
| L 99-233 | 10 | 11 | 9 | 6 | 2 | -4 |
| HoCP 00-950 | 4 | 6 | 6 | 4 | 4 | 0 |
| L 01-283 | 4 | 8 | 11 | 10 | 10 | 0 |
| L 01-299 | 1 | 3 | 7 | 15 | 22 | +7 |
| L 03-371 | <1 | 1 | 2 | 3 | 3 | 0 |
| HoCP 04-838 | | <1 | 1 | 3 | 6 | +3 |
| Others | 1 | <1 | 1 | 2 | 1 | -1 |
| Totals | 100 | 100 | 100 | 100 | 100 | |

[1] Based on annual variety surveys from 19 parishes by county agents, 2010-2014.

# MATURITY CHARACTERISTICS OF HISTORICAL AND MODERN LOUISIANA SUGARCANE VARIETIES

Kenneth Gravois, Collins Kimbeng, and Michael Pontif
LSU AgCenter, Sugar Research Station

In 2013, historical sugarcane varieties beginning with POJ 234, modern varieties LCP 85-384 through Ho 07-613, and four advanced experimental clones were planted at the Sugar Research Station in St. Gabriel, LA. The historical varieties were provided by the personnel from the USDA-ARS Sugarcane Research Unit in Houma, LA.

Standard cultural practices were followed during the 2014 growing season. The plots were not replicated, and samples were harvested on October 2, November 3, and December 1. An 8-stalk sample was hand-cut out of each plot for a quality analysis. Each sample was then sent to the laboratory to determine theoretical recoverable sugar per ton of cane (lbs/ton); fiber content (%); purity (%) (Gravois and Milligan, 1992).

A freeze occurred during the nights of November 18 and 19. Data from the December sampling date provided an early but crude estimate of cold tolerance within this group of varieties based on lower purities in the December sampling date.

Gravois, K.A. and S.B. Milligan. 1992. Genetic relationships between fiber and sugarcane yield components. Crop Sci. 32:62-67.

Table 1. Maturity characteristics of some historical Louisiana sugarcane varieties across three sampling dates. The varieties were grown at the Sugar Research Station, St. Gabriel, LA during 2014.

| Date | VARIETY | TRS | PURITY | FIBER |
|---|---|---|---|---|
| October | POJ234 | 173 | 78.5 | 10.4 |
| November | POJ234 | 187 | 79.8 | 11.5 |
| December | POJ234 | 212 | 82.0 | 12.5 |
| October | CO290 | 93 | 65.2 | 11.0 |
| November | CO290 | 151 | 75.4 | 10.8 |
| December | CO290 | 132 | 71.3 | 10.9 |
| October | CP28-19 | 156 | 76.4 | 12.0 |
| November | CP28-19 | 190 | 79.8 | 12.4 |
| December | CP28-19 | 202 | 81.1 | 12.9 |
| October | CP29-120 | 125 | 72.8 | 11.4 |
| November | CP29-120 | 171 | 79.5 | 12.8 |
| December | CP29-120 | 174 | 78.4 | 14.1 |
| October | CP36-105 | 116 | 68.4 | 9.9 |
| November | CP36-105 | 192 | 78.6 | 13.0 |
| December | CP36-105 | 183 | 77.9 | 12.8 |
| October | CP44-101 | 110 | 68.0 | 10.0 |
| November | CP44-101 | 194 | 80.5 | 11.9 |
| December | CP44-101 | 185 | 79.8 | 12.3 |
| October | CP52-68 | 134 | 73.4 | 11.6 |
| November | CP52-68 | 212 | 83.6 | 13.4 |
| December | CP52-68 | 208 | 83.0 | 12.6 |
| October | L60-25 | 168 | 79.3 | 10.1 |
| November | L60-25 | 212 | 82.9 | 11.4 |
| December | L60-25 | 217 | 82.8 | 10.8 |
| October | CP65-357 | 150 | 75.6 | 11.6 |
| November | CP65-357 | 195 | 81.0 | 11.7 |
| December | CP65-357 | 217 | 83.0 | 12.3 |
| October | CP70-321 | 168 | 77.0 | 9.7 |
| November | CP70-321 | 247 | 86.8 | 11.5 |
| December | CP70-321 | 238 | 84.8 | 9.6 |

Table 2. Maturity characteristics of modern Louisiana sugarcane varieties across three sampling dates. The varieties were grown at the Sugar Research Station, St. Gabriel, LA during 2014.

| DATE | VARIETY | TRS | PURITY | FIBER |
|---|---|---|---|---|
| October | LCP85-384 | 188 | 79.1 | 10.0 |
| November | LCP85-384 | 252 | 86.5 | 13.1 |
| December | LCP85-384 | 270 | 87.4 | 12.2 |
| October | HoCP85-845 | 180 | 80.9 | 12.8 |
| November | HoCP85-845 | 254 | 87.7 | 14.1 |
| December | HoCP85-845 | 220 | 83.8 | 14.2 |
| October | HoCP96-540 | 165 | 78.4 | 11.3 |
| November | HoCP96-540 | 221 | 83.6 | 11.6 |
| December | HoCP96-540 | 231 | 83.3 | 13.5 |
| October | L99-226 | 202 | 82.0 | 10.5 |
| November | L99-226 | 240 | 85.6 | 12.5 |
| December | L99-226 | 206 | 79.5 | 12.6 |
| October | HoCP00-950 | 234 | 85.8 | 11.1 |
| November | HoCP00-950 | 262 | 86.9 | 12.6 |
| December | HoCP00-950 | 237 | 84.2 | 11.3 |
| October | L01-283 | 201 | 81.7 | 11.1 |
| November | L01-283 | 216 | 82.7 | 11.5 |
| December | L01-283 | 238 | 84.6 | 11.6 |
| October | L01-299 | 147 | 75.5 | 10.7 |
| November | L01-299 | 235 | 85.6 | 13.4 |
| December | L01-299 | 186 | 78.7 | 12.9 |
| October | L03-371 | 179 | 80.0 | 9.8 |
| November | L03-371 | 244 | 86.4 | 10.0 |
| December | L03-371 | 213 | 82.9 | 10.0 |
| October | HoCP04-838 | 171 | 79.6 | 12.4 |
| November | HoCP04-838 | 215 | 83.7 | 13.6 |
| December | HoCP04-838 | 240 | 85.6 | 13.4 |
| October | Ho05-961 | 216 | 83.4 | 11.7 |
| November | Ho05-961 | 257 | 86.1 | 12.6 |
| December | Ho05-961 | 221 | 80.6 | 13.2 |
| October | Ho07-613 | 241 | 86.2 | 11.7 |
| November | Ho07-613 | 274 | 88.1 | 12.1 |
| December | Ho07-613 | 258 | 85.8 | 12.0 |
| October | L09-112 | 171 | 76.8 | 11.9 |
| November | L09-112 | 230 | 83.9 | 13.2 |
| December | L09-112 | 212 | 80.7 | 13.2 |
| October | HoCP09-804 | 204 | 83.1 | 12.8 |
| November | HoCP09-804 | 258 | 88.3 | 14.1 |
| December | HoCP09-804 | 239 | 85.1 | 14.8 |
| October | Ho09-840 | 207 | 83.0 | 12.1 |
| November | Ho09-840 | 223 | 84.5 | 12.6 |
| December | Ho09-840 | 243 | 85.2 | 15.0 |

Table 2. Continue

| DATE | VARIETY | TRS | PURITY | FIBER |
|---|---|---|---|---|
| October | Ho10-937 | 188 | 80.7 | 11.7 |
| November | Ho10-937 | 222 | 84.4 | 11.5 |
| December | Ho10-937 | 249 | 87.6 | 12.3 |

# MATURITY CHARACTERISTICS OF FLORIDA SUGARCANE VARIETIES

Kenneth Gravois, Collins Kimbeng, and Michael Pontif
LSU AgCenter, Sugar Research Station

In 2013, sugarcane varieties from Florida were obtained from the Kleentek foundation greenhouse and seed-cane increases were planted. These seed-cane increases were used to plant a yield trial in 2014, and there were sufficient stalks left so that each increase could be sampled across time during the 2014 harvest season.

Standard cultural practices were followed during the 2014 growing season. The seed-cane increase was not replicated, and samples were harvested on October 2, November 3, and December 1. An 8-stalk sample was hand-cut out of each plot for a quality analysis. Each sample was then sent to the laboratory to determine theoretical recoverable sugar per ton of cane (lbs/ton); fiber content (%); purity (%) (Gravois and Milligan, 1992).

A freeze occurred during the nights of November 18 and 19. Data from the December sampling date provided an early but crude estimate of cold tolerance within this group of Florida varieties based on lower purities in the December sampling date.

Gravois, K.A. and S.B. Milligan. 1992. Genetic relationships between fiber and sugarcane yield components. Crop Sci. 32:62-67.

Table 1. Maturity characteristics of Florida sugarcane varieties across three sampling dates. The varieties were grown at the Sugar Research Station, St. Gabriel, LA during 2014.

| Date | Variety | TRS (lbs/ton) | Fiber Content (%) | Purity (%) |
|---|---|---|---|---|
| 2-Oct | CP00-1101 | 178.07 | 12.10 | 80.38 |
| 3-Nov | CP00-1101 | 211.80 | 13.10 | 83.24 |
| 1-Dec | CP00-1101 | 205.19 | 15.15 | 80.65 |
| 2-Oct | CP01-1372 | 206.24 | 10.83 | 81.50 |
| 3-Nov | CP01-1372 | 261.26 | 9.83 | 84.61 |
| 1-Dec | CP01-1372 | 249.83 | 10.30 | 85.07 |
| 2-Oct | CP03-1912 | 133.51 | 10.60 | 72.14 |
| 3-Nov | CP03-1912 | 186.88 | | 79.39 |
| 1-Dec | CP03-1912 | 216.94 | 13.28 | 82.43 |
| 2-Oct | CP04-1566 | 167.31 | 14.49 | 77.88 |
| 3-Nov | CP04-1566 | 212.48 | 15.32 | 82.50 |
| 1-Dec | CP04-1566 | 178.78 | 12.61 | 76.05 |
| 2-Oct | CP04-1844 | 122.95 | 11.28 | 71.78 |
| 3-Nov | CP04-1844 | 155.18 | 11.58 | 75.21 |
| 1-Dec | CP04-1844 | 182.48 | 13.61 | 79.09 |
| 2-Oct | CP04-1935 | 178.09 | 13.46 | 79.74 |
| 3-Nov | CP04-1935 | 212.15 | 13.64 | 82.72 |
| 1-Dec | CP04-1935 | 217.48 | 14.60 | 81.99 |
| 2-Oct | CP96-1252 | 163.48 | 10.99 | 80.08 |
| 3-Nov | CP96-1252 | 184.08 | 11.09 | 81.79 |
| 1-Dec | CP96-1252 | 211.69 | 10.22 | 83.83 |
| 2-Oct | CPCL00-4111 | 208.28 | 11.01 | 83.26 |
| 3-Nov | CPCL00-4111 | 230.18 | 11.38 | 84.80 |
| 1-Dec | CPCL00-4111 | 223.09 | 11.66 | 82.21 |
| 2-Oct | CPCL02-0926 | 181.66 | 11.21 | 79.48 |
| 3-Nov | CPCL02-0926 | 223.80 | 11.75 | 85.37 |
| 1-Dec | CPCL02-0926 | 234.31 | 13.53 | 84.62 |
| 2-Oct | CPCL02-1295 | 160.49 | 14.30 | 78.11 |
| 3-Nov | CPCL02-1295 | 167.28 | 15.32 | 78.52 |
| 1-Dec | CPCL02-1295 | 222.34 | 14.53 | 84.08 |
| 2-Oct | CPCL95-2287 | 147.94 | 10.86 | 76.16 |
| 3-Nov | CPCL95-2287 | 207.20 | 12.92 | 82.66 |
| 1-Dec | CPCL95-2287 | 215.52 | 13.75 | 81.51 |
| 2-Oct | CPCL97-2730 | 186.17 | 12.65 | 79.81 |
| 3-Nov | CPCL97-2730 | 229.94 | 13.11 | 84.15 |
| 1-Dec | CPCL97-2730 | 224.67 | 12.92 | 83.17 |
| 2-Oct | CPCL99-4455 | 183.74 | 9.90 | 79.14 |
| 3-Nov | CPCL99-4455 | 236.67 | 11.67 | 84.88 |
| 1-Dec | CPCL99-4455 | 254.19 | 11.00 | 86.63 |

# YIELD AND FIBER CONTENT OF HIGH-FIBER SUGARCANE CLONES

Kenneth Gravois, Mavis Finger, Collins Kimbeng, and Michael Pontif
LSU AgCenter, Sugar Research Station

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

In 2008, the LSU AgCenter partnered with Mississippi State University to evaluate high-fiber sugarcane clones (energycane). Dr. Brian Baldwin of Mississippi State University is the coordinator of the Sun Grant proposal: "Regional Biomass Feedstock – Herbaceous Bioenergy Crop Field Trial". These trials are located across the southeastern U.S. with one located at the LSU AgCenter's Sugar Research Station at St. Gabriel, LA. The sugarcane clones were bred and selected at the USDA-ARS Sugarcane Research Unit in Houma, LA.

A yield trial was planted on September 18, 2008 at the Sugar Research Station in St. Gabriel, Louisiana. Seed-cane of five varieties was obtained at the USDA-ARS Sugarcane Research Unit's Ardoyne Farm, and a randomized complete block (four replications) experiment was planted.

Standard cultural practices were followed during the 2009, 2010, 2011, 2012, 2013, and 2014 growing seasons. The field trial was harvested on December 16, 2009 for the plant-cane crop; December 2, 2010 for the first stubble crop; December 15, 2011 for the second stubble crop; December 19, 2012 for the third stubble crop; December 11, 2013 for the fourth stubble crop; December 11, 2014 for the fifth stubble crop. Plots were combine-harvested and weighed to determine cane yield (tons/acre). A 10-stalk sample was hand-cut out of each plot for a quality analysis. Each sample was then sent to the laboratory to determine juice Brix by refractometer and pol ($Z^o$) by saccharimeter. Fiber content was determined by the pre-breaker press method (Gravois and Milligan, 1992). Brix % cane was determined as ((100-Fiber content)*juice Brix)/100.

Data were analyzed with SAS (v 9.4) software. Replication was considered a random effect; variety was considered a fixed effect. Least square means were estimated and tested for statistical significance (P=0.05) with the Student's t test using the PDIFF option of PROC MIXED.

Gravois, K.A. and S.B. Milligan. 1992. Genetic relationships between fiber and sugarcane yield components. Crop Sci. 32:62-67.

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

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | |
|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | |
| Ho 02-144 | 30.5 | B | 9.9 | A | 20.6 | B | 6.27 | C | 3.02 | AB |
| Ho 02-147 | 44.2 | A | 8.8 | B | 17.8 | C | 7.87 | AB | 3.89 | A |
| Ho 06-9001 | 28.9 | B | 7.9 | B | 26.4 | A | 7.58 | ABC | 2.28 | BC |
| Ho 06-9002 | 25.5 | B | 7.5 | BC | 25.3 | A | 6.44 | BC | 1.91 | C |
| HoCP 72-114 | 42.8 | A | 7.3 | C | 20.7 | B | 8.84 | A | 3.12 | AB |

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

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | | Moisture Content | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | | % | |
| Ho 02-144 | 25.0 | C | 12.3 | A | 25.9 | B | 6.49 | D | 3.08 | C | 61.8 | C |
| Ho 02-147 | 47.0 | A | 13.6 | A | 19.5 | D | 9.15 | A | 6.39 | A | 66.9 | A |
| Ho 06-9001 | 26.0 | C | 9.9 | C | 29.7 | A | 7.70 | BC | 2.57 | C | 60.4 | D |
| Ho 06-9002 | 24.4 | C | 10.2 | BC | 29.6 | A | 7.22 | CD | 2.49 | C | 60.2 | D |
| HoCP 72-114 | 35.8 | B | 11.5 | B | 24.0 | C | 8.58 | AB | 4.12 | B | 64.5 | B |

Table 3. Second-stubble data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2011.

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | | Moisture Content | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | | % | |
| Ho 02-144 | 55.3 | A | 11.9 | A | 23.6 | B | 12.95 | B | 6.58 | B | 64.5 | BC |
| Ho 02-147 | 72.4 | B | 13.1 | A | 18.4 | D | 13.21 | AB | 9.48 | A | 68.6 | A |
| Ho 06-9001 | 57.2 | A | 9.6 | BC | 28.7 | A | 16.41 | A | 5.49 | B | 61.7 | C |
| Ho 06-9002 | 50.7 | A | 9.2 | C | 28.3 | A | 14.41 | AB | 4.66 | B | 62.6 | C |
| HoCP 72-114 | 57.1 | A | 11.1 | B | 22.6 | C | 12.39 | B | 6.34 | B | 66.2 | AB |

Table 4. Third-stubble data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2012.

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | | Moisture Content | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | | % | |
| Ho 02-144 | 34.6 | B | 13.1 | AB | 23.2 | AB | 7.99 | AB | 4.53 | B | 63.7 | B |
| Ho 02-147 | 49.7 | A | 14.4 | A | 19.6 | C | 9.74 | A | 7.16 | A | 66.0 | AB |
| Ho 06-9001 | 27.3 | C | 11.6 | BC | 24.8 | A | 6.85 | B | 3.17 | C | 63.6 | B |
| Ho 06-9002 | 28.0 | C | 10.9 | C | 25.7 | A | 7.24 | B | 3.05 | C | 63.3 | B |
| HoCP 72-114 | 39.4 | B | 10.8 | C | 21.5 | BC | 8.46 | AB | 4.26 | B | 67.8 | A |

Table 5. Fourth-stubble data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2013.

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | | Moisture Content | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | | % | |
| Ho 02-144 | 36.5 | A | 10.9 | A | 23.2 | B | 8.52 | A | 3.98 | AB | 65.9 | B |
| Ho 02-147 | 40.7 | A | 11.9 | A | 19.8 | C | 8.14 | A | 4.84 | A | 68.3 | A |
| Ho 06-9001 | 38.2 | A | 9.6 | B | 27.8 | A | 10.57 | A | 3.67 | AB | 62.6 | D |
| Ho 06-9002 | 28.3 | A | 9.3 | BC | 26.4 | A | 7.41 | A | 2.63 | B | 64.3 | C |
| HoCP 72-114 | 38.0 | A | 9.5 | C | 23.1 | B | 8.75 | A | 3.61 | AB | 67.5 | A |

Table 6. Fifth-stubble data obtained from an energycane field trial conducted at the Sugar Research Station in St. Gabriel, Louisiana in 2014.

| Variety | Cane Yield | | Cane Brix | | Fiber Content | | Insoluble Solids (Fiber) Weight | | Brix Weight | | Moisture Content | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | tons/ac | | % | | % | | tons/ac | | tons/ac | | % | |
| Ho 02-144 | 35.2 | BC | 11.6 | A | 27.0 | B | 9.51 | A | 4.10 | A | 63.1 | AB |
| Ho 02-147 | 44.8 | A | 12.1 | A | 21.3 | D | 9.53 | A | 5.42 | B | 53.8 | C |
| Ho 06-9001 | 34.9 | BC | 8.5 | B | 31.0 | A | 10.81 | A | 2.97 | C | 63.5 | AB |
| Ho 06-9002 | 31.5 | C | 9.0 | B | 30.0 | A | 9.43 | A | 2.84 | C | 66.8 | A |
| HoCP 72-114 | 39.5 | AB | 9.8 | B | 24.3 | C | 9.64 | A | 3.89 | B | 58.9 | BC |

# IDENTIFICATION OF GENES TOWARD DEVELOPMENT OF MARKERS FOR RESISTANCE TO LEAF SCALD AND BROWN RUST IN SUGARCANE

Andres Gutierrez[1], Carolina Avellaneda[2], Jeff Hoy[2], Michael Pontif[3], Collins Kimbeng[3], Niranjan Baisakh[1]

[1]School of Plant, Environmental and Soil Sciences, [2]Department of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Center, Baton Rouge, LA 70803

[3]Sugar Research Station, Louisiana State University Agricultural Center, 5755 LSU Ag Road, St. Gabriel, LA 70776

## INTRODUCTION

Identification of the genes/alleles for resistance to leaf scald and brown rust will have a great application in breeding programs. Several molecular approaches have been used for identify and study the expression of the genes in response to disease resistance in sugarcane. In our laboratory we have previously used the suppression subtractive hybridization (SSH) method to identify genes related with cold tolerance (Khan et al., 2013). The same approach was used to identify genes related with resistance to leaf scald and brown rust with a long term goal of developing functional markers to facilitate breeding of disease resistant cultivars.

## METHODS

**Leaf scald inoculation:** Leaf scald bacteria (*Xanthomonas albilineans*) were isolated from a longitudinal section of sugarcane leaf with a pencil-line symptom as per the method described in Garces et al. (2014). The bacterial suspension at a concentration of $10^8$ CFU/ml was kept on ice prior to inoculation. In both greenhouse and field experiments, approximately 2-month-old plants of the clones LCP 85-384 (leaf scald resistant) and HoCP89-846 (leaf scald susceptible) were inoculated at sunset by injecting 200 µl of bacterial suspension with a syringe and needle close to the apical meristem, and only two wounds were made to each plant. Fifteen plants per cultivar were inoculated and four plants per cultivar were used as non-inoculated control for the SSH library construction. Greenhouse experiments were performed during the winter of 2012-2013. Leaf and meristem samples of three plants were harvested in liquid nitrogen from both clones after 24 h, 48 h, 72 h, and 1 week after inoculation and stored at −80 C for RNA isolation. Leaf and meristem tissues collected from non-inoculated plants served as the control. The inoculation method effectivity was assessed after two weeks of inoculation by bacterial quantification using qPCR (Garces et al., 2014).

**Brown rust inoculation:** Urediniospores of the brown rust fungus (*Puccinia melanocephala*) were collected by vacuum from the abaxial surface of multiple naturally infected leaves in single fields and stored at -80 $^{o}$C. L 99-233, the clone that was previously demonstrated to exhibit quantitative resistance to brown rust (Hoy et al., 2014), was used for inoculation. Plants were started in the greenhouse from single-node cuttings and grown until three to four leaves had emerged. Ten plants were inoculated with a urediniospore concentration of approximately $10^6$ CFU/ml suspended in distilled water with 0.1% Tween 20. Inoculum was applied to both sides of two fully emerged leaves per plant with a small brush to create six replicates per host/pathogen

combination. Urediniospore suspensions were brushed onto the surface of water agar plates at the time of inoculation, and the germination (%) for individual spore collections were determined by microscopic examination the next morning in two experiments. Inoculated plants were placed for 15 h in an indoor plastic mist chamber maintained at a temperature of 23 ± 1 $^{o}$C. Additional distilled water was applied to leaves with an atomizer to create high relative humidity and maintain leaf wetness for the entire 15 hours. After the infection period, the plants were kept under artificial lighting at 23 $\pm$ 1 $^{o}$C.

**RNA isolation and cDNA subtraction:** Total RNA was isolated from the frozen leaf tissues using Trizol (Invitrogen, Carlsbad, CA) and cDNA was synthesized from 20 µg of RNA from control and inoculated plants using the Superscript$^{TM}$ double-strand cDNA synthesis kit (Invitrogen, Carlsbad, CA). The cDNA subtraction was performed using the PCR-select$^{TM}$ cDNA subtraction kit (Clontech, Palo Alto, CA) following manufacturer's instructions as described in Khan et al. (2013). Forward subtraction libraries were prepared from both resistant and susceptible clones (for leaf scald) and resistant clone (for brown rust) using cDNA from control plant as driver and inoculated plant as tester. Differentially up-regulated genes were amplified by primary PCR and the primary PCR product was enriched by secondary PCR as per the user manual of the kit.

**Cloning, sequencing, and functional annotation of differentially expressed genes:** The subtracted cDNAs were cloned into pGEM-T Easy Vector (Promega, Madison, WI) and transformed into *Escherichia coli* DH5 cells following the method described previously (Ramanarao, et al., 2011). One hundred ninety two white colonies from each SSH library of LCP 85-384 and HoCP89-846, and 384 white colonies from L 99-233 were confirmed positive for the gene inserts with M13 forward and reverse primers; 192 plasmids were then single-pass sequenced using an ABI 3130xl sequencing platform. Sequence processing and functional annotation was performed as described earlier (Khan et al., 2013). Gene ontology (GO) IDs and GOSlim terms of transcripts with known function for biological process, molecular function, and cellular component were assigned using Blast2GO (Conesa et al., 2005).

**Transcript profiling of differentially expressed genes in response to leaf scald:** The expression patterns of 17 differentially expressed genes for leaf scald and 12 for brown rust, identified by cDNA subtraction, were validated by quantitative reverse transcription polymerase chain reaction (qRT-PCR) following the method described earlier (Ramanarao, et al., 2011) using gene specific primers. The qRT-PCR was carried out in triplicate (three biological replications corresponding to cDNAs prepared from three plants each clones). The PCR was conducted in a 20 µl final reaction volume in a MyiQ real-time PCR analysis system (Bio-Rad, Hercules, CA) as described in Khan et al. (2013). Expression of genes was normalized against the *Saccharum officinarum* elongation factor (SoEF1; GenBank Acc. #EF581011) and calculated as fold-change ratio in comparison to the control using the $2^{-\Delta\Delta Ct}$ method (Pfaffl, 2001).

**Mining leaf scald- and brown rust-responsive genes for microsatellite markers:** The leaf scald and brown rust-responsive genes were searched for the presence of simple sequence repeat (SSR) motifs using the GRAMENE SSR tool (Temnykh, *et al,*. 2001); criteria was set to at least five repeats for dinucleotide motifs and at least three repeats for tri, tetra and penta nucleotide motifs. Primers flanking the SSR motifs were designed using Primer 3 Plus (http://www.bioinformatics.nl/cgi-bin/primer3plus/primer3plus.cgi/).

## RESULTS

**Identification of leaf scald responsive genes:** BLAST search against non-redundant DNA and protein databases revealed that 29 and 33 transcripts of LCP85-384 and HoCP89-846 respectively, were without significant similarity to known genes. After the analysis against the KEGG and NCBI databases revealed that 45 and 55 genes from the susceptible and resistant clones were involved in different metabolic pathways. The different cellular, molecular and biological functions are summarized in Figures 1 and 2. Genes involved in signal transduction and DNA binding activities were represented more in the resistant clone LCP 85-384 as compared to the susceptible clone HoCP89-846. The genes showed differential regulation in their expression between the two varieties at different time points.

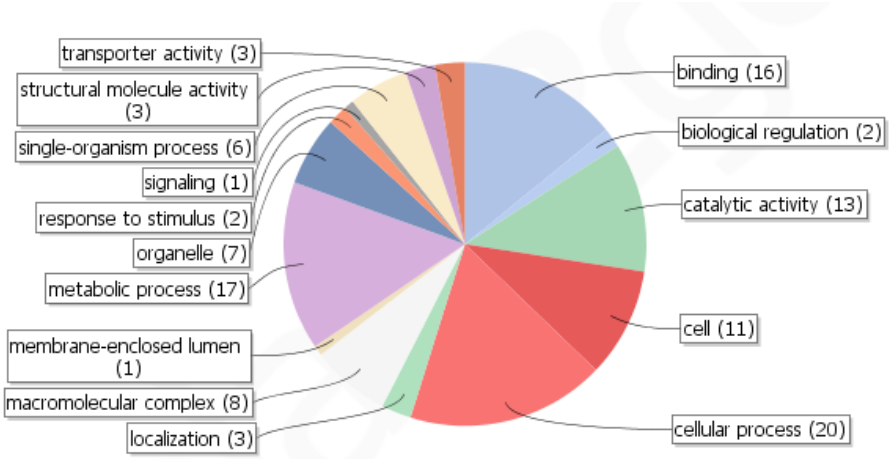


**Figure 1:** Functional annotation of leaf scald responsive genes of the susceptible clone HoCP89-846.

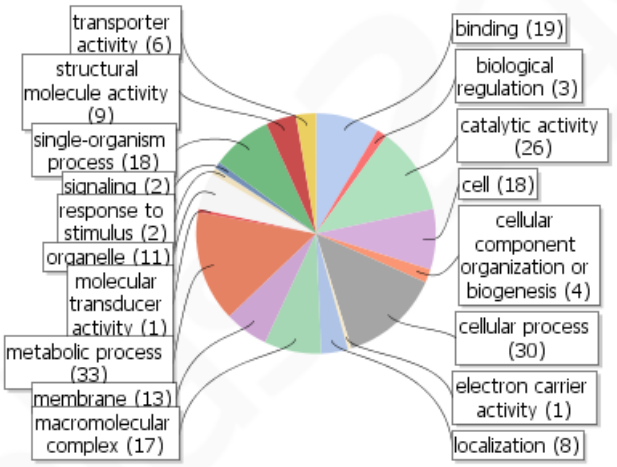


**Figure 2:** Functional annotation of leaf scald responsive genes of the resistant clone LCP85-384.

**Development of SSR markers derived from leaf scald responsive genes:** Twenty two SSRs were detected in genes from LCP85-384 and nine from HoCP89-846. The distribution of the SSR motifs and types are shown in Figure 3 and Figure 4, respectively.

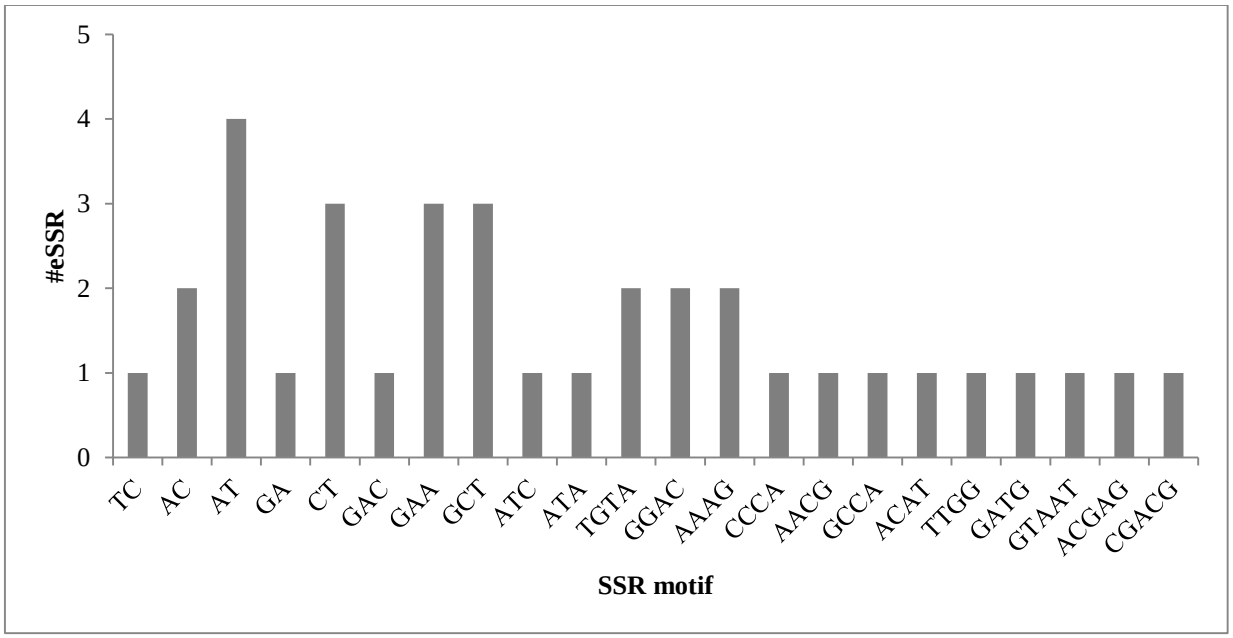


**Figure 3:** Distribution of the motifs in 31 SSRs from leaf scald responsive genes

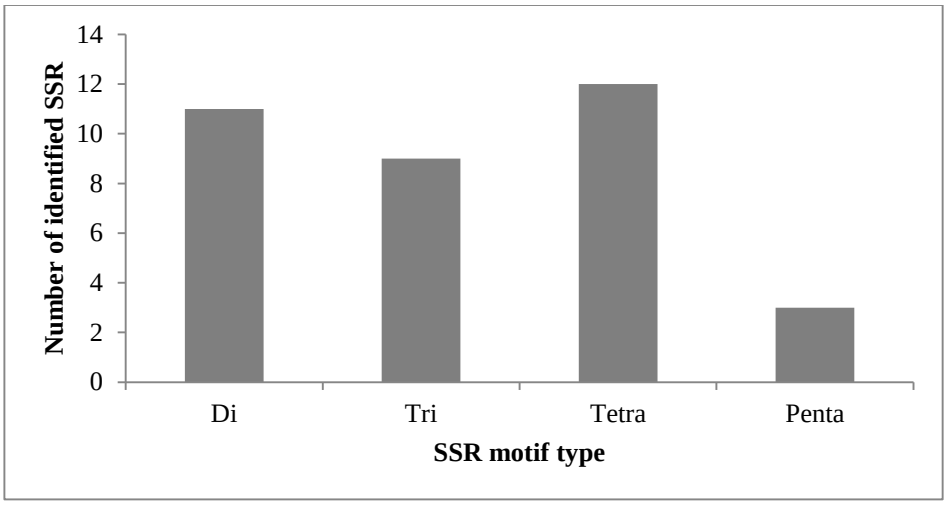


**Figure 4:** Frequency of the types of 31 SSRs detected from the leaf scald responsive genes

**Identification of brown rust responsive genes in L 99-233:** Blast search with NCBI protein and nucleotide database assigned putative functions to 358 out of 384 genes and 26 did not have any hit. One hundred eighteen and 102 genes were involved in metabolic and cellular process, respectively (Figure 5). Gene Ontology analysis of the genes showed that maximum number of transcripts belonged to transcription factor category (Figure 6).

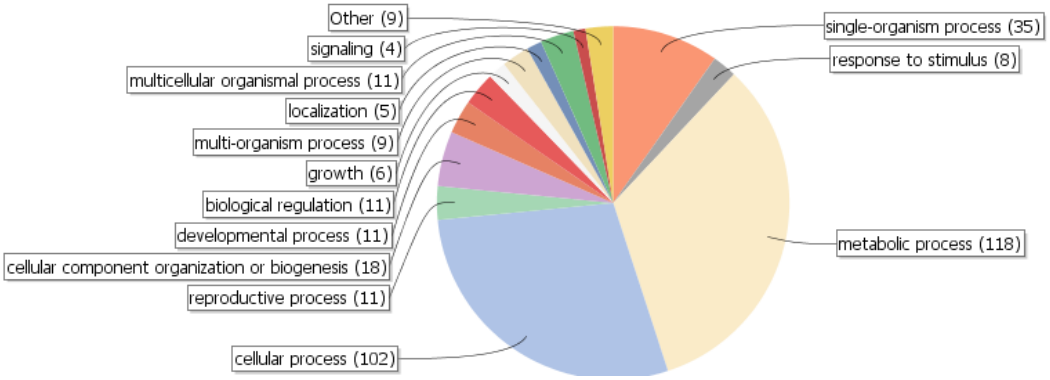


**Figure 5.** Functional annotation of brown rust responsive genes of L 99-233.

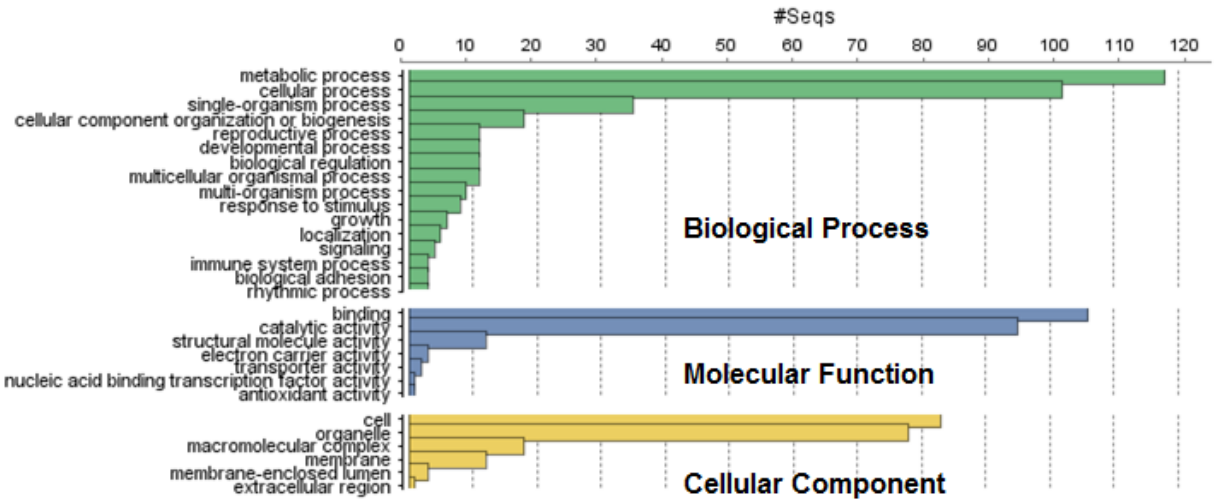


**Figure 6.** Gene ontology analysis of brown rust responsive genes in L 99-233

**Development of SSR markers derived from brown rust responsive genes:** One hundred eighteen genes associated with rust resistance were identified to contain SSR motifs, of which 77 were with perfect SSRs (with single motif repeats) and forty one were complex with two or more SSRs separated by ≤ 100 bp. Among the SSR motifs, dinucleotide repeats were the highest (136) followed by tri (67), and tetra (12). Among the dinucleotide motifs, AT/AT type was most frequent followed by TG/CA and CA/GT in that order (Figure 7).

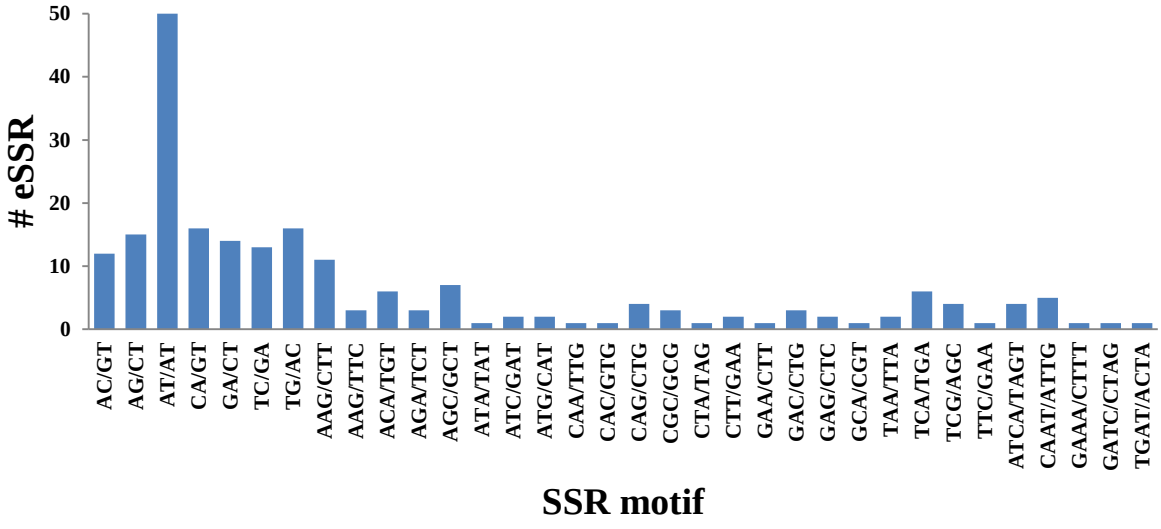


**Figure 7.** Distribution of motifs in the SSRs from brown rust responsive genes in L 99-233.

Time-scale analysis of the differentially expressing genes is in progress with an objective to identify genes with distinct expression pattern between resistant and susceptible varieties that can be used as discriminating markers for selecting resistant parents/progeny. In addition, the SSR markers identified from the disease responsive genes are being used for our ongoing

genotyping work of the mapping populations to identify quantitative trait loci controlling leaf scald and brown rust resistance.

**Acknowledgement:** The leaf scald research was supported by a grant from the USDA-NIFA and the brown rust research is funded by the American Sugar Cane League and USDA-NIFA hatch grant.

**References**

Conesa, A., Götz, S., García-Gómez, J.M., Terol, J., Talón, M., Robles, M. 2005. Blast2GO: a universal tool for annotation, visualization and analysis in functional genomics research. Bioinformatics. 21:3674-3676.

Garces, F. F., Gutierrez, A., and Hoy, J. W. 2014. Detection and quantification of Xanthomonas albilineans by qPCR and potential characterization of sugarcane resistance to leaf scald. Plant Dis. 98:121-126.

Hoy JW, Avellaneda MC, Bombecini J Variability in Puccinia melanocephala pathogenicity and resistance in sugarcane cultivars. Plant Dis 98: 1728–1732, 2014.

Khan, N., Bedre, R., Parco, A., Bernaola, L., Hale, A., Kimbeng, C., Pontif, M. and Baisakh, N. 2013. Identification of cold-responsive genes in energycane for their use in genetic diversity analysis and future functional marker development. Plant Science. 211:122-131.

Ramanarao, M.V., Weindorf, D., Breitenbeck, G., Baisakh, N. 2011. Differential expression of the transcripts of *Spartina alterniflora* Loisel (Smooth Cordgrass) induced in response to petroleum hydrocarbon. Mol Biotechnol. 51:18-26

Temnykh, S., DeClerck, G., Lukashova, A., Lipovich, L.,Cartinhour, S. and McCouch, S. 2001. Computational and experimental analysis of microsatellites in rice (*Oryza sativa* L.): frequency, length variation, transposon associations, and genetic marker potential. Genome research 11: 1441-1452