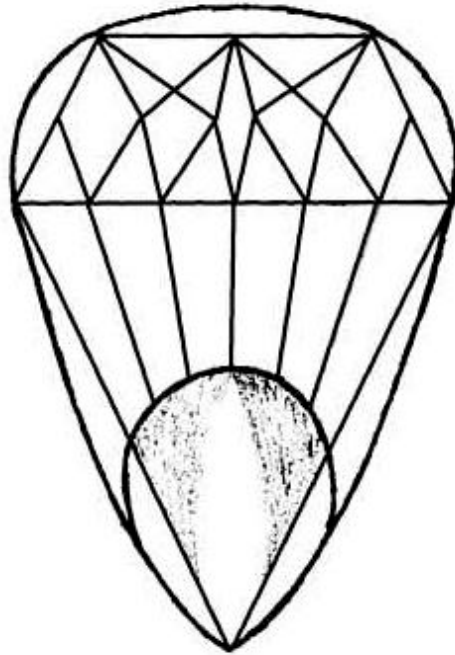


**United States Department of Agriculture
Agricultural Research Service**



Germplasm Enhancement of Maize

2012 GEM Cooperator Booklet

December 5th 2012

***The information in this report is shared cooperatively.
The data are not published, but are presented with the understanding
that they will not be used in publications without specific consent of the public cooperator.***

GEM Mission:

The mission of the GEM (Germplasm Enhancement of Maize) Project is to effectively increase the diversity of U.S. maize germplasm utilized by producers, global end-users and consumers. The mission will be achieved through a collaborative effort between USDA-ARS, and both public and private research scientists by utilizing exotic, public, and proprietary maize germplasm. The resulting germplasm and associated knowledge, derived via the identification and incorporation of favorable alleles for prioritized traits from exotic sources, is utilized in private and public breeding programs and ultimately contributes to increased genetic diversity of maize grown by producers and improved product performance. In addition, the GEM project provides opportunities for training plant scientists in the enhancement and utilization of un-adapted germplasm. This contributes to the global sustainability of agricultural production, economic stability and the nutrition and well being of society.

GEM Cooperator Meeting Booklet

Table of Contents

Cooperator Agenda

Annual Report

Ames	Page 1-3
Raleigh	Page 4-6
SCA Reports	Page 6-8
TSG Meeting Summary	Page 8
Personnel	Page 9
In-kind Support	Page 9-10
Yield Trial Summary	Page 11
Publications/Outreach/Field Days	Page 12-14

GEM Releases

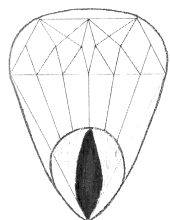
Released Lines Raleigh EX30, 31	Page 1-2
Released Line Summary (Ames)	Page 3
Released Lines Yield Trials (Ames)	Page 4-6
Germplasm Releases and Key Traits	Page 7-11
Racial Background of Releases	Page 12

Yield Trials

Ames Grain Trials	Page 1-13
Experiment Summary for 2011	Page 14

99 Decode

Rear Cover



**Germplasm
Enhancement of
Maize**

Cooperator Meeting:

DATE: December 5, 2012

HOUR: 8:30 AM-12:00 PM

LOCATION: Regency Ball Room D
Hyatt Regency Hotel
Chicago

Meeting called by: T. Hoegemeyer, Chair

Agenda Topics

Minutes of Dec 6, 2011	N. de Leon	8:30-8:40 AM
Elections	T. Hoegemeyer	8:40-8:50 AM
GEM Annual Reports	M. Blanco, M. Krakowsky	8:50-9:15 AM
Plot and Data Report	M. Shen	9:15-9:20 AM
Yield Test Results and New GEM Releases	M. Blanco, M. Krakowsky	9:20-10:00 AM
Break		10:00-10:20 AM
Developing Diverse Germplasm and Student Skill Sets to Address Needs in the Food Industry	M. Campbell, Truman State University, Kirksville, MO	10:20-11:05 AM
Population Genetic Insights Into Selection During Maize Breeding	J. Ross-Ibarra, University of California-Davis	11:05-11:50 AM
Discussion		11:50-12:00 PM
Adjourn		12:00 PM

2012 Annual Report of the GEM Project

GEM- Ames 2012 Highlights (Dr. Michael Blanco)

Midwest Germplasm releases and development:

- Two hundred fifty-eight (258) GEM releases are now publicly available.
- Eight GEM lines from the Ames program are proposed for release to GEM Cooperators for the 2013 planting year. Yield data, and NIR results for protein, oil, and starch can be found on the CD and in the handout for 2013 released lines. Two of the releases are from accessions with no previous GEM releases, one from Argentina, AR17026, and one from Cuba, CUBA173. The other released lines include two from tropical hybrids, DK212T and DKXL370; two from Thailand, NEI9004; and two from Uruguay, UR13085.

Table 1. Germplasm releases from Ames for 2013

GEM Code	Pedigree	Race	Type	Heterotic Group
GEMS-0234	AR17026:S1648-B-030	Cristalino Colorado	25% Temperate	Stiff Stalk
GEMS-0235	CUBA173:S0446-B-030	Criollo/Tuson	25% Tropical	Stiff Stalk
GEMN-0236	DK212T:N11a10-B-110	Tropical Hybrid	25% Tropical	Non-Stiff Stalk
GEMS-0237	DKXL370:S08c17c-B-008	Tropical Hybrid	25% Tropical	Stiff Stalk
GEMN-0238	NEI9004:N0803-B-027	Suwan	25% Tropical	Non-Stiff Stalk
GEMN-0239	NEI9004:N0803-B-053	Suwan	25% Tropical	Non-Stiff Stalk
GEMS-0240	UR13085:S99g99u-B-023	Cateto Sulino	25% Temperate	Stiff Stalk
GEMS-0241	UR13085:S99g99u-B-058	Cateto Sulino	25% Temperate	Stiff Stalk

- Approximately 452 BC₁S₂ generation families of CUBA164 x B73) x B73 and CUBA164xPHB47) x PHB47 were planted in an isolation crossing block in York, NE with collaborator Dupont/Pioneer Hi-Bred. Top crosses made in isolation will be studied for adaptability to high plant density and the parental lines used for a genetic mapping population which is also being used for a graduate thesis study. Impact: This research will provide new knowledge on the effects of exotic alleles from CUBA164, and determine their potential to respond to high plant density.
- Approximately one hundred (100) new breeding crosses were made in Ames; 63 of these were 25% tropical breeding crosses. The remaining 37 were GEM derived breeding crosses consisting of GEM x GEM, GEM x public, and GEM x Ex-PVP. GEM Cooperators made six additional breeding crosses as part of their in kind support.
- Ten new breeding cross populations were worked in Ames, and 12 were assigned to Cooperators for in kind support. Thirteen families of single seed descent (SSD) balanced bulks and nine S₁ ear to row populations were advanced to S₂ in Ames, and six by Cooperators.
- Ear and kernel images of 70 GEM recommended lines and phenotypic descriptions were posted to the GEM website.

Host Plant Resistance:

Disease data for 2012 is reported on the GEM CD, and will be posted to our website (<http://www.public.iastate.edu/~usda-gem/>) in January. Pathology and entomology research collaborators from the private and public sectors screened GEM lines, top crosses, and breeding crosses for Northern Leaf Blight (NLB), Southern Leaf Blight (SLB), Goss's Wilt, Gray Leafspot (GLS), Diplodia ear rot, Aspergillus (aflatoxin and other mycotoxins), Corn ear worm (CEW), Western corn root worm (WCR), and miscellaneous tropical and southern insects. Please see the quality traits sections regarding ear mold and mycotoxin studies.

The extreme heat and drought conditions in 2012 impacted data collection (low infection, etc.) and resulted in missing plots at many locations. Appreciation is extended for the in-kind support and extensive efforts by private and public GEM Cooperators:

- DuPont/Pioneer Hi-Bred International (Bill Dolezal at Johnston, IA, and Mark Mancl at Woodland, CA). In Johnston, it was not possible to collect NLB data, but Diplodia ear rot (DIPPER) data was collected on a limited number of plots; at Woodland, CA, Fusarium ear rot and Head Smut was evaluated.
- Professional Seed Research (Jim Dodd) for their efforts collecting data on GLS, NLB, and Goss's Wilt.
- 3rd Millennium Genetics (Ed and Raechel Baumgartner) for tropical insect evaluations on GEM lines in Puerto Rico which was particularly helpful to identify some material for Fall Armyworm which was severe in 2011-2012.
- USDA-ARS-CGBRU (Xinzhi Ni) in Tifton, GA provided data for Corn ear worm (CEW), and Fall Armyworm.
- USDA-ARS-PSRU in Raleigh, NC provided data for SLB (Peter Balint-Kurti) and Fusarium ear rot (Jim Holland)
- ARS-PGRU, Columbia, MO (Bruce Hibbard) evaluated corn rootworm (CRW)
- ARS-CHPRRU, Mississippi State, MS (Paul Williams and Brien Henry) for aflatoxin in grain.

Specific Cooperator Agreement (SCA) reports for disease and insect research can be found under Public Cooperator Reports for W. Xu (CEW, grain mold). 2012 disease evaluation data is recorded on the CD and will be posted to our website soon from the following cooperators:

- USDA-ARS PSRU in Raleigh, NC (GLS, SLB)
- USDA-ARS CGBRU Tifton, GA (CEW and Fall Armyworm)
- DuPont/Pioneer Hi-Bred (Diplodia ear rot from Johnston, IA, and Fusarium ear rot and headsmut (*Sphacelotheca reiliana*) from Woodland, CA)
- Professional Seed Research (NLB, GLS, Goss's Wilt, from IL)
- 3rd Millennium Genetics (Corn Earworm/Army Worm complex in Puerto Rico)

Second year host plant resistance evaluation data (2012) will be posted to our website under "GEM Germplasm Releases and Key Traits" data for the following releases. CD data includes:

- Two additional GEM lines were identified with SLB resistance (GEMN-0213, GEMN-0219); 85 total released lines with SLB resistance for all years.
- One additional release was identified with Diplodia ear rot resistance (GEMS-0018); four total releases for all years.
- Several lines had good Diplodia ear rot and Fusarium ratings over two years, but due to stressful conditions at both sites the lines will be re-evaluated in 2013.
- For Fall Armyworm (Puerto Rico), GEMN-0238 was rated 7.6; (1-9 scale, 9 most resistant)
- Three GEM germplasm sources (two derived from DKXL370, and one derived from CUBA117) were identified with resistance to CEW, Maize Weevil, and Stink Bug, and Sap Beetle by ARS-CGBRU in Tifton, GA (Ni et al. 2012).

Ames 2012 Allelic Diversity (AD) and Double Haploids (DH):

- Approximately 430 DH lines were developed from the allelic diversity populations; 252 lines have sufficient seed quantity for distribution, and represent 54 races from 13 countries.
- Self pollinations were made in 594 rows of BC₁F₁ to BC₁F₅ allelic diversity project germplasm to generate the BC₁F₂ to BC₁F₆ generations, representing 115 races from 14 countries. Due to the drought and heat, approximately 51% did not produce sufficient seed to make a balanced bulk for the next generation.
- Double haploid (DH) inbreds were increased by self pollination of 365 rows; 490 rows were induced; 508 rows were doubled; ear height, plant height, and flowering notes were taken. Seed reduction loss is expected similar to or worse than in the traditional AD selfing nursery.

Ames 2012 Yield Test and Other Highlights:

- Approximately 13,149 plots (2,311 entries) were managed or coordinated through Ames in 2012. Among these, 520 entries (22.5%) were in 2nd year and 1,791 entries were in 1st year trials.
- Two hundred-forty-two (242) top crosses out of 2,311 entries exceeded the mean yield of the check hybrids in Midwest trials in 2012. Of the 242 hybrids that exceeded the mean, 189 were from first year trials, and 53 from second year trials.

- Approximately 8,700 nursery rows and 1,300 isolation rows were managed by Ames. Losses due to drought in the isolation blocks were estimated at 30-35%. Thanks to the generous in kind support from five companies (AgReliant, Becks, DowAgroSciences, IFS, and Monsanto) additional top cross seed is now being made in winter isolations.
- One hundred new breeding crosses were observed and evaluated for breeding potential in Ames, IA, Ft. Branch, IN (AgReliant), and Memphis, TN (G&S Crop Services). Ames also evaluated 92 additional breeding crosses.
- Field Days, Publications, and Outreach: Four GEM Field Days were held in Ames, IA, Fargo, ND, Etter, TX, and Beijing, China. Frequent visitors over multiple days at each location resulted in ~746 total visitors. Thirteen peer reviewed manuscripts and nine abstracts related to GEM germplasm were published by researchers and graduate students. Two presentations at the 25th Annual Student Research Conferences were made by students at Truman State University in Kirksville, MO. Other outreach consisted of speaker presentations, university trial reports, etc. Details of Field Days, Publications and Outreach are included at the end of this report.

Quality Traits (including grain mold/mycotoxin):

- GEMS-0237, and GEMS-0240 had protein content of 14.0 and 14.4% respectively.
- GEMS-0241 had oil content of 5.2%.
- Two new GEM silage lines were released from the University of Wisconsin by Natalia de Leon. WI615S was derived from the GEM Quality Synthetic cycle 0 (GQS C0), which is a synthetic from CUBA164 and CUBA117, and W616S derived from AR16026:S1719.
- Lines from the GEM Project, K0679Y (PI 591017) and CUBA117:S15-101-001, were found to have reduced aflatoxin content in several hybrid combinations by ARS-CHPRRU scientists in Mississippi State, MS (Henry et al. 2012).
- GEMS-0030 (PI 639055) had the lowest level of aflatoxin accumulation (20 ppb) in a physiological study under drought and heat stress. Interestingly, this line was very susceptible to heat and drought stress and the physiological mechanisms are being studied by ARS-CGPRU scientists in Stoneville, MS (Kebede et al. 2012).
- Approximately 12 developmental crosses were made for ear rot resistance including NEI9004:S2809-B-061/GEMS-0003 which was highly resistant in 2012 DIPPER evaluations. Both per se inbreds (GEMS-0003 and NEI9004:S2809-B-061) were identified as resistant in previous years.

NIR Data of 2013 GEM Releases:

Whole grain composition data for protein, oil, and starch content were generated using an NIR Infratech 1241 with a sample transport module and whole grain calibration from Iowa State Grain Quality Lab. All lab data are reported on a dry matter basis and available on the CD, and will be posted on the GEM web site. Samples are obtained from a bulk of 8 ears from self pollinated rows. NIR data on the CD includes GEM line characterizations for 2012, and two year analysis (2011-2012) of retest GEM lines (lines in second year re-test yield trials). Data for protein, oil, and starch content for the 2013 recommended lines from Ames, IA are in Table 2. Data are from Ames and are 2 year averages (2011 and 2012).

Table 2. Two year NIR summary (2011-2012) from self pollinated bulk seed
2013 Line Releases- Ames

GEM Code	Pedigree	Country	Protein	Oil	Starch	Density
GEMS-0234	AR17026:S1648-B-030	Argentina	12.8	3.6	69.4	1.306
GEMS-0235	CUBA173:S0446-B-030	Cuba	12.5	4.1	69.3	1.312
GEMN-0236	DK212T:N11a10-B-110	Thailand	13.1	3.8	69.2	1.297
GEMS-0237	DKXL370:S08c17c-B-008	Brazil	14.0	4.0	68.3	1.298
GEMN-0238	NEI9004:N0803-B-027	Thailand	12.0	3.7	70.1	1.312
GEMN-0239	NEI9004:N0803-B-053	Thailand	13.0	3.8	69.4	1.338
GEMS-0240	UR13085:S99g99u-B-023	Uruguay	14.4	4.0	67.4	1.297
GEMS-0241	UR13085:S99g99u-B-058	Uruguay	13.5	5.2	66.5	1.288

GEM-Raleigh Highlights (Dr. Matt Krakowsky)

Germplasm releases:

Four GEM lines from the Raleigh program are recommended for release to GEM Cooperators for the 2013 planting year. Yield data can be found on the CD (EX30 and EX31) and agronomic data can be found in the table at the end of this report. Releases include two lines derived from CIMMYT tropical inbred CML287, one from tropical hybrid DK888 and one from Brazilian accession BR52051 (also known as SE32).

Table 3. Germplasm releases from Raleigh for 2013

GEM code	Pedigree	Race	Type	Country	Heterotic pattern	Grain Color	Cob Color
GEMN-0242	BR52051(SE32): N11c-015-004	Dente Amarelo	50% Tropical	Brazil	NSSS	Y	R/W
GEMS-0243	CML287:S15-024-003	Mixed (Tropical inbred)	50% Tropical	Mexico	SSS	Y	W
GEMS-0244	CML287:S15-027-001	Mixed (Tropical inbred)	50% Tropical	Mexico	SSS	Y	W
GEMS-0245	DK888:S11b-037-018-008	Tropical hybrid	50% Tropical	Thailand	SSS	Y	W

Germplasm development:

- Overall, there were about 3000 GEM nursery plots and 1200 GEM isolation plots in Raleigh, with additional GEM-related nursery managed by Major Goodman.
- S₁ families were developed from six breeding crosses: BR106:N(GEMN-0097), BR51501:N11a, BR51501:S11a, BR51721:S20, GUAT209:N19, and PASCO14:S11a.
- Families from six GEM breeding crosses were advanced from S₁ to S₂: BR106:N42, BR106:S42, BR106:LH132, NC298:S42, NC300:S42, and CML420:S18.
- Twenty-four GEM x GEM F₁ combinations were produced based on 2010 and 2011 yield trial data.
- Seventeen new breeding crosses were developed between tropical inbreds (CML103, CML264, CML274, CML287, CML343, CML373, CML494, Ki43, and La Posta Seq C7_F71-1-1-1-2-B-B-B) and GEM releases (GEMS-0091, GEMN-0097, and GEMS-0113). Both groups were selected based on performance in yield trials.

Germplasm Evaluation in 2012:

- Overall, approximately 14,500 yield plots were coordinated from Raleigh, with approximately 9,300 planted in NC and the rest planted by seven cooperators at various locations throughout the Southeast and Midwest. We would like to thank Dupont / Pioneer, Monsanto, the University of Tennessee, Dow AgroSciences, AgReliant Genetics, Pannar and GEM-Ames for their support in planting and harvesting yield trials for our location.
- Twenty-eight (28) entries were evaluated at 18 locations in either of two third-year trials (EX30 and EX31); 64 entries were evaluated in second-year trials, 16 of which will be evaluated in third-year trials in 2013; and 400 entries were evaluated in first-year trials, 127 of which will be evaluated again in 2013.
- Evaluations of GEM releases from Raleigh and Ames were conducted in two experiments (EXP8 and EXP9) to identify those with the best potential for use in new GEM x GEM and accession x GEM breeding crosses. EXP8 (releases from Raleigh) was planted at locations in the southern Corn Belt and southeast, while EXP9 (releases from Ames) was planted in North Carolina and the Corn Belt. A subset of the best performing GEM lines from the 2010 and 2011 trials (EX26-EX29) were planted in the 2012 trials along with more recent releases. Ex-PVPs were included in both trials for comparisons with GEM releases.
- Breeding crosses were crossed on to testers and evaluated for yield potential in three trials, EXS1, EXS2 and EXS3. EXS1 is mostly non-CIMMYT tropical germplasm, while EXS2 and S3 are mostly CIMMYT releases. Breeding crosses were also evaluated *per se* in the Raleigh nursery.

- Ex-PVP inbreds were evaluated by Major Goodman at five locations in North Carolina and results for three trials conducted over two (EXG2 and EXG3) or three years (EX89) will be available on the GEM website.

Allelic Diversity:

- There were over 450 summer nursery rows dedicated to the development of F₁s and BC₁s for the Allelic Diversity project, along with 120 rows in the winter 2012 nursery.
- Due to poor pollinating conditions and severe plant stress, only 12 BC₁ families and 12 F₁s were completed this summer in Raleigh; 6 BC₁ families and 12 F₁s were also completed in the previous winter nursery.
- Approximately 90 nursery rows were dedicated to increasing seed of AD doubled-haploid lines, though seed production was very poor due to plant stress and ear rots.

Other GEM-Raleigh recommendations:

- Based on one year evaluations of breeding crosses in EXS1, some of the most promising are ATL100:S(NK794), BR51039:N15, BR52051:S172641, FS8A(S):S092603, PASCO14:S212603, PASCO14:S212612 and SX2788:S(NK794). Nursery observation data for the breeding crosses in this trial were provided in the 2010 and 2011 GEM handouts. The 2011 data are also available on the GEM website (Yield trials/2011/BC OBS).
- Based on one year evaluations of breeding crosses in EXS2 and EXS3, some of the most promising are 89291:S(NC368), 89291:N(LH51), 89291:N(LH59), 89291:N(PHG47), 90113:S(NK794), CML287:S(DJ7), CML343:N(NC320), CML343:S(NS701), CML343:S(PHW52), and Ki43: S(DJ7). Nursery observation data for many of the breeding crosses in these trials were also provided in the 2010 and 2011 GEM handouts.
- Four of the best entries in EXP8 were GEMS-0032, GEMN-0043, GEMN-0104, and GEMN-207. BR105:S16-373-008-011, an unreleased GEM line (see EXL7 from 2011), had high yield but also high moisture at harvest.
- Four of the best entries from EXP9 were GEMN-0048, GEMS-0175, GEMN-0187, and GEMS-0219. GEMN-0097 had a good value for Y/M (as it had in EX28 from 2010-2011) but was susceptible to lodging in the 2012 Raleigh summer nursery. GEMS-0091, one of the better performing entries in EX29 in 2010 and 2011, was susceptible to heat stress in the 2012 Raleigh summer nursery.
- Some of the most promising ex-PVPs based on yield trial data are Cargill 2369, NKW8304, NS701 and PHT55 from EX89; LH193, NKW8555 and PHM57 from EXG2; and Wilson 900 from EXG3. NKH8341 and NS701 in EX89 had high Y/M values, and NS701 also performed well in trial EXP9. Few of the ex-PVPs had higher yields than B73 or Mo17 in these trials, and none were significantly higher. Based on visual observations in our nursery, PHT55 and related line PHG39 are highly susceptible to ear rot as compared to Cargill 2369, LH132, NKW8304, and NS701.

Table 4. Agronomic summary of the four GEM-Raleigh lines for 2013

GEM code	Pedigree	Days to ANT	GDU to ANT	Days to Silk	GDU to Silk	Plant Height (cm)	Ear Height (cm)
GEMN-0242	BR52051(SE32):N11c-015-004	86	1613	87	1642	200	80
GEMS-0243	CML287:S15-024-003	89	1701	91	1761	215	80
GEMS-0244	CML287:S15-027-001	87	1642	88	1670	210	100
GEMS-0245	DK888:S11b-037-018-008	88	1670	88	1670	220	85
Check	B73	80	1487	80	1487	200	85

Table 5. NIR data of the four GEM-Raleigh lines for 2013

GEM code	Pedigree	Protein*	Oil	Starch	Density
GEMN-0242	BR52051(SE32):N11c-015-004	14.69	4.38	66.84	1.31
GEMS-0243	CML287:S15-024-003	15.28	4.79	65.88	1.32
GEMS-0244	CML287:S15-027-001	13.23	4.23	68.35	1.31
GEMS-0245	DK888:S11b-037-018-008	11.70	4.72	69.15	1.33
Check	B73	13.30	3.32	69.19	1.27
Check	B73xMo17	14.74	3.42	68.17	1.28

*Seed component measurements for seed grown in 2013 only.

Public Cooperator Reports (GEM Ames) Funded by Specific Cooperative Agreements (SCA):

Four university projects were funded in 2012 for a total of \$51,161 (Table 6).

Table 6. Public Cooperators Supported In 2012

Name	Institute	Amount
Mark Campbell	Truman State University	7,764
Natalia de Leon	University of Wisconsin	14,323
Jay-lin Jane	Iowa State University	15,778
Wenwei Xu	Texas A&M University	13,296
		Total \$51,161

A short summary of key highlights from each SCA report is included below. Significant progress was made this year by all SCA researchers. Space does not allow extensive discussion of methods, germplasm development, and results in the summaries below. **Please see the full report on the CD submitted by each cooperator.** These will also be available on the GEM website soon.

Mark Campbell, J. Beck, M. Emery, D. Borje, A. Panthi, J. Issleib, E. Vanover, J. Burke, and D. Boedeker **Truman State University: Development and evaluation of specialty starch germplasm utilizing GEM biodiversity to optimize grain quality, composition, and yield**

Truman State University has been using GEM germplasm to develop specialty starches, particularly high amylose for resistant starch (RS), and slowly digestible starch (SDS). Both RS and SDS have human health benefits by lowering glycemic index and slow release of sugar into the blood which has therapeutic benefits for diabetes and hypoglycemia. An important objective of this project is to develop inbred lines evaluate hybrids. In 2012 25 entries were evaluated for yield in Ames, IA, in a population density study planted at 24,000 plants per acre (ppa) and 32,670 ppa. The experiment was under extreme drought stress and no significant differences were found for yield between the two densities. The highest yielding hybrid was planted at the highest density and was [CHIS775:S1911b///AR16035:S02///GEM67](#) X [DREP150:N2011d///DKXL370:N11a20///GEM67](#). In another study, new germplasm crosses are being made by crossing GEM amylo maize VII lines to populations of Quality Protein Maize (QPM), Nepal and Indian germplasm in an effort to improve amino acid content. Two selections of high amylose converted material (BR105 and GEMS-0003) x QPM yielded 122-123 bu/acre in the first year screening. Given the drought year this was acceptable yield performance. A new bioassay method to identify germplasm with RS is being studied in collaboration with Drs. Hendrich and Sing. The method involves measuring bacterial growth on corn samples in an anaerobic growth chamber similar to conditions in the human intestinal tract. During the past summer GEM activities in the Campbell lab have partnered with the MathBIO program directed by Dr. Jon Beck and funded by NSF. The objective is to meet industry demands for student training in life science in agriculture and bioinformatics. The aim of the MathBio project is to compile data collected on GEM germplasm developed at Truman State and create an interactive computerized phylogenetic browser interface. This will assist in detection of patterns

and inheritance (using QTL markers, phenotypic data, and NIR spectral information) of high amylose phenotypes in GEMS-0067. Plans are to expand the database to capture records over the past 15 years.

Natalia de Leon and Dustin T. Eilert, University of Wisconsin: Development of maize inbreds, hybrids, and enhanced GEM breeding populations for superior silage, biofeedstock yield, and compositional attributes

It is now recognized that compositional attributes of feedstock sources used for animal nutrition are similar to those needed for fermentation of biomass for the potential generation of liquid fuels. In 2012, the UW Corn Silage Breeding Program continued to evaluate GEM materials for yield and compositional attributes. Two additional inbreds were released in 2012. One release was derived from AR16026:S1719-052, and the other from cycle 0 of the GEM Quality Synthetic (GQS). Five trials involved GEM materials in 2012. Trials were planted in three reps per site at 32,000 plants/acre at Madison (May 30) and Arlington (May 25). Temperatures were well above average, and dry conditions persisted and generated high levels of stress in the trials and nursery. Highlights of the trials were as follows:

06GEM05390 GEMS-0183 highlights (Table 1): This was an advanced test from 2011. None of the 06GEM05390 material exceeded the check mean, although seven of nine GEMS-0183 selections exceeded the check mean with ideal dry matter content (36.5%). The seven selections will be further evaluated for quality.

AR16026 GEM01818 highlights (Table 2): Although the average yield for AR16026 was lower than the check mean, the dry matter content was higher than ideal (especially at Arlington). Since one line (AR16026:S1719-052) was already released, it is expected more interesting material could be identified, and some selections will be evaluated for quality. The GEM01818 material was mostly superior to check yield and all lines from this population will be evaluated for quality.

GEMN-0178 0190 highlights (Table 3): Two of six hybrids from GEMN-0178 had forage yield above checks but none will be evaluated for quality. Six of nine hybrids from GEMN-0190 had yields above the checks at both locations and will be evaluated for quality.

GEMN-0191 0192 0193 highlights (Table 4): Four from GEMN-0191, six from GEMN-0192, and six from GEMN-0193 had forage yield above the checks and acceptable dry matter and will be evaluated for quality. It is of interest that GEMN-0191 and GEMN-0192 are SCROGP3 background (St. Croix) and are early maturity. GEMN-0193 is UR11002 background (Uruguay).

GQSC1 S3 highlights (Table 5): The GQS consisted of the first silage evaluation of 35 S₃ lines test crossed to the UW line W162S. None of the 35 lines tested exceeded the check means. Quality evaluation will be performed for 16 of the 35 lines and decisions made after evaluation.

Quality evaluation for neutral detergent fiber (NDF), in vitro true digestibility (IVD), in vitro NDF digestibility (IVNDFD), crude protein (CP), and starch will be done on selected test crosses from each of the experiments. Based on these values, milk/ton of forage and milk/acre will be estimated based on MILK2006, which uses forage composition (NDF, IVTD, IVNDFD, CP, and starch) to estimate potential milk production per ton of forage. Forage yield is then used to estimate potential milk per acre. In 2012, five new GEM populations were introduced and self pollinations initiated. Details of ongoing nursery can be found in the report.

Jay-lin Jane, Y. Hanyu, Iowa State University: Development of GEM line starch to improve nutritional value and bio-fuel production

Specific objectives of this research project are to (1) characterize the molecular structure and properties of GEM corn starch to identify germplasm for high-digestibility and resistant starch; (2) characterize and explore utilization of GEM corn starch to improve nutritional value to humans and animals; and (3) characterize GEM normal and waxy corn starch for bio-fuel production and to improve the yield of ethanol. For the first objective, two expired PVP (Ex-PVP) normal corn lines, G80 and LH82, were planted in the field of the North Central Regional Plant Introduction Station (Ames, IA) on May 18, 2012. The corn lines were harvested on different dates (Oct.5th and Oct.25th), and effects of the harvesting date on starch properties were analyzed. Starch content did not change appreciably between the two harvest dates, although starch from the Oct.25th showed greater gelatinization conclusion temperatures than that harvested on Oct.5th. There was no significant difference in the pasting properties of the starch of the corn harvested on different dates. Resistant starch (RS) and slowly digestible starch (SDS) are both important for health by reducing glycemic index, and SDS may provide prolonged energy since starch becomes slowly available. For the second objective starch

of four *ae wx* double-mutant corn lines and one *ae* corn line were characterized to determine the SDS and RS content. Four *ae wx* genotypes were compared to one *ae* check inbred, and the normal inbred, B73. The normal inbred B73 was almost exclusively rapidly digestible starch (RDS), 98.2%. The *ae* inbred was 25.3% RS, and 5.2% SDS, and 69.5% RDS; while the four *ae wx* inbreds averaged 4.2-8.1% RS, 6.7-7.9% SDS, and 84.0-88.2% RDS.

The results suggest that *ae wx* genotypes have greater levels of SDS, while *ae* is greater for levels of RS. For Objective 3, starch properties of four GEM normal corn lines grown in 2009 and 2010 crop years were analyzed, and effects of starch properties on ethanol production were determined. The average starch-ethanol conversion efficiency (88.2%) and percentage starch hydrolysis (77.4%) of the normal corn were substantially lower than that of the waxy corn (93.0% and 95.2%, respectively). The differences could be attributed to the greater amylose contents (27.9-30.4%) and longer average branch-chain-lengths of amylopectin (23.3 DP) of the normal corn starch compared with that of the waxy corn starch (0.9-4.6% and 22.0 DP, respectively). Regression analyses showed that the amylose content of the starch showed significant negative-correlation with the starch-ethanol conversion efficiency ($r = -0.87$, $p < 0.01$).

For the waxy corn samples, amylopectin branch-chain-lengths of the starch showed significant negative-correlations with the starch-hydrolysis rate and the ethanol yield. Four waxy genotypes (two inbreds and two hybrids) grown in 2011, and eight genotypes (two waxy inbreds, three waxy hybrids, two normal inbreds and one normal hybrid) grown in 2012 were used for an ethanol cold-fermentation study. The ethanol production and corn kernel properties were compared between the inbred and hybrid lines for the waxy and normal genotypes. One waxy inbred, GEMN-0186, had low starch content (57.2%), while the two F1 waxy hybrids with the same inbred (GEMN-0186) had starch content of 63-64%. Ethanol yield for waxy hybrids (34.2 g/100 g of grain) was slightly greater than the normal hybrid (33.7 g/100 g of grain). However, ethanol conversion efficiency for the waxy hybrids (94.2%) was substantially greater than for the normal hybrid (89.2%). One hundred-kernel weight of the hybrid lines were greater than that of their corresponding parent inbred lines for both waxy and normal genotypes, suggesting improved corn kernel yield of the hybrid corn.

Wenwei Xu, Texas A&M University: Use of GEM germplasm for evaluation and development of drought tolerance, corn ear worm (CEW) resistance, and low aflatoxin level grain

The specific objectives of this project include selection and development of inbred lines with abiotic stress resistance including drought, heat, corn ear worm (CEW) resistance, and the evaluation of new breeding crosses. Approximately 100 testcrosses between GEM lines (developed in Lubbock) were planted and will be evaluated for grain yield, CEW, and drought tolerance (using controlled irrigation) at three locations in the Texas High Plains (Lubbock, Halfway, and Dumas). Important genetic backgrounds being tested include lines derived from ANTIG01:N16, CH05012:N12, CUBA164:S20, DK888:Na08f, DKXL380:S08a, FS8A(T):N11a, and GUAT209:N19 (being tested in top crosses and as lines per se). Thirty new GEM breeding crosses were planted in Lubbock under dryland and well-watered plots to assess drought tolerance. Lines from ANTIG01:N16 had excellent grain quality and were tolerant to high temperatures but stalk quality of test crosses were fair. Brown midrib lines from GUAT209:N19 (*bm1*), and DK888:N11 (*bm3*) were entered in grain and silage trials at Halfway and Etter, Texas (data in Tables 1-3).

GEM TSG Meeting, Sep 18, 2012- Highlights:

The GEM Technical Steering Group (TSG) meeting was held at the North Central Regional Plant Introduction Station (NCRPIS) in Ames, IA on September 18, 2012. A tour of the nurseries was hosted by Mike Blanco, Candice Gardner, Andrew Smelser, and Fred Engstrom. The tour included inbred characterizations, breeding crosses, top crosses with GEM lines, Ex-PVP's, and doubled haploids (DH). GEM releases from 2011 and 2012 from Ames and Raleigh were observed and discussed. A review of GEM's disease screening program for important international diseases (includes US) was presented by M. Blanco and T. Hoegemeyer. This included viruses Mal de Rio Cuarto, Maize Rough Dwarf, and Corn Lethal Necrosis (CLN) which is now a problem in Kenya. Important fungal diseases were Head Smut, Northern Leaf Blight (NLB); Southern Rust, Gray leaf spot, and Late Wilt (*Cephalosporium maydis*). Joint release of GEM DH lines by Iowa State and ARS was discussed, and ideas for future research with this germplasm. More information will be forthcoming. Another topic included GEM's efforts recycling GEM lines (GEM x GEM), and working developmental crosses of GEM x Ex-PVP. The TSG suggested that this effort be continued.

PERSONNEL UPDATE:

Ames: **USDA-ARS Plant Introduction Research Unit**

Dr. Mike Blanco, GEM Coordinator and Geneticist
Andrew Smelser, GEM Technician and M.S. student
Fred Engstrom, GEM Technician
Dr. Mack Shen, IT Specialist
Adam Vanous, Iowa State University, Ph.D. student
Dr. Candice Gardner, Research Leader and Fundholder

Raleigh: **USDA-ARS Plant Science Research Unit**

Dr. Matt Krakowsky, Southeast GEM Coordinator
Dale Dowden, Agricultural Research Technician
Dr. Peter Balint-Kurti, Research Geneticist
Dr. Jim Holland, Maize Research Geneticist
Dr. David Marshall, Research Leader and Fundholder
NC State University
Oliver Ott, Graduate Student
Jill Recker, Graduate Student
Dr. Major Goodman, William Neal Reynolds Distinguished Professor

IN KIND NURSERY AND TRIAL SUPPORT MIDWEST GEM PROJECT IN 2012:

Table 7. Private In-Kind Nursery and Trial Support – Summer 2012

3 rd Millennium Genetics (Puerto Rico)	Tropical insect evaluations
AgReliant Genetics LLC	Make S1's in TZAR104:N99ba99bk
	Breeding cross evaluations
	Yield trials
BASF Plant Science LLC	Make S1's in GEMN-0193/GEMN-0179
	Make S1's in GEMN-0179/GEMN-0205
	Make S1's in BR51039:N1543
	Yield trials
Beck's Superior Hybrids	Make S1's in NEI9008:S17a2640
	Yield trials
Brandy Wine Seed Farms LLC	Advance S1's to S2 in BR51501:N11a08bT4799ai-B
CAAS (China)	Evaluate breeding crosses and lines for agronomic phenotypes
	Evaluate MRDV, Head Smut, Gibberella stalk rot
DowAgroSciences	Top cross S2's in DK212T:S11b40-B
	Yield trials
DuPont / Pioneer Hi-Bred, Int.	Allelic Diversity support
	Multiple disease evaluations of GEM lines
FFR Cooperative	Make S1's in FS8A(S):S092642
Forage Genetics	Advance S1's to S2 in MDI022:N99d99am
	Yield trials
G and S Crop Services LLC	Make new breeding crosses
	Breeding cross evaluations
GDU, Inc	Make S1's in GEMN-0097/GEMN-0178

Genetic Enterprises Int'l	Make S1's in AR17056:S1912
Genetic Resources, Inc.	Yield trials
Illinois Foundation Seeds, Inc.	Make S1's in LH61/(21/GEMN-0124)-SIB-SIB
	Yield trials
Ingredion, Inc.	Backcross wx into adv GEM lines
	Yield trials
JFS & Associates, Ltd.	Advance S1's to S2 in CML349:N99ao99ax-B
MBS Genetics LLC	Top cross GEM lines
Monsanto	Make new breeding crosses
	Make S1's in BR51039:N1512
	Yield trials
PANNAR	Yield Trials
Professional Seed Research	Multiple disease evaluations of GEM lines
Seed Asia (Thailand)	Breeding cross evaluations; Downy mildew screening
SEEDirect	Yield trials
Semillas Fitó (Spain)	Evaluate GEM families for MRDV, Late wilt, Head Smut
Syngenta	Make new breeding crosses
	Makes S1's in CML341:S99y11
	Make S1's in BR105:N99z11
	Yield trials
Terrell Seed Research	Advance S1's to S2's in CML341:S99y99ah-B
Wyffels Hybrids	Makes S1's in BR51403:S0243
	Yield trials

Table 8. Private In-Kind Nursery Support – Winter 2012-2013

AgReliant Genetics LLC	Top cross S2's in NEI9004:N0846
BASF Plant Science LLC	Make BBK of selected S1 ears
Beck's Superior Hybrids, Inc.	Top cross Miscellaneous GEM lines
DowAgroSciences	Top cross S2's in PASCO14:S212612
DuPont / Pioneer Hi-Bred, Int.	Allelic Diversity Support
Illinois Foundation Seeds, Inc.	Top cross S2's in CML325:S1840
Ingredion, Inc.	Backcross wx into adv GEM lines
Monsanto	Top cross S2's in 53NS2/GEMN-0128
Semillas Tuniche (Chile)	Make S1's in Ki21:S21z99bd
Syngenta	Top cross selections from BR105/N99z11 Top cross selections from CML341/S99y11 Make new breeding crosses
Sursem SA (Argentina)	Evaluate GEM families for Mal de Rio Cuarto disease

Table 9. 2012 GEM Yield Trial Summary

Expt #	Material	Tester	Total Entry	# Reps	Source	Entry Yield Avg.	Check Yield Avg.	CV (%)	LSD (p=0.05)	# above check avg.
121001	Retest	HC33	60	8	GEM	135.2	154.0	16.7	22.6	1
121002	Retest	MBS3633	60	8	GEM	134.4	148.8	18.7	25.2	2
121201	TZISTRI112:S99n	LH287	50	4	GEM	131.1	161.4	15.8	30.1	0
121301	MDI022:N99d99h	HC33	70	5	GEM	134.8	164.1	15.5	27.1	1
121302	BR105:S1646	LH287	60	4	GEM	127.3	157.8	23.1	43.3	2
121303	CUBA164:T26aS41	LH287	40	5	GEM	145.5	167.2	15.9	29.8	2
121304	BR105:S1643	AGR-nSS	90	5	AGR	151.5	162.1	15.1	29.7	23
121306	DKXL212:S0950	MBS8814C BLLRW	72	6	FGI	155.6	149.0	14.7	26.7	51
121307	NS1:S0852	MON-nSS	72	4	MON	143.2	154.7	14.8	29.7	13
121308	MBRC10:N1749b	MON-SS	60	2	MON	95.7	127.8	21.5	45.5	0
121309	MBRC10:N1730	MON-SS	72	3	MON	124.7	162.1	13.8	28.8	0
121310	BR105:S1641	SYG-nSS	60	5	SYG	128.3	138.4	14.3	24.0	11
121311	BR105:S1641	SYG-nSS	60	5	SYG	130.4	152.2	12.6	21.4	1
121401	NEI9008:N082699ai	HC33	70	5	GEM	156.7	163.8	15.4	30.3	17
121402	NEI9008:N082699ai	HC33	70	5	GEM	147.4	157.7	16.1	30.2	18
121403	BR105:S162699aj	MBS9508	50	4	GEM	135.2	134.7	15.7	30.4	22
121404	Retest	LH287	70	7	GEM	139.6	154.7	20.8	31.5	5
121405	Retest	MBS8814	50	7	GEM	156.1	157.4	13.8	22.6	21
121406	GEMN-0117/DKXL212:N11A-139-001-001-B-B-B-B-B	BAS-SS1	40	6	BAS	132.7	145.1	14.4	21.9	4
121407	GEMN-0117/DKXL212:N11A-139-001-001-B-B-B-B-B	BAS-SS2	32	6	BAS	124.6	150.5	13.7	20.0	0
125001	Retest	LH287	70	7	GEM	162.7	182.6	11.3	19.9	3
125002	Retest	MBS8814	50	7	GEM	175.7	184.9	12.3	22.8	11
125301	AR03056:N1630a	HC33	70	5	GEM	141.1	192.9	11.7	21.1	0
125302	AR17056:S1217	LH287	60	4	GEM	139.1	169.6	15.2	30.4	0
125303	UR05017:S0409	LH287	60	4	GEM	155.1	180.1	14.5	32.1	2
125304	AR03056:N0902a	JFS-SS	40	4	GEM	128.9	158.4	17.7	33.7	0
125305	UR10001:S99x51	JFS-nSS	60	3	GEM	132.4	189.1	16.2	37.1	0
125306	Retest	HC33	40	7	GEM	148.9	189.5	11.9	19.3	0
125307	Retest	MBS3633	30	7	GEM	153.3	180	11.1	18.7	1
125308	CH05015:N4049a	SGI994HX	60	4	IFS	121.2	160.7	13.9	24.7	0
125401	GEMN-0140/GEMN-0097	HC33	70	5	GEM	143.6	168.3	15.5	28.7	1
125402	GEMN-0156/GEMN-0174	HC33	70	5	GEM	135.4	157.3	16.3	28.1	1
125403	GEMS-0149/GEMS-0061	LH287	40	5	GEM	145.2	162.4	16.4	30.5	2
125404	GEMS-0175/GEMS-0115	LH287	60	4	GEM	156.7	167.6	13.7	30.1	7
125405	GEMS-0147/GEMS-0115	LH287	50	5	GEM	151.2	164.3	13.4	25.7	3
125406	GEMS-0147/GEMS-0180	LH287	30	5	GEM	158.3	165.3	12.5	25.1	6
125407	Ex-PVP	NA	30	4	GEM	149.8	185.2	15.7	35.4	0
126401	Early Retest	NA	40	7	GEM	154.5	195.6	13.4	23.1	0
126402	GEMxGEM	NA	50	5	GEM	148.3	160.7	17.6	33.1	9
126403	Wx Test	NA	40	6	ING	111.4	128.9	15.1	20.4	2
40						141.1	162.7	15.2	27.8	242
Total number of entries above the check means =					242					
The number of the reps lost					29					
Percentage of reps lost (%)					12.3					

PUBLICATIONS (Peer Review):

- Brenner, E.A., M. Blanco, C. Gardner, and T. Lubberstedt. 2012. Genotypic and phenotypic characterization of isogenic doubled haploid exotic introgression lines in maize. *Mol. Breeding* doi: 10.1007/s11032-011-9684-5.
- Carena, M.J. 2011. Germplasm Enhancement for Adaptation to Climate Changes. *Crop Breed. & Appl. Biotech.* S1:56-65.
- Carena, M.J. 2012. Intellectual Property Challenges and Opportunities for Developing Maize Cultivars in the Public Sector. *Euphytica*. (in press)
- Carena, M.J. 2012. Developing Cold and Drought Tolerant Short-Season Maize Products for Fuel and Feed Utilization. *Crop Breed. & Appl. Biotech.* (in press).
- Carena, M.J. 2012. Developing the Next Generation of Diverse and Healthier Maize Cultivars Tolerant to Climate Changes. *Euphytica*. (in press)
- Hansey, C.N., J.M. Johnson, R.S. Sekhon, S.M. Kaeppler, and N. de Leon. 2011. Genetic diversity of a maize association population with restricted phenology. *Crop Sci.* 51: 704-715.
- Henry, B.W. G.L. Windham, and M.H. Blanco. 2012. Evaluation of maize germplasm for resistance to aflatoxin accumulation. *Agronomy* 2: 28-39; doi:10.3390/agronomy2010028.
- H.-Y. Hung and J.B. Holland. 2012. Diallel analysis of resistance to Fusarium ear rot and fumonisin contamination in maize. *Crop Sci.* 52:2173-2181.
- Kebede, H., H.Abbas, D.K. Fisher, and N. Bellaloui. 2012. Relationship between aflatoxin contamination and physiological responses of corn plants under drought and heat stress. *Toxins* **2012**, 4(11), 1385-1403; doi:[10.3390/toxins4111385](https://doi.org/10.3390/toxins4111385)
- Ni, X., Xu, W., Blanco M. H. and Wilson, J. P. 2012. Evaluation of elite corn inbred lines for multiple ear-colonizing insect and disease resistance. *Journ. Econ. Ent.* (Accepted).
- Sharma, S., and M.J. Carena. 2012. NDSU EarlyGEM: Increasing the Genetic Diversity of Northern U.S. Hybrids through the Development of Unique Exotic Elite Lines. *Maydica*. (in press)
- Scott M.P., K. Byrnes, and M. Blanco. 2012. Dry matter and relative sugar yield from enzymatic hydrolysis of maize whole plants and cobs. *Plant Breeding* 131:286–292. DOI: DOI: 10.1111/j.1439-0523.2011.01937.x.
- Weiwei W., Guo, T, Chavez Tovar, V.H., Li, H., Yan, J., and Taba, S. 2012. The strategy and potential utilization of temperate germplasm for tropical germplasm improvement: A case study of maize (*Zea mays* L.). *Mol. Breeding* DOI 10.1007/s11032-011-9696-1

ABSTRACTS

- Bari, A., and Carena, M.J. 2012. Utilization of Industry Lines in U. S. Northern Corn Breeding Programs. In 2012 Corn Utilization and Technology Conference, Indianapolis, IN.
- Carena, M.J. Increasing genetic diversity with exotic germplasm. Proceedings 48th Annual Illinois Corn Breeding School, p 173-193, March 5-6, 2012. Urbana-Champaign, IL.
- Dong, N., Laude, T., and Carena, M.J. 2012. The Early-QPM Program: the Next Generation of Healthier Short-season Products. In 2012 Corn Utilization and Technology Conference, Indianapolis, IN.

Gardner, C.A. Maize diversification by capturing useful alleles from exotic germplasm. Proceedings 48th Annual Illinois Corn Breeding School, p 172, March 5-6, 2012. Urbana-Champaign, IL.

Gardner, C., M.C. Romay-Alvarez, M. Millard, S. Flint-Garcia, J. Holland, and E. Buckler. Using high-throughput genotyping information to aid in managing a large maize collection. ASA-CSSA-SSSA Annual Meetings Abstract 375-3 [CD-ROM] Cincinnati, OH, Oct 21-25, 2012.

Gardner, C., P.D. Cyr, M. Millard, L. Gu, M.A. Reisinger, G. Emberland, Q. Sinnott, J. Chung, M. Bohning, K. Endress, G. Kinnard, and P. Bretting. Using the GRIN-Global system to identify useful genetic resources and information. ASA-CSSA-SSSA Annual Meetings Abstract 259-4 [CD-ROM] Cincinnati, OH, Oct 21-25, 2012.

Kebede, H., H.Abbas, D.K. Fisher, and N. Bellaloui. 2012. Association of aflatoxin contamination with physiological responses of corn plants to moisture deficit and heat stress. ASA Southern Regional Branch Meeting, February 5-7, Birmingham, AL. Available at <http://a-c-s.confex.com/crops/2012srb/webprogram/Paper70175.html>

Laude, T., and Carena, M.J. 2012. Improving North Dakota corn adapted maize populations by exploring useful genes from diverse germplasm. In 2012 Corn Utilization and Technology Conference, Indianapolis, IN.

Sharma, S., and Carena, M.J. 2012. NDSU EarlyGEM Program: Adding Value to Short-Season Corn Hybrids with Unique Tropical and Temperate Genes. In 2012 Corn Utilization and Technology Conference, Indianapolis, IN.

OUTREACH, PUBLIC RELATIONS AND FIELD DAYS:

25th Annual Student Research Conference, Truman State University, Kirksville, MO, April 21, 2012.

Marianne L. Emery, Victoria F. Halfmann, Mark R. Campbell, Faculty Mentor. 2012. [Assessment of Specialty-Starch Corn Selected Using Maize Biodiversity](#). 2012 Student Research Conference:25th Annual Student Research Conference. April 21, 2012

Enato A. Esangbedo and Akriti Panthi., Mark R. Campbell, Faculty Mentor. 2012. [Identifying and distinguishing between single and double mutant corn using Near Infrared Transmittance Spectroscopy](#) (Poster.) 2012 Student Research Conference:25th Annual Student Research Conference. April 21, 2012.

Other Outreach, Public Relations

Boedker, D., Burke, J., Campbell, M and Beck, J. 2102. Phylogenetic Tree Browsers in Marker-Assisted Gene Selection Studies, Departments of Agricultural Science and Computer Science, Truman State University, Kirksville, MO. Undergraduate Research Conference at the Interface of Biology and Mathematics November 17-18, 2012 University of Tennessee Conference Center, Knoxville, TN

Joshi K, Campbell M, Cooper C, Singh V. 2012. Variation in Prebiotic Properties of Experimental Maize Lines with Higher Levels of Resistant Starch. Faculty Mentors: Annual Interdisciplinary Biomedical Research Symposium, November 8, 2012.

Romay, C. 2012. Genotyping-by-Sequencing on a century of maize breeding: Ames Association Panel. Raymond F. Baker Center for Plant Breeding Lecture Series. June 28-29, 2012. Iowa State University, Ames, IA.

Wenwei Xu, Thomas Marek, J. Wade Howard, Jill Breeden, Casey Hardin, and Dennis Pietsch. 2012. 2012 State Silage Corn Performance Test on the Texas High Plains. Texas A&M AgriLife Research and Extension-Lubbock Center Technical Report No.12-4. pp.16

Wenwei Xu. Breeding corn for abiotic stress tolerance through conventional and transgenic methods. Invited presentation. Nanjing Agricultural University, Nanjing, China, May 22, 2012.

Wenwei Xu. Transgenic corn: Development, field release, and regulatory compliance. Institute of Zoology, Chinese Academy of Sciences, Beijing, China, May 25, 2012.

Ames, IA GEM Project (M. Blanco) 2012 Field Days:

- September 19: 75 people attended. Featured were GEM releases from 2011 and 2012(Raleigh and Ames releases), new experimental lines for potential release, doubled haploid lines, and breeding history that included a population density observation for old and modern germplasm.
- August-September: Approximately 100 international visitors from seven countries (China, France, India, Korea, Mexico, South Africa, and Thailand) and toured the GEM demonstration fields and seed storage facilities at the NCRPIS.

Fargo, ND North Dakota State University (M. Carena) 2012 Field Days:

- July 24-25, 2012: Over 100 visitors to observe the NDSU EarlyGEM releases and new experimentals for abiotic stress with dryland and irrigated experiments in northern and western North Dakota.
- August-September: Approximately 300 national and international visitors including farmers, breeders, consultants, industry, and policy makers. Tours at the summer nursery in Fargo where EarlyGEM and population releases were shown.

Etter, TX Texas A&M University (W. Xu) 2012 Field Day:

- August 22, 2012: Texas High Plains limited irrigation field day held for corn producers, seed companies, policy makers, consultants, and underground water conservation district. Approximately 50 visitors.

Beijing, China, Chinese Academy of Agricultural Sciences (CAAS) 2012 Field Day:

- September 3-9: The first international GEM Field Day was sponsored by CAAS and hosted by Dr. Tianyu Wang. One hundred-twenty six (126) visitors were from Chinese and international seed companies (approximately half of the visitors), and the remaining visitors were from the public sector. Over 150 GEM breeding crosses, releases, and new genetic families were observed.

Raleigh EX30: Third year trial of potential GEM releases, 22 locations total in 2011 and 2012

Entry No.	Pedigree	Yield	Moisture	Y/M	Erect Plants
		bu/ac	%		%
1	CL-G1607(CML420):N11-005-004 x LH132.FR1064	146	19.2	7.6	96
2	DK212T:N11-B-003-022-002[@] x LH132.FR1064	155	20.0	7.7	92
3	GUAT209:N11c-006-001 x LH132.FR1064	143	19.9	7.2	95
4	GUAT209:N11c-009-002 x LH132.FR1064	140	19.4	7.2	92
5	SE32(BR52051):N11c-015-004 x LH132.FR1064	158	19.5	8.1	90
6	SE32(BR52051):N11c-028-008 x LH132.FR1064	139	19.8	7.0	98
7	SE32(BR52051):N11c-039-001 x LH132.FR1064	145	20.2	7.2	97
8	CHIS775:N19-027-022-002[#] x LH132.FR1064	154	19.3	8.0	96
9	MD22:N21-B-002-008^{\$} x LH132.FR1064	154	18.2	8.5	97
10	RN07(BR51721):N20-B-006-002 x LH132.FR1064	146	19.8	7.4	95
13	LH287 x LH132.FR1064	145	18.4	7.9	94
14	LH353 x LH132.FR1064	133	18.2	7.3	98
19	Pioneer 31G98	182	19.2	9.5	95
20	Pioneer 31D58	177	20.9	8.5	97
21	Pioneer 31P41	182	20.5	8.9	98
22	DeKalb 697	171	20.8	8.2	97
23	HC33 x TR7322	148	17.5	8.4	96
24	Pioneer 33M54	166	19.3	8.6	96
	Mean of the experiment	154	19.5	7.9	96
	Mean of the checks	175	20.2	8.7	96
	LSD ($p=0.05$)	13.4	0.8		4.5
	CV	12.4	5.9		6.7

Note: While entry #5 from this trial has been recommended, seed of most of the entries is available from GEM-Raleigh

@ Derived from GEMN-0164

White grain with red cob

\$ Derived from same S₂ as GEMN-0214

Raleigh EX31: Third year trial of potential GEM releases, 23 locations total in 2011 and 2012

Entry No.	Pedigree	Yield	Moisture	Y/M	Erect Plants
		bu/ac	%		%
1	CHIS740:S14-B-226-B-002 x LH283.LH287	149	20.5	7.3	94
2	CML287:S15-024-001 x LH283/LH287	149	21.1	7.1	91
3	CML287:S15-024-003 x LH283/LH287	158	20.9	7.6	91
4	CML287:S15-027-001 x LH283/LH287	156	20.9	7.5	93
5	CML287:S15-002-001-003 x LH283.LH287	157	20.6	7.6	90
6	CML287:S15-004-002-003 x LH283.LH287	156	20.4	7.6	91
7	CML287:S15-006-004-005 x LH283.LH287	153	21.0	7.3	95
8	CML287:S15-024-003-001 x LH283.LH287	163	20.3	8.0	91
9	CML287:S15-024-003-003 x LH283.LH287	158	20.5	7.7	93
10	CML287:S15-027-001-002 x LH283.LH287	158	21.0	7.5	96
11	CML287:S15-027-001-003 x LH283.LH287	160	20.9	7.6	90
12	CML287:S15-027-001-004 x LH283.LH287	151	21.7	7.0	94
13	CML287:S15-027-001-008 x LH283.LH287	156	21.3	7.3	95
14	DK888:S11b-001-013-002 x LH283.LH287	153	20.2	7.6	94
15	DK888:S11b-037-018-004 x LH283.LH287	153	21.1	7.2	90
16	DK888:S11b-037-018-008 x LH283.LH287	159	20.4	7.8	95
17	DK888:S11b-037-024-001-002 x LH283.LH287	153	21.6	7.1	91
18	LH310 x LH283.LH287 Holden's	152	20.1	7.6	92
19	LH382 x LH283.LH287 Holden's	157	19.4	8.1	94
20	LH383 x LH283.LH287 Holden's	155	19.2	8.1	93
21	Pioneer 31D58	173	20.5	8.4	97
22	Pioneer 31P41	178	20.2	8.8	98
23	DeKalb 697	164	20.5	8.0	93
24	HC33 x TR7322	138	16.9	8.1	97
	Mean of the experiment	157	20.5	7.7	93
	Mean of the checks	172	20.4	8.4	96
	LSD ($p=0.05$)	11.0	0.8		5.9
	CV	10.1	5.7		9.1

Note: While only three entries (#'s 3, 4 and 16) from this trial have been recommended, seed of most of the entries is available from GEM-Raleigh

Summary of the 8 GEM Ames Released Lines for 2013

GEM Code	Pedigree	Race	Type	Country	Heterotic Group	Cob Color	Grain Color	Grain Type
GEMS-0234	AR17026:S1648-B-030	Cristalino Colorado	25% Temperate	Argentina	SS	Red	5	6
GEMS-0235	CUBA173:S0446-B-030	Criollo/Tuson	25% Tropical	Cuba	SS	Red	5	5
GEMN-0236	DK212T:N11a10-B-110	Tropical Hybrid	25% Tropical	Thailand?	NS	Red	5	4
GEMS-0237	DKXL370:S08c17c-B-008	Tropical Hybrid	25% Tropical	Mexico	SS	Red	5	5
GEMN-0238	NEI9004:N0803-B-027	Suwan	25% Tropical	Thailand	NS	Red	5	5
GEMN-0239	NEI9004:N0803-B-053	Suwan	25% Tropical	Thailand	NS	Red	5	7
GEMS-0240	UR13085:S99g99u-B-023	Cateto Sulino	25% Temperate	Uruguay	SS	White	4	4
GEMS-0241	UR13085:S99g99u-B-058	Cateto Sulino	25% Temperate	Uruguay	SS	Red	5	6

Grain Type: 1 = Very Dent, 9 = Flint (5 similar to B73)

Grain Color: 1 = White, 9 = Orange (5 similar to B73)

Lines per se Data							NIR Data			
GEM Code	Pedigree	Days to Pollination	GDU's to Pollination	Plant Ht. (cm)	Ear Ht. (cm)	1000 k Wt (g)	2 year Average (2011-2012)			
							Protein	Oil	Starch	Density
GEMS-0234	AR17026:S1648-B-030	61	1355	177	91	300	12.8	3.6	69.4	1.306
GEMS-0235	CUBA173:S0446-B-030	65	1459	197	112	240	12.5	4.1	69.3	1.312
GEMN-0236	DK212T:N11a10-B-110	65	1459	210	100	280	13.1	3.8	69.2	1.297
GEMS-0237	DKXL370:S08c17c-B-008	66	1488	201	107	280	14.0	4.0	68.3	1.298
GEMN-0238	NEI9004:N0803-B-027	67	1517	192	102	380	12.0	3.7	70.1	1.312
GEMN-0239	NEI9004:N0803-B-053	67	1517	169	100	300	13.0	3.8	69.4	1.338
GEMS-0240	UR13085:S99g99u-B-023	67	1517	199	100	280	14.4	4.0	67.4	1.297
GEMS-0241	UR13085:S99g99u-B-058	65	1459	197	106	320	13.5	5.2	66.5	1.288
	B73	65	1459	177	77	260	13.0	4.1	68.9	1.302

Top Cross Data													
GEM Code	Pedigree	x LH287			x MBS8814			x HC33			x MBS3633		
		Estimated	Plant	Ear	Estimated	Plant	Ear	Estimated	Plant	Ear	Estimated	Plant	Ear
		RM	Ht. (cm)	Ht. (cm)	RM	Ht. (cm)	Ht. (cm)	RM	Ht. (cm)	Ht. (cm)	RM	Ht. (cm)	Ht. (cm)
GEMS-0234	AR17026:S1648-B-030	110	255	100	113	250	120						
GEMS-0235	CUBA173:S0446-B-030	-	-	-	118	265	130						
GEMN-0236	DK212T:N11a10-B-110							114	280	115	115	290	133
GEMS-0237	DKXL370:S08c17c-B-008	110	275	100	112	260	145						
GEMN-0238	NEI9004:N0803-B-027							112	285	127.5	113	288	135
GEMN-0239	NEI9004:N0803-B-053							114	280	130	113	273	143
GEMS-0240	UR13085:S99g99u-B-023	115	265	130	119	275	150						
GEMS-0241	UR13085:S99g99u-B-058	117	255	120	120	280	140						
Hybrid Checks													
Check	LH200xLH262	118	280	140									
Check	HC33xLH287	109	260	110									
Check	MBS3633xMBS8814	113	270	125									

2013 Ames Released Lines Yield Trials

GEM Code	Pedigree	105305 Tester: LH287 (5 Reps)								125001 Tester: LH287 (7 Reps)								125002 Tester: MBS8814 (7 Reps)							
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.
GEMS-0234	AR17026:S1648-B-030	29	186.5	104.6	19.6	9.5	57.3	4.8	4.9	44	180.3	98.7	18.8	9.6	56.9	5.5	15.4	35	191.4	103.5	22.0	8.7	54.3	0.9	5.7
	HC33xLH287	66	164.2		18.7	8.8	56.0	5.8	6.4	66	186.8	102.3	18.3	10.2	55.8	2.7	6.6	46	186.5	100.8	20.0	9.3	55.9	0.5	0.9
	LH200xLH262	67	179.8	100.9	22.8	7.8	56.5	1.3	12.9	67	168.6		22.9	7.4	55.9	0.6	7.4	47	195.7	105.8	24.5	8.0	55.6	0.3	17.3
	Pioneer 31D58	68	198.1	111.1	22.6	8.8	57.2	0.5	0.5	68	193.6	106.0	22.4	8.7	56.8	2.5	1.0	48	180.0	97.4	24.3	7.4	57.2	0.0	1.0
	Pioneer 33F85	69	182.2	102.2	20.6	8.8	57.0	10.2	3.2	69	196.2	107.4	19.7	10.0	57.7	0.8	5.6	49	186.2	100.7	20.8	9.0	57.0	0.4	4.1
	Pioneer 34R65	70	166.9		19.7	8.5	57.4	2.3	2.4	70	167.9		18.0	9.3	58.7	0.7	1.2	50	171.0		19.1	9.0	57.9	0.0	2.2
	MBS3633xMBS8814																	45	190.0	102.8	22.3	8.5	53.5	8.3	2.0
	Test Entry Means		166.5	93.4	20.5	8.1	55.7	5.7	8.0		162.7		20.2	8.0	55.9	5.0	12.0		175.7		23.5	7.5	53.8	3.7	1.9
	Check Means		178.3	100.0	20.9	8.5	56.8	4.0	5.1		182.6		20.2	9.0	57.0	1.5	4.3		184.9		21.8	8.5	56.2	1.6	4.6
	CV		9.8		4.3						11.3		6.7						12.3		5.4				
	F-value		1.8		4.9						3.1		8.6						1.9		16.7				
	LSD (p=0.05)		22.9		1.2						19.9		1.4						22.8		1.3				

GEM Code	Pedigree	101314 Tester: AGR-nSS BT1 (5 Reps)								121405 Tester: MBS8814 (8 Reps)							
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.
GEMS-0235	CUBA173:S0446-B-030	19	168.5	108.7	20.0	8.4	56.2	7.3	3.0	30	170.1	108.0	25.4	6.7	53.5	3.1	0.0
	HC33xLH287	77	150.9		15.3	10.1	60.5	12.6	5.8	46	159.5	101.3	19.6	8.1	56.0	0.3	6.8
	LH200xLH262	78	159.7		21.2	7.7	57.3	2.5	3.6	47	148.9		25.7	5.8	55.0	0.9	4.6
	Pioneer 31D58	76	174.4	112.5	20.9	8.5	58.3	0.4	0.7	48	153.9		24.4	6.5	55.8	0.0	0.0
	Pioneer 33F85	68	158.6		19.2	8.3	57.5	11.1	5.2	49	173.7	110.3	21.1	8.2	57.2	0.7	1.1
	Pioneer 34R65	74	151.5		17.2	8.9	59.2	1.5	1.1	50	149.9		19.2	7.9	57.7	0.0	2.8
	MBS3633xMBS8814									45	158.8		23.0	7.0	53.5	5.1	5.1
	Test Entry Means		162.0	104.6	21.0	7.7	56.2	2.7	8.3		156.1		24.2	6.4	54.0	4.6	4.7
	Check Means		155.0	100.0	18.4	8.4	58.8	4.9	4.4		157.4		22.2	7.1	55.9	1.2	3.4
	CV		11.8		6.6						13.8		5.6				
	F-value		1.4		7.2						1.6		12.1				
	LSD (p=0.05)		23.8		1.7						22.6		1.4				

GEM Code	Pedigree	101311 Tester: HC33 (5 Reps)								121001 Tester: HC33 (8 Reps)								121002 Tester: MBS3633 (8 Reps)							
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.
GEMN-0236	DK212T:N11a10-B-110	100	190.3	118.8	22.6	8.4	55.8	0.9	1.4	23	146.6	95.2	21.2	6.9	55.4	0.7	2.9	21	143.0	96.0	20.0	7.2	55.7	2.3	6.9
	HC33xLH287	130	154.9		20.4	7.7	55.7	3.3	1.3	56	164.7	106.9	18.5	8.9	56.5	1.0	9.8	54	140.4		18.1	7.7	56.7	6.9	15.2
	LH200xLH262	126	149.3		26.1	6.1	56.3	9.3	3.4	57	160.1	104.0	23.9	6.7	54.8	0.3	1.5	55	158.0	106.2	23.2	6.8	54.9	7.9	22.7
	Pioneer 31D58	127	191.1	119.3	26.1	7.8	56.6	0.9	0.0	58	162.6	105.6	23.1	7.0	56.3	0.9	0.0	56	159.4	107.1	22.1	7.2	56.9	1.8	1.1
	Pioneer 33F85	133	174.1	108.6	22.5	7.9	57.1	0.0	0.4	59	163.5	106.1	20.0	8.2	56.8	2.4	9.7	57	165.1	111.0	19.9	8.3	57.2	2.3	4.9
	Pioneer 34R65	134	155.2		21.2	7.5	58.0	0.4	0.0	60	119.2		18.3	6.6	57.2	0.4	5.4	58	129.4		17.9	7.2	58.8	0.0	1.4
	MBS3633xMBS8814																	53	140.7	94.5	18.0	7.8	56.5	16.1	1.3
	Test Entry Means		140.4	87.7	20.8	6.8	56.4	2.6	2.4		135.2		19.9	6.8	56.6	2.3	5.4		134.4		19.7	6.8	57.0	8.5	5.3
	Check Means		160.2	100.0	23.1	6.9	56.6	3.6	1.2		154.0		20.8	7.4	56.3	1.0	5.3		148.8		19.9	7.5	56.8	5.8	7.8
	CV		16.4		5.4						16.7		7.4						18.7		6.1				
	F-value		2.4		6.5						2.6		6.2						1.6		6.7				
	LSD (p=0.05)		29.7		1.4						22.6		1.5						25.2		1.2				

GEM Code	Pedigree	101304 Tester: LH287 (5 Reps)								121404 Tester: LH287 (8 Reps)								121405 Tester: MBS8814 (8 Reps)							
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.
GEMS-0237	DKXL370:S08c17c-B-008	7	171.7	103.1	19.3	8.9	54.4	6.6	3.3	29	152.1	98.3	18.5	8.2	56.1	19.2	4.8	16	173.2	110.0	21.3	8.1	54.2	4.5	7.2
	HC33xLH287	66	159.1		19.3	8.4	56.9	0.5	6.9	66	133.2		17.9	7.4	56.8	4.9	6.5	46	159.5	101.3	19.6	8.1	56.0	0.3	6.8
	LH200xLH262	67	146.9		24.8	6.2	55.8	1.7	6.9	67	161.6	104.5	21.6	7.5	54.5	6.8	8.0	47	148.9		25.7	5.8	55.0	0.9	4.6
	Pioneer 31D58	68	195.3		23.5	8.4	57.4	1.3	0.0	68	148.3	95.9	21.9	6.8	55.3	4.2	2.4	48	153.9		24.4	6.5	55.8	0.0	0.0
	Pioneer 33F85	69	177.4		20.0	8.8	58.5	16.1	2.7	69	182.9	118.3	19.4	9.4	57.3	1.5	3.7	49	173.7	110.3	21.1	8.2	57.2	0.7	1.1
	Pioneer 34R65	70	153.7		18.1	8.5	59.2	1.8	0.0	70	147.3	95.2	17.7	8.3	59.3	0.0	3.1	50	149.9		19.2	7.9	57.7	0.0	2.8
	MBS3633xMBS8814																	45	158.8		23.0	7.0	53.5	5.1	5.1
	Test Entry Means		160.9	96.6	20.3	7.9	55.8	4.5	7.2		139.6		19.7	7.1	55.8	11.0	7.9		156.1		24.2	6.4	54.0	4.6	4.7
	Check Means		166.5	100.0	21.1	7.9	57.6	4.3	3.3		154.7		19.7	7.9	56.6	3.5	4.7		157.4		22.2	7.1	55.9	1.2	3.4
	CV		13.3		4.7						20.8		6.8						13.8		5.6				
	F-value		2.0		7.0						1.4		5.1						1.6		12.1				
	LSD (p=0.05)		26.9		1.2						31.5		1.4						22.6		1.4				

GEM Code	Pedigree	101316 Tester: Beck's SS (5 Reps)									111304 Tester: HC33 (4 Reps)															
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.									
GEMN-0238	NEI9004:N0803-B-027	27	200.7	113.8	23.9	8.4	54.5	4.1	0.0	21	135.1	98.8	17.3	8.0	58.3	5.5	1.6									
GEMN-0239	NEI9004:N0803-B-053	53	202.0	114.5	26.8	7.5	53.9	0.6	3.0	43	153.2	112.1	17.5	9.0	57.7	3.5	3.4									
	HC33xLH287	71	150.3		20.2	7.7	55.7	1.6	12.3	56	134.5	98.4	16.3	8.2	57.9	4.6	1.6									
	LH200xLH262	72	190.3	107.9	25.8	7.6	54.5	4.5	0.6	57	155.7	113.9	19.3	8.2	58.3	3.7	2.3									
	Pioneer 31D58	73	189.2	107.3	24.6	8.2	54.6	0.6	2.4	58	141.5	103.5	18.2	7.9	57.2	4.1	1.7									
	Pioneer 33F85	74	189.0		22.6	8.4	55.3	14.8	2.3	59	152.5	111.6	17.9	8.6	58.0	6.3	2.4									
	Pioneer 34R65	75	163.0		20.0	8.4	56.1	1.3	0.0	60	99.2		16.1	6.3	58.9	2.9	0.0									
	MBS3633xMBS8814																									
	Test Entry Means		179.4		23.9	7.7	54.8	3.7	1.9		124.8		16.2	7.7	59.0	6.4	3.8									
	Check Means		176.4		22.6	8.1	55.2	4.6	3.5		136.7		17.5	7.8	58.0	4.3	1.6									
	CV		12.4		6.9						19.2		9.5													
	F-value		1.3		4.4						1.4		2.2													
	LSD (p=0.05)		30.0		2.2						34.4		2.2													
GEM Code	Pedigree	121001 Tester: HC33 (8 Reps)									121002 Tester: MBS3633 (8 Reps)															
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.									
GEMN-0238	NEI9004:N0803-B-027	33	148.0	96.1	20.3	7.3	56.8	1.3	4.4	32	146.0	98.1	20.4	7.2	56.9	7.5	6.7									
GEMN-0239	NEI9004:N0803-B-053	41	166.7	108.2	21.2	7.9	55.5	0.0	1.4	40	149.0	100.1	20.4	7.3	56.8	13.6	6.5									
	HC33xLH287	56	164.7	106.9	18.5	8.9	56.5	1.0	9.8	54	140.4		18.1	7.7	56.7	6.9	15.2									
	LH200xLH262	57	160.1	104.0	23.9	6.7	54.8	0.3	1.5	55	158.0	106.2	23.2	6.8	54.9	7.9	22.7									
	Pioneer 31D58	58	162.6	105.6	23.1	7.0	56.3	0.9	0.0	56	159.4	107.1	22.1	7.2	56.9	1.8	1.1									
	Pioneer 33F85	59	163.5	106.1	20.0	8.2	56.8	2.4	9.7	57	165.1	111.0	19.9	8.3	57.2	2.3	4.9									
	Pioneer 34R65	60	119.2		18.3	6.6	57.2	0.4	5.4	58	129.4		17.9	7.2	58.8	0.0	1.4									
	MBS3633xMBS8814									53	140.7	94.5	18.0	7.8	56.5	16.1	1.3									
	Test Entry Means		135.2		19.9	6.8	56.6	2.3	5.4		134.4		19.7	6.8	57.0	8.5	5.3									
	Check Means		154.0		20.8	7.4	56.3	1.0	5.3		148.8		19.9	7.5	56.8	5.8	7.8									
	CV		16.7		7.4						18.7		6.1													
	F-value		2.6		6.2						1.6		6.7													
	LSD (p=0.05)		22.6		1.5						25.2		1.2													
GEM Code	Pedigree	105304 Tester: LH287 (5 Reps)									125001 Tester: LH287 (7 Reps)								125002 Tester: MBS8814 (7 Reps)							
		Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	Entry	Yield B/A	% Yield /CHK	% Moist	YM	TWT	% S.L.	% R.L.	
GEMS-0240	UR13085:S99g99u-B-023	15	161.0	104.7	22.6	7.1	54.4	3.0	2.6	36	183.0	100.2	21.2	8.6	54.3	2.1	4.8	26	184.1	99.6	25.0	7.4	52.3	4.5	1.0	
GEMS-0241	UR13085:S99g99u-B-058	40	162.6	105.7	22.7	7.2	55.1	4.4	1.2	42	182.0	99.7	22.7	8.0	53.8	3.1	4.5	33	191.0	103.3	25.8	7.4	52.4	4.4	1.3	
	HC33xLH287	46	147.1		18.6	8.0	57.2	1.8	1.5	66	186.8	102.3	18.3	10.2	55.8	2.7	6.6	46	186.5	100.8	20.0	9.3	55.9	0.5	0.9	
	LH200xLH262	47	169.4	110.1	22.2	7.7	57.2	2.1	3.5	67	168.6		22.9	7.4	55.9	0.6	7.4	47	195.7	105.8	24.5	8.0	55.6	0.3	17.3	
	Pioneer 31D58	48	158.4	103.0	22.0	7.3	57.0	3.6	1.0	68	193.6	106.0	22.4	8.7	56.8	2.5	1.0	48	180.0	97.4	24.3	7.4	57.2	0.0	1.0	
	Pioneer 33F85	49	161.1	104.7	20.2	8.2	57.4	8.0	1.7	69	196.2	107.4	19.7	10.0	57.7	0.8	5.6	49	186.2	100.7	20.8	9.0	57.0	0.4	4.1	
	Pioneer 34R65	50	132.9		18.2	7.5	58.7	0.8	1.2	70	167.9		18.0	9.3	58.7	0.7	1.2	50	171.0		19.1	9.0	57.9	0.0	2.2	
	MBS3633/MBS8814																	45	190.0	102.8	22.3	8.5	53.5	8.3	2.0	
	Test Entry Means		150.4	97.8	22.9	6.6	55.2	3.2	2.4		162.7		20.2	8.0	55.9	5.0	12.0		175.7		23.5	7.5	53.8	3.7	1.9	
	Check Means		153.8	100.0	20.2	7.6	57.5	3.2	1.8		182.6		20.2	9.0	57.0	1.5	4.3		184.9		21.8	8.5	56.2	1.6	4.6	
	CV		12.0		4.8						11.3		6.7						12.3		5.4					
	F-value		2.0		8.5						3.1		8.6						1.9		16.7					
	LSD (p=0.05)		22.7		1.4						19.9		1.4						22.8		1.3					

GEM Germplasm Releases and Key Traits

Entry	Pedigree	Code	Race	Country	Site Released	Year Released	Prot	AA	Oil	Starch Prop.	Silage	GLS	NLB	SLB	Drought	Fumon.	Fuser	Aflatox	ASR	Diplodia	YM	Head Smut
1	GEMS-001(PI503806xB94//B94)	GEMS-0001	Alazan	Peru	Ames	2001																
2	GEMS-002 (FS8A(S):S09-43-2)	GEMS-0002	Mixed	USA	Ohio St.	2003								✓		✓	✓					
3	BR52051(SE32):S17-B-023-001-B-B	GEMS-0003	Dente Amarelo	Brazil	NC	2003	✓		✓			✓	✓	✓		✓	✓			✓		
4	DK212T:S11-B-013-002-B-B	GEMS-0004	Hybrid-tropical	Thailand	NC	2003							✓	✓			✓					
5	DK212T:S11-B-015-001-B-B	GEMS-0005	Hybrid-tropical	Thailand	NC	2003							✓	✓								
6	DK212T:S11-B-017-001-B-B	GEMS-0006	Hybrid-tropical	Thailand	NC	2003							✓	✓			✓					
7	DK212T:S11-B-018-001-B-B	GEMS-0007	Hybrid-tropical	Thailand	NC	2003	✓							✓								
8	DK212T:S11-B-038-001-B-B	GEMS-0008	Hybrid-tropical	Thailand	NC	2003																
9	DK212T:S11-B-040-001-B-B	GEMS-0009	Hybrid-tropical	Thailand	NC	2003											✓					
10	DK212T:S11-B-041-002-B-B	GEMS-0010	Hybrid-tropical	Thailand	NC	2003																
11	DK212T:S11-B-045-002-B-B	GEMS-0011	Hybrid-tropical	Thailand	NC	2003																
12	DK888:S11-B-003-001-B-B	GEMS-0012	Hybrid-tropical	Thailand	NC	2003																
13	DK888:S11-B-004-004-B-B	GEMS-0013	Hybrid-tropical	Thailand	NC	2003								✓								✓
14	DK888:S11-B-010-001-B-B	GEMS-0014	Hybrid-tropical	Thailand	NC	2003																✓
15	DK888:S11-B-014-001-B-B	GEMS-0015	Hybrid-tropical	Thailand	NC	2003								✓								
16	DK888:S11-B-015-003-B-B	GEMS-0016	Hybrid-tropical	Thailand	NC	2003						✓	✓	✓			✓					
17	DK888:S11-B-025-001-B-B	GEMS-0017	Hybrid-tropical	Thailand	NC	2003																
18	DK888:S11-B-026-002-B-B	GEMS-0018	Hybrid-tropical	Thailand	NC	2003														✓		
19	DK888:S11-B-029-001-B-B	GEMS-0019	Hybrid-tropical	Thailand	NC	2003						✓										
20	DK888:S11-B-033-001-B-B	GEMS-0020	Hybrid-tropical	Thailand	NC	2003																
21	DK888:S11-B-035-002-B-B	GEMS-0021	Hybrid-tropical	Thailand	NC	2003										✓	✓					✓
22	DK888:S11-B-035-003-B-B	GEMS-0022	Hybrid-tropical	Thailand	NC	2003																
23	DK888:S11-B-039-002-B-B	GEMS-0023	Hybrid-tropical	Thailand	NC	2003																
24	DKB830:S11-B-045-001-B-B	GEMS-0024	Hybrid-tropical	Mexico	NC	2003						✓										
25	DKXL370:S11-B-001-002-B-B	GEMS-0025	Hybrid-tropical	Brazil	NC	2003																
26	DKXL370:S11-B-025-001-B-B	GEMS-0027	Hybrid-tropical	Brazil	NC	2003							✓					✓				✓
27	DKXL370:S11-B-025-002-B-B	GEMS-0028	Hybrid-tropical	Brazil	NC	2003						✓						✓				✓
28	DKXL370:S11-B-028-001-B-B	GEMS-0029	Hybrid-tropical	Brazil	NC	2003							✓	✓			✓					
29	DKXL380:S11-B-004-003-B-B	GEMS-0030	Hybrid-tropical	Brazil	NC	2003		✓				✓	✓	✓			✓	✓				✓
30	DKXL380:S11-B-028-001-B-B	GEMS-0031	Hybrid-tropical	Brazil	NC	2003	✓	✓					✓									✓
31	DKXL380:S11-B-029-001-B-B	GEMS-0032	Hybrid-tropical	Brazil	NC	2003							✓	✓			✓	✓				
32	BR51403(PE001):N16-B-044-B	GEMN-0033	Cateto	Brazil	NC	2003				✓		✓										
33	BR51403(PE001):N16-B-172-B	GEMN-0035	Cateto	Brazil	NC	2003				✓		✓	✓									
34	BR51403(PE001):N16-B-176-B	GEMN-0036	Cateto	Brazil	NC	2003				✓												
35	BR51403(PE001):N16-B-181-B	GEMN-0037	Cateto	Brazil	NC	2003				✓		✓										✓
36	BR51403(PE001):N16-B-239-B	GEMN-0039	Cateto	Brazil	NC	2003	✓			✓			✓									
37	BR51403(PE001):N16-B-431-B	GEMN-0040	Cateto	Brazil	NC	2003				✓												
38	BR51403(PE001):N16-B-521-B	GEMN-0041	Cateto	Brazil	NC	2003				✓												
39	BR51403(PE001):N16-B-705-B	GEMN-0042	Cateto	Brazil	NC	2003				✓												
40	BR51403(PE001):N16-B-857-B	GEMN-0043	Cateto	Brazil	NC	2003				✓												
41	CH05015:N12-20-1-B-B	GEMN-0044	Camelia	Chile	Ames	2003																
42	CH05015:N12-140-1-B-B	GEMN-0045	Camelia	Chile	Ames	2003	✓															✓
43	CH05015:N15-8-1-B-B	GEMN-0046	Camelia	Chile	Ames	2003				✓												
44	UR13085:N0215-014-001	GEMN-0047	Cateto Sulino	Uruguay	Ames	2003																
45	DKXL370:N11a20-31-1-B-B	GEMN-0048	Hybrid-tropical	Brazil	Ames	2003	✓															
46	DKB844:S1601-512-1-B	GEMS-0049	Hybrid-tropical	Mexico	Ames	2003	✓															
47	DKB844:S1601-517-1-B	GEMS-0050	Hybrid-tropical	Mexico	Ames	2003																
48	CUBA164:S2008a-83-1-B	GEMS-0051	Criollo/Argentino	Cuba	Ames	2003																
49	CUBA164:S2008a-326-1-B	GEMS-0052	Criollo/Argentino	Cuba	Ames	2003																✓
50	CUBA164:S15-192-2-B	GEMS-0053	Criollo/Argentino	Cuba	Ames	2003																
51	AR16035:S02-450-1-B	GEMS-0054	Cristalino Colorado	Argentina	Ames	2003																✓
52	AR16035:S02-443-1-B-B	GEMS-0055	Cristalino Colorado	Argentina	Ames	2003																
53	FS8B(T):N1809-946-1-B	GEMN-0056	Mixed	USA	Ames	2003																✓
54	AR01150:N04-545-1-B	GEMN-0057	Dent. Blanco Rugoso	Argentina	Ames	2003																
55	AR01150:N04-696-1-B	GEMN-0058	Dent. Blanco Rugoso	Argentina	Ames	2003	✓															
56	SCRO1:N1310-398-1-B	GEMN-0059	St. Croix	St. Croix	Ames	2003				✓												
57	CHIS775:N1912-519-1-B-B	GEMN-0060	Tuxpeño	Mexico	Ames	2003																✓
58	AR16026:S17-10-1-B-B	GEMS-0061	Cristalino Colorado	Argentina	Ames	2003			✓							✓	✓	✓				
59	AR16026:S17-16-1-B-B	GEMS-0062	Cristalino Colorado	Argentina	Ames	2003											✓					

Entry	Pedigree	Code	Race	Country	Site Released	Year Released	Prot	AA	Oil	Starch Prop.	Silage	GLS	NLB	SLB	Drought	Fumon.	Fuser	Aflatox	ASR	Diplodia	YM	Head Smut
60	CUBA164:S1511b-325-001	GEMS-0063	Criollo/Argentino	Cuba	Ames	2003	✓															✓
61	CUBA164:S1511b-249-1-B-B	GEMS-0064	Criollo/Argentino	Cuba	Ames	2003																
62	CUBA117:S1520-41-1-B-B	GEMS-0065	Argentino	Cuba	Ames	2003			✓													
63	CUBA117:S1520-52-1-B-B	GEMS-0066	Argentino	Cuba	Ames	2003																
64	GUAT209:S13 x (H99ae x OH43ae)-4-4-2-1	GEMS-0067	Tusón	Guatemala	Truman St	2007																
65	AR16026:S1704-153-001	GEMS-0068	Cristalino Colorado	Argentina	Ames	2003											✓					✓
66	AR16035:S19-161-001	GEMS-0069	Cristalino Colorado	Argentina	Ames	2003																✓
67	CH05015:N12-183-001	GEMN-0070	Camelia	Chile	Ames	2003															✓	
68	CH05015:N15-003-001	GEMN-0071	Camelia	Chile	Ames	2003															✓	✓
69	CHIS775:S1911b-439-001	GEMS-0072	Tuxpeño	Mexico	Ames	2003																✓
70	CUBA117:S15-372-001	GEMS-0073	Argentino	Cuba	Ames	2003		✓						✓			✓					✓
71	CUBA164:S1517-163-001	GEMS-0074	Criollo/Argentino	Cuba	Ames	2003																✓
72	CUBA164:S1517-241-002	GEMS-0075	Criollo/Argentino	Cuba	Ames	2003								✓								
73	DKB844:N11b-118-001	GEMN-0076	Hybrid-tropical	Mexico	Ames	2003																
74	DKXL370:N11a20-604-001	GEMN-0077	Hybrid-tropical	Brazil	Ames	2003						✓		✓								
75	FS8A(S):S09-362-001	GEMS-0078	Mixed	USA	Ames	2003								✓								
76	FS8B(S):S0316-802-001	GEMS-0079	Mixed	USA	Ames	2003								✓								✓
77	FS8B(S):S0316-814-001	GEMS-0080	Mixed	USA	Ames	2003								✓								
78	FS8B(T):N1802-382-001	GEMN-0081	Mixed	USA	Ames	2003								✓								
79	FS8B(T):N1802-525-001	GEMN-0082	Mixed	USA	Ames	2003						✓		✓								
80	GUAT209:N1925-081-001	GEMN-0083	Tusón	Guatemala	Ames	2003		✓				✓										✓
81	PASCO14:S0105-198-001	GEMS-0084	Cuban yellow	Peru	Ames	2003								✓								
82	UR01089:S0525-519-001	GEMS-0085	Cateto Sulino	Uruguay	Ames	2003								✓								✓
83	UR10001:S1813-257-001	GEMS-0086	Dente Branco	Uruguay	Ames	2003																
84	AR03056:N09-024-001	GEMN-0087	Dentado Blanco	Argentina	Ames	2004																
85	AR03056:N09-182-001	GEMN-0088	Dentado Blanco	Argentina	Ames	2004						✓									✓	
86	AR03056:N09-191-001	GEMN-0089	Dentado Blanco	Argentina	Ames	2004																
87	AR03056:N09-250-001	GEMN-0090	Dentado Blanco	Argentina	Ames	2004																
88	CHIS740:S1411a-783-002	GEMS-0091	Tuxpeño/Olotillo	Mexico	Ames	2004		✓														✓
89	CUBA164:S2012-444-001	GEMS-0092	Criollo/Argentino	Cuba	Ames	2004							✓		✓		✓					
90	CUBA164:S2012-966-001	GEMS-0093	Criollo/Argentino	Cuba	Ames	2004																
91	DKXL370:N11a20-199-002	GEMN-0094	Hybrid-tropical	Brazil	Ames	2004											✓					
92	DKXL370:N11a20-234-002	GEMN-0095	Hybrid-tropical	Brazil	Ames	2004						✓	✓									
93	DKXL370:-N11a20-322-001	GEMN-0096	Hybrid-tropical	Brazil	Ames	2004				✓											✓	
94	FS8B(T):N11a-087-001	GEMN-0097	Mixed	USA	Ames	2004											✓				✓	
95	FS8B(T):N11a-110-001	GEMN-0098	Mixed	USA	Ames	2004											✓					
96	FS8B(T):N11a-322-001	GEMN-0099	Mixed	USA	Ames	2004						✓										
97	UR11003:S0302-937-001	GEMS-0100	Dente Branco	Uruguay	Ames	2004											✓				✓	
98	DK888:S11b-007-B-B	GEMS-0101	Hybrid-tropical	Thailand	NC	2004								✓								
99	DK888:S11b-001-B	GEMS-0102	Hybrid-tropical	Thailand	NC	2004								✓								
100	DK888:N11(95)-B-027-010-B-B	GEMN-0103	Hybrid-tropical	Thailand	NC	2004								✓								
101	DK888:N11(95)-B-027-012-B-B	GEMN-0104	Hybrid-tropical	Thailand	NC	2004						✓	✓	✓								
102	DK888:N11(95)-B-027-015-B-B	GEMN-0105	Hybrid-tropical	Thailand	NC	2004								✓								
103	DK888:N11(95)-B-022-007-B-B	GEMN-0106	Hybrid-tropical	Thailand	NC	2004																
104	DK888:N11(95)-B-022-012-B-B	GEMN-0107	Hybrid-tropical	Thailand	NC	2004								✓								
105	DK888:N11(95)-B-027-001-B-B	GEMN-0108	Hybrid-tropical	Thailand	NC	2004						✓		✓								
106	DKXL380:N11-B-015-003-B-B	GEMN-0109	Hybrid-tropical	Brazil	NC	2004																
107	BARBGP2:N08a18-332-001	GEMN-0110	Tusón	Barbados	Ames	2005							✓									✓
108	CH05015:N1204-057-001	GEMN-0111	Camelia	Chile	Ames	2005	✓	✓	✓								✓					
109	CH05015:N1502-086-001	GEMN-0112	Camelia	Chile	Ames	2005	✓							✓							✓	✓
110	CHIS775:S1911b-120-001	GEMS-0113	Tuxpeño	Mexico	Ames	2005	✓			✓				✓								
111	DK212T:N11a12-191-001	GEMN-0114	Hybrid-tropical	Thailand	Ames	2005																✓
112	DKB844:S1601-073-001	GEMS-0115	Hybrid-tropical	Mexico	Ames	2005				✓												
113	DKB844:S1601-003-002	GEMS-0116	Hybrid-tropical	Mexico	Ames	2005	✓			✓			✓									
114	DREP150:N2011d-624-001	GEMN-0117	Mixed	Dom. Republic	Ames	2005	✓	✓						✓								✓
115	UR11003:S0302-1011-001	GEMS-0118	Dente Branco	Uruguay	Ames	2005		✓													✓	
116	CHS775:N19-042-001-B	GEMN-0119	Tuxpeño	Mexico	NC	2005							✓	✓								
117	CHS775:N19-042-003-B	GEMN-0120	Tuxpeño	Mexico	NC	2005							✓	✓								
118	CHS775:N19-027-010-B	GEMN-0121	Tuxpeño	Mexico	NC	2005				✓			✓	✓								✓
119	CHS775:N19-093-002-B	GEMN-0122	Tuxpeño	Mexico	NC	2005				✓			✓	✓								
120	CHS775:N19-030-011-B	GEMN-0123	Tuxpeño	Mexico	NC	2005				✓			✓	✓								

Entry	Pedigree	Code	Race	Country	Site Released	Year Released	Prot	AA	Oil	Starch Prop.	Silage	GLS	NLB	SLB	Drought	Fumon.	Fuser	Aflatox	ASR	Diplodia	YM	Head Smut
121	DK212T:N11-B-003-001-B	GEMN-0124	Hybrid-tropical	Thailand	NC	2005			✓				✓	✓			✓					
122	DK888:S11-B-029-001-B	GEMS-0125	Hybrid-tropical	Thailand	NC	2005								✓								
123	DK888:S11-B-029-006-B	GEMS-0126	Hybrid-tropical	Thailand	NC	2005								✓					✓			
124	DK888:N11(95)-B-017-001-B	GEMN-0127	Hybrid-tropical	Thailand	NC	2005				✓				✓								
125	DKXL370:N11-B-005-002-B	GEMN-0128	Hybrid-tropical	Brazil	NC	2005	✓	✓						✓								
126	DKXL370:N11-B-005-006-B	GEMN-0129	Hybrid-tropical	Brazil	NC	2005	✓						✓	✓								
127	DKXL370:N11-B-005-010-B	GEMN-0130	Hybrid-tropical	Brazil	NC	2005		✓	✓					✓		✓	✓	✓				
128	DKXL370:N11-B-005-011-B	GEMN-0131	Hybrid-tropical	Brazil	NC	2005	✓	✓	✓					✓								
129	DKXL370:N11-B-005-021-B	GEMN-0132	Hybrid-tropical	Brazil	NC	2005	✓	✓						✓								
130	DKXL370:N11-B-029-002-B	GEMN-0133	Hybrid-tropical	Brazil	NC	2005	✓	✓					✓	✓								
131	DKXL380:N11-B-010-017-B	GEMN-0134	Hybrid-tropical	Brazil	NC	2005							✓	✓			✓					
132	DKXL380:N11-B-007-025-B	GEMN-0135	Hybrid-tropical	Brazil	NC	2005			✓				✓	✓			✓					
133	DKXL380:N11-B-007-028-B	GEMN-0136	Hybrid-tropical	Brazil	NC	2005	✓		✓					✓								
134	SCR Gp3:N14-028-003-003-B	GEMN-0137	Tusón	St. Croix	NC	2005		✓						✓								✓
135	AR17056:N2035-421-001	GEMN-0138	Cristalino Colorado	Argentina	Ames	2006						✓	✓	✓								
136	AR17056:N2035-473-001	GEMN-0139	Cristalino Colorado	Argentina	Ames	2006						✓	✓	✓								
137	BR51675:N0620-033-001	GEMN-0140	Dente Amarelo	Brazil	Ames	2006						✓		✓						✓		
138	BR51675:N0620-053-001	GEMN-0141	Dente Amarelo	Brazil	Ames	2006								✓							✓	
139	BR52060:S0210-143-001	GEMS-0142	Dente Amarelo	Brazil	Ames	2006														✓	✓	
140	BR52060:S0210-147-001	GEMS-0143	Dente Amarelo	Brazil	Ames	2006			✓											✓	✓	
141	MDI022:N2120-284-001	GEMN-0144	Cuban yellow	Peru	Ames	2006								✓								
142	MDI022:N2120-333-001	GEMN-0145	Cuban yellow	Peru	Ames	2006		✓														
143	NEI9004:S2818-003-001	GEMS-0146	Suwan	Thailand	Ames	2006	✓														✓	
144	NEI9004:S2818-025-001	GEMS-0147	Suwan	Thailand	Ames	2006	✓															
145	NEI9004:S2818-376-001	GEMS-0148	Suwan	Thailand	Ames	2006	✓															
146	UR05017:S0415-180-002	GEMS-0149	Semidentado Riograndense	Uruguay	Ames	2006	✓														✓	
147	UR05017:S0415-187-001	GEMS-0150	Semidentado Riograndense	Uruguay	Ames	2006	✓															
148	CHIS775:N19-042-001-003-B-B-B	GEMN-0151	Tuxpeño	Mexico	NC	2006							✓	✓			✓					
149	DK212T:N11-B-016-005-B-B	GEMN-0152	Hybrid-tropical	Thailand	NC	2006						✓	✓	✓								
150	DKXL380:N11-B-007-027-B-B-B	GEMN-0153	Hybrid-tropical	Brazil	NC	2006								✓								
151	AR13026:N08b15-016	GEMN-0154	Cristalino Colorado	Argentina	Ames	2007																
152	AR13026:N08b15-086	GEMN-0155	Cristalino Colorado	Argentina	Ames	2007																
153	BR51721:N2012-098-002	GEMN-0156	Dente Amarelo	Brazil	Ames	2007				✓		✓									✓	
154	BR51721:N2012-164-002	GEMN-0157	Dente Amarelo	Brazil	Ames	2007				✓			✓									
155	BR51721:N2012-397-001	GEMN-0158	Dente Amarelo	Brazil	Ames	2007				✓			✓				✓		✓	✓		
156	CASH:N1410-018-001	GEMN-0159	Com Belt Dent	USA	Ames	2007															✓	
157	CUBA117:S1542-037-002	GEMS-0160	Argentino	Cuba	Ames	2007	✓															
158	CUBA117:S1542-057-001	GEMS-0161	Argentino	Cuba	Ames	2007	✓	✓	✓													
159	CUBA117:S1542-057-002	GEMS-0162	Argentino	Cuba	Ames	2007	✓		✓								✓					
160	CUBA164:S2012-456-001	GEMS-0163	Criollo/Argentino	Cuba	Ames	2007															✓	
161	DK212T:N11-B-003-022-B-B-B	GEMN-0164	Hybrid-tropical	Thailand	NC	2007							✓	✓			✓					
162	DK888:N11(95)-B-022-012-026-B-B	GEMN-0165	Hybrid-tropical	Thailand	NC	2007								✓			✓					✓
163	DK888:N11(95)-B-027-001-008-B-B	GEMN-0166	Hybrid-tropical	Thailand	NC	2007								✓			✓					
164	DK888:N11(95)-B-027-001-018-B-B	GEMN-0167	Hybrid-tropical	Thailand	NC	2007								✓								
165	DK888:N11(95)-B-027-001-019-B	GEMN-0168	Hybrid-tropical	Thailand	NC	2007								✓								
166	DK888:N11(95)-B-027-001-027-B	GEMN-0169	Hybrid-tropical	Thailand	NC	2007						✓		✓			✓					
167	DK888:N11(95)-B-027-001-030-B	GEMN-0170	Hybrid-tropical	Thailand	NC	2007								✓								
168	DK888:N11(95)-B-027-001-037-B	GEMN-0171	Hybrid-tropical	Thailand	NC	2007								✓								
169	DK888:N11(95)-B-027-001-040-B	GEMN-0172	Hybrid-tropical	Thailand	NC	2007								✓			✓					
170	DK888:N11(95)-B-027-012-009-B	GEMN-0173	Hybrid-tropical	Thailand	NC	2007							✓	✓			✓					
171	AR17056:N2025-574-001	GEMN-0174	Cristalino Colorado	Argentina	Ames	2008	✓			✓			✓									
172	BVIR155:S2012-029-001	GEMS-0175	Tusón	British Virgin Is.	Ames	2008	✓														✓	
173	CUBA164:S2008c-289-001	GEMS-0176	Criollo/Argentino	Cuba	Ames	2008	✓															✓
174	DK888:N11a08a-395-001	GEMN-0177	Hybrid-tropical	Thailand	Ames	2008							✓	✓								
175	DK888:N11a08a-440-001	GEMN-0178	Hybrid-tropical	Thailand	Ames	2008								✓								
176	FS8B(T):N11a08c-030-002	GEMN-0179	Mixed	USA	Ames	2008			✓				✓								✓	
177	GUAT209:S1308a-047-001	GEMS-0180	Tusón	Guatemala	Ames	2008				✓				✓								✓
178	GUAT209:S1308a-068-001	GEMS-0181	Tusón	Guatemala	Ames	2008						✓		✓								✓
179	GUAT209:S1308a-084-001	GEMS-0182	Tusón	Guatemala	Ames	2008						✓		✓							✓	✓
180	GUAT209:S1308a-104-001	GEMS-0183	Tusón	Guatemala	Ames	2008																✓
181	GUAT209:S1308a-120-001	GEMS-0184	Tusón	Guatemala	Ames	2008																✓

Entry	Pedigree	Code	Race	Country	Site Released	Year Released	Prot	AA	Oil	Starch Prop.	Silage	GLS	NLB	SLB	Drought	Fumon.	Fuser	Aflatox	ASR	Diplodia	YM	Head Smut
182	CUBA164:S2012-966-001-B wx	GEMS-0185	Criollo/Argentino	Cuba	Ames	2008																
183	DKXL370:N11a20-036-002-B wx	GEMN-0186	Hybrid-tropical	Brazil	Ames	2008	✓					✓		✓								
184	ANTIG03:N1218-056-001	GEMN-0187	Criollo	Antigua	Ames	2009																✓
185	DKXL212:S0912-012-001	GEMS-0188	Hybrid-tropical	Brazil	Ames	2009	✓														✓	
186	DKXL212:S0912-117-001	GEMS-0189	Hybrid-tropical	Brazil	Ames	2009	✓														✓	
187	PASCO14:N0424-078-001	GEMN-0190	Cuban yellow	Peru	Ames	2009																
188	SCROGP3:N2017-003-001	GEMN-0191	Tusón	St. Croix	Ames	2009															✓	✓
189	SCROGP3:N2017-172-001	GEMN-0192	Tusón	St. Croix	Ames	2009			✓					✓							✓	
190	UR11002:N0308b-086-001	GEMN-0193	Dente Branco	Uruguay	Ames	2009															✓	
191	DK888:N11(95)-B-027-001-011-B	GEMN-0194	Hybrid-tropical	Thailand	NC	2009						✓		✓								
192	DK888:N11(95)-B-027-001-015-B	GEMN-0195	Hybrid-tropical	Thailand	NC	2009						✓	✓	✓								
193	DK888:N11(95)-B-003-001-001-B	GEMN-0196	Hybrid-tropical	Thailand	NC	2009								✓								
194	DK888:N11(95)-002-021-008-B-B	GEMN-0197	Hybrid-tropical	Thailand	NC	2009							✓	✓								
195	DK212T:N11-040-001-007	GEMN-0198	Hybrid-tropical	Thailand	NC	2009							✓	✓								
196	AR16021:S0908a-039-001	GEMS-0199	Cristalino Colorado	Argentina	Ames	2010															✓	
197	BR105:S1612-008-001	GEMS-0200	Composite (Suwan)	Brazil	Ames	2010								✓								
198	BR105:S1612-057-001	GEMS-0201	Composite (Suwan)	Brazil	Ames	2010								✓								
199	BR105:S1640-128-001	GEMS-0202	Composite (Suwan)	Brazil	Ames	2010															✓	
200	CUBA164:S2008dF44-012-001	GEMS-0203	Criollo/Argentino	Cuba	Ames	2010																
201	FS8A(T):N1804-006-001	GEMN-0204	Mixed	USA	Ames	2010								✓								
202	GUAD05:N3215-197-001	GEMN-0205	Early Caribbean	Guadalupe	Ames	2010								✓								
203	AR16035:S02-615-001-B wx	GEMS-0206	Cristalino Colorado	Argentina	Ames	2010																
204	BR51403(PE001):N16-B-044-004-001-001C-001	GEMN-0207	Cateto	Brazil	NC	2010								✓								
205	BR51403(PE001):N16-B-044-004-001-002G-003	GEMN-0208	Cateto	Brazil	NC	2010								✓								
206	BR51721(RN07):N20-B-017-002	GEMN-0209	Dente Amarelo	Brazil	NC	2010																
207	CL-G1607(CML420):N11-008-001-007	GEMN-0210	Tropical Line	CIMMYT	NC	2010																
208	DK888:N11-B-027-012-B-007	GEMN-0212	Hybrid-tropical	Thailand	NC	2010								✓			✓					
209	DKXL380:N11-B-007-010-B-002	GEMN-0213	Hybrid-tropical	Brazil	NC	2010								✓			✓					
210	MDI022:N21-B-002-003	GEMN-0214	Cuban yellow	Peru	NC	2010																
211	NS1:S08-006-001-002	GEMS-0215	Suwan	Thailand	NC	2010																
212	PASCO14:N11b-B-001-002	GEMN-0216	Cuban Yellow	Peru	NC	2010																
213	DK888:N11-B-027-001-B-001	GEMN-0217	Hybrid-tropical	Thailand	NC	2010								✓								
214	(CUBA164:S2012-459-001-B/GEMS-0002)-B-B-011	GEMS-0218	(Criollo/Argentino)/Mixed	Cuba/USA	Ames	2011	✓							✓								
215	(CUBA164:S2012-459-001-B/GEMS-0002)-B-B-031	GEMS-0219	(Criollo/Argentino)/Mixed	Cuba/USA	Ames	2011	✓							✓							✓	
216	(GEMS-0113/GEMS-0091)-B-058-001	GEMS-0220	Tuxpeño/Tuxpeño	Mexico	Ames	2011																
217	BR105:N1641-159-001	GEMN-0221	Composite (Suwan)	Brazil	Ames	2011																
218	MBRC10:S1741-B-057	GEMS-0222	Multiple Borer Composite	Mexico	Ames	2011															✓	
219	CUBA164:S2012-444-001-B wx	GEMS-0223	Criollo/Argentino	Cuba	Ames	2011																
220	BG070404:D27S42-B-014	GEMS-0224	Unclassified	Venezuela	Ames	2012															✓	
221	BR105:N16a16b-B-074	GEMN-0225	Composite (Suwan)	Brazil	Ames	2012																
222	BR106:S99a99e-B-053	GEMS-0226	Composite (Tuxpeño)	Brazil	Ames	2012	✓															
223	NEI9004:S2809-B-022	GEMS-0227	Suwan	Thailand	Ames	2012															✓	
224	NEI9004:S2809-B-025	GEMS-0228	Suwan	Thailand	Ames	2012																
225	SANM126:N1299b-B-033	GEMN-0229	Cuban yellow	Peru	Ames	2012															✓	
226	CML413:N18-001-036-002	GEMN-0230	Tropical Line	CIMMYT	NC	2012																
227	CUBA164:D27-B-017-001	GEMN-0231	Criollo/Argentino	Cuba	NC	2012																
228	SCR_Gp3:N14-028-003-B-002	GEMN-0232	Tusón	St. Croix	NC	2012																
229	CML329:N18-001-020-001	GEMN-0233	Tropical Line	CIMMYT	NC	2012																
230	AR17026:S1648-B-030	GEMS-0234	Cristalino Colorado	Argentina	Ames	2013															✓	
231	CUBA173:S0446-B-030	GEMS-0235	Criollo/Tuson	Cuba	Ames	2013																
232	DK212T:N11a10-B-110	GEMN-0236	Hybrid-tropical	Thailand	Ames	2013																
233	DKXL370:S08c17c-B-008	GEMS-0237	Hybrid-tropical	Brazil	Ames	2013															✓	
234	NEI9004:N0803-B-027	GEMN-0238	Suwan	Thailand	Ames	2013																
235	NEI9004:N0803-B-053	GEMN-0239	Suwan	Thailand	Ames	2013																
236	UR13085:S99g99u-B-023	GEMS-0240	Cateto Sulino	Uruguay	Ames	2013																
237	UR13085:S99g99u-B-058	GEMS-0241	Cateto Sulino	Uruguay	Ames	2013																
238	SE32(BR52051):N11c-015-004-B	GEMN-0242	Dente Amarelo	Brazil	NC	2013																
239	CML287:S15-024-003-B	GEMS-0243	Tropical Line	CIMMYT	NC	2013																
240	CML287:S15-027-001-B	GEMS-0244	Tropical Line	CIMMYT	NC	2013																
241	DK888:S11b-037-018-008-B	GEMS-0245	Hybrid-tropical	Thailand	NC	2013																

Entry	Pedigree	Code	Race	Country	Site Released	Year Released	Prot	AA	Oil	Starch Prop.	Silage	GLS	NLB	SLB	Drought	Fumon.	Fuser	Aflatox	ASR	Diplodia	YM	Head Smut
242	DKXL212:N11a-139-001-001	DE EXP	Hybrid-tropical	Brazil	UDEL	2003		✓					✓									
243	DE3 (DKXL212:N11a-191)	DE3	Hybrid-tropical	Brazil	UDEL	2002							✓									
244	DE4 (DKXL212:N11a-365)	DE4	Hybrid-tropical	Brazil	UDEL	2002						✓	✓	✓								
245	DE6 (DKXL212:N11a-234)	DE6	Hybrid-tropical	Brazil	UDEL	2005	✓															
246	NY212 (FS8B(T):N1802-212)	NY212	Mixed	USA	Cornell U	2009													✓			
247	NY215 (FS8B(T):N1802-215)	NY215	Mixed	USA	Cornell U	2009													✓			
248	NY266 (AR01150:N0406-266)	NY266	Dent. Blanco Rugoso	Argentina	Cornell U	2009													✓			
249	Tx204 (AR01150:N0406)	Tx204	Dent. Blanco Rugoso	Argentina	Texas A&M	2004									✓							
250	Tx205 (AR01150:N0406)	Tx205	Dent. Blanco Rugoso	Argentina	Texas A&M	2004									✓							
251	W605S (AR17026:N1019)	W605S	Cristalino Colorado	Argentina	U of Wisc.	2004					✓											
252	W606S (SCRO1:N1310)	W606S	St. Croix	St. Croix	U of Wisc.	2009					✓											
253	W607S (BR52051:N04)	W607S	Dente Amarelo	Brazil	U of Wisc.	2009					✓											
254	W608S (CH05015:N15)	W608S	Camelia	Chile	U of Wisc.	2009					✓											
255	W609S (FS8B(T):N11a)	W609S	Mixed	USA	U of Wisc.	2009					✓											
256	W610S (CUBA164:S2012)	W610S	Criollo/Argentino	Cuba	U of Wisc.	2009					✓											
257	W615S (GEM Quality Syn. GQS C0)	W615S	Criollo/Argentino	Cuba	U of Wisc.	2013					✓											
258	W616S (AR16026:S1719)	W616S	Cristalino Colorado	Argentina	U of Wisc.	2013					✓											
Legend:																						
Agro traits = Yield, lodging, and moisture w/in 10% of check mean																						
Y/M = Yield moisture ratio similar to or above check mean																						
ECB = European corn borer tolerance																						
GLS = Gray leafspot resistance																						
MDR = Mal de Rio Cuarto virus tolerance																						
NLB = Northern leaf blight resistance																						
SLB = Southern leaf blight resistance																						
Fuser = Fusarium ear rot resistance																						
Fumonisin = Low level of fumonisin (Fusarium mycotoxin)																						
Aflatoxin = Low level of aflatoxin (Aspergillus mycotoxin)																						
ASR=Anthracnose stalk rot resistance																						
AAI = Amino acid index of lysine, methionine, and tryptophan																						
Oil = Oil content > 4.5%, Protein = Protein content > 13%, and Starch = Starch thermal property																						
Bolded codes are Crop Science Registered																						

Racial Background of 258 GEM Releases				
Race	Ames Releases	NC Releases	Other Releases	Total Releases
Alazan	1	0	0	1
Argentino	6	0	0	6
Camelia	7	0	1	8
Canilla	0	0	0	0
Cateto	0	11	0	11
Cateto Sulino	4	0	0	4
Composite (Suwan)	5	0	0	5
Composite (Tuxpeño)	1	0	0	1
Corn Belt Dent	1	0	0	1
Criollo	1	0	0	1
Criollo/Argentino (CUBA164)	14	1	2	17
Criollo/Tuson (CUBA173)	1	0	0	1
Cristalino Colorado	14	0	2	16
Cuban yellow	5	2	0	7
Dent. Blanco Rugoso	2	0	3	5
Dentado Blanco	4	0	0	4
Dente Amarelo	7	3	1	11
Dente Branco	4	0	0	4
Early Caribbean	1	0	0	1
Hybrid Blanco	0	0	0	0
Hybrid-tropical	18	71	4	93
Mixed	12	0	4	16
GEM Derived*	3	0	0	3
Multiple Borer Composite	1	0	0	1
Semidentado Riograndense	2	0	0	2
Southern Dent	0	0	0	0
St. Croix	1	0	1	2
Suwan	7	1	0	8
Tropical Line	0	5	0	5
Tusón	10	2	1	13
Tuxpeño	3	6	0	9
Tuxpeño/Olotillo	1	0	0	1
Unclassified	1	0	0	1
Totals	137	102	19	258

*GEMS-0218: (CUBA164:S2012-459-001-B/GEMS-0002)-B-B-011

*GEMS-0219: (CUBA164:S2012-459-001-B/GEMS-0002)-B-B-031

*GEMS-0220: (GEMS-0113/GEMS-0091)-B-058-001

Ames Grain Yield Trials

121001 (Retest)							121002 (Retest)						
Tester: HC33							Tester: MBS3633						
Rep: 8							Rep: 8						
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
41 NEI9004:N0803-B-053	166.7	21.2	7.9	55.5	0.0	1.4	57 Pioneer 33F85	165.1	19.9	8.3	57.2	2.3	4.9
56 HC33xLH287	164.7	18.5	8.9	56.5	1.0	9.8	56 Pioneer 31D58	159.4	22.1	7.2	56.9	1.8	1.1
59 Pioneer 33F85	163.5	20.0	8.2	56.8	2.4	9.7	55 LH200xLH262	158.0	23.2	6.8	54.9	7.9	22.7
58 Pioneer 31D58	162.6	23.1	7.0	56.3	0.9	0.0	43 NEI9004:N0803-B-062	157.9	20.2	7.8	57.6	5.8	2.4
57 LH200xLH262	160.1	23.9	6.7	54.8	0.3	1.5	40 NEI9004:N0803-B-053	149.0	20.4	7.3	56.8	13.6	6.5
21 CML323:N1546-B-049	159.7	21.6	7.4	56.8	2.7	11.6	35 NEI9004:N0803-B-036	146.3	20.3	7.2	57.6	21.8	5.8
45 NEI9004:N0803-B-066	150.4	21.8	6.9	55.5	0.0	4.9	9 CUBA110:N1746-B-018	146.3	20.7	7.1	58.4	5.7	3.3
16 DK212T:N11a10-B-049	149.4	19.5	7.7	57.2	2.7	7.2	32 NEI9004:N0803-B-027	146.0	20.4	7.2	56.9	7.5	6.7
19 CML323:N1546-B-040	149.2	21.4	7.0	55.7	1.3	6.6	18 CML323:N1546-B-040	145.9	21.0	7.0	55.2	11.2	1.5
14 DK212T:N11a10-B-003	148.4	20.8	7.1	56.1	1.5	3.8	22 DK212T:N11a10-B-118	144.0	20.0	7.2	57.2	13.3	4.4
33 NEI9004:N0803-B-027	148.0	20.3	7.3	56.8	1.3	4.4	5 ANTIG03:N1242-B-062	143.7	18.5	7.8	58.7	3.5	4.8
23 DK212T:N11a10-B-110	146.6	21.2	6.9	55.4	0.7	2.9	6 CML329:N1899d-B-031	143.0	19.6	7.3	57.1	8.8	12.5
11 CML329:N1899d-B-031	146.2	18.4	8.0	57.5	0.0	0.4	21 DK212T:N11a10-B-110	143.0	20.0	7.2	55.7	2.3	6.9
17 DK212T:N11a10-B-060	145.8	19.8	7.4	56.2	2.0	11.8	12 DK212T:N11a10-B-035	142.4	20.1	7.1	55.6	13.8	3.2
36 NEI9004:N0803-B-036	145.6	19.6	7.4	57.9	1.6	1.4	50 GEMN-0191	142.3	17.9	8.0	57.4	10.1	6.0
34 NEI9004:N0803-B-029	145.5	19.6	7.4	56.0	2.7	6.1	29 NEI9004:N0803-B-018	141.7	20.5	6.9	56.0	1.2	2.1
38 NEI9004:N0803-B-039	144.2	21.3	6.8	54.9	1.5	3.4	42 NEI9004:N0803-B-058	141.5	19.8	7.1	57.6	1.0	0.3
31 NEI9004:N0803-B-018	142.3	21.0	6.8	55.7	1.4	2.7	16 PASCO14:N04-004-001	141.2	20.6	6.8	56.9	21.5	7.1
7 CML329:N1834-B-038	141.2	21.0	6.7	55.2	0.3	7.7	45 NEI9004:N0803-B-069	140.9	20.4	6.9	56.7	4.2	2.5
3 DK212T:N11a10-B-035	140.7	20.0	7.0	56.2	1.9	9.7	53 MBS3633/MBS8814	140.7	18.0	7.8	56.5	16.1	1.3
Test Entry Means	135.2	19.9	6.8	56.6	2.3	5.4	Test Entry Means	134.4	19.7	6.8	57.0	8.5	5.3
Check Means	154.0	20.8	7.4	56.3	1.0	5.3	Check Means	148.8	19.9	7.5	56.8	5.8	7.8
CV	16.7	7.4					CV	18.7	6.1				
F-value	2.6	6.2					F-value	1.6	6.7				
LSD (p=0.05)	22.6	1.5					LSD (p=0.05)	25.2	1.2				

121201							121301						
Tester: LH287							Tester: HC33						
Rep: 4							Rep: 5						
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
47 Pioneer 33F85	189.4	20.3	9.3	57.4	0.4	12.5	69 Pioneer 33F85	177.0	20.6	8.6	56.8	2.1	3.8
45 LH200xLH262	161.1	25.8	6.3	54.7	7.8	27.0	67 LH200xLH262	176.0	24.7	7.1	55.5	1.5	10.3
46 Pioneer 31D58	156.6	24.7	6.3	56.4	0.0	2.4	26 MDI022:N99d99h-B-030	165.7	20.4	8.1	55.6	6.1	5.5
44 HC33xLH287	156.4	20.2	7.8	56.6	15.2	32.6	70 Pioneer 34R65	158.2	18.6	8.5	59.2	2.4	9.4
1 TZISTRI112:S99n-B-001	148.8	20.0	7.5	58.7	4.3	22.1	66 HC33xLH287	156.4	18.9	8.3	56.1	3.6	13.7
10 TZISTRI112:S99n-B-017	146.2	21.5	6.8	56.4	25.0	25.3	59 MDI022:N99d99h-B-064	155.4	18.2	8.5	57.8	6.4	16.0
32 TZISTRI112:S99n-B-054	144.8	20.2	7.2	58.4	10.1	28.0	35 MDI022:N99d99h-B-040	155.0	16.8	9.2	57.6	1.1	3.4
34 TZISTRI112:S99n-B-058	143.9	21.8	6.6	57.0	14.7	21.4	25 MDI022:N99d99h-B-029	153.3	19.2	8.0	58.3	2.9	14.0
48 Pioneer 34R65	143.3	18.3	7.8	58.5	2.3	17.1	68 Pioneer 31D58	152.7	24.4	6.2	55.6	3.5	3.0
25 TZISTRI112:S99n-B-043	143.2	20.3	7.1	55.9	13.7	38.4	3 MDI022:N99d99h-B-003	152.7	20.3	7.5	56.7	0.6	9.6
37 TZISTRI112:S99n-B-063	142.8	22.2	6.4	56.2	2.0	21.9	62 MDI022:N99d99h-B-067	152.4	20.5	7.5	57.0	4.0	6.6
41 TZISTRI112:S99n-B-068	140.5	21.8	6.4	57.0	13.8	33.8	22 MDI022:N99d99h-B-024	149.3	18.2	8.2	58.5	4.5	5.9
23 TZISTRI112:S99n-B-037	140.2	21.2	6.6	58.4	19.6	28.4	11 MDI022:N99d99h-B-011	148.8	17.6	8.4	58.3	9.2	2.0
21 TZISTRI112:S99n-B-035	139.3	20.1	6.9	57.9	26.4	30.2	56 MDI022:N99d99h-B-061	148.5	18.8	7.9	58.0	5.7	4.8
22 TZISTRI112:S99n-B-036	139.0	22.9	6.1	56.3	17.1	37.8	33 MDI022:N99d99h-B-038	148.0	17.9	8.3	57.6	4.7	6.8
18 TZISTRI112:S99n-B-032	138.3	20.5	6.8	55.7	14.7	34.8	55 MDI022:N99d99h-B-060	147.1	19.5	7.5	57.2	7.9	5.3
33 TZISTRI112:S99n-B-057	138.2	22.9	6.0	55.8	27.3	28.1	54 MDI022:N99d99h-B-059	146.8	16.7	8.8	57.5	6.2	10.7
13 TZISTRI112:S99n-B-021	137.7	21.2	6.5	57.2	1.5	12.9	42 MDI022:N99d99h-B-047	145.8	17.6	8.3	57.8	6.1	0.6
26 TZISTRI112:S99n-B-044	137.1	19.7	6.9	58.0	16.9	35.2	17 MDI022:N99d99h-B-019	144.8	18.6	7.8	57.8	7.6	7.5
7 TZISTRI112:S99n-B-010	135.4	22.0	6.1	56.5	16.1	27.0	60 MDI022:N99d99h-B-065	144.7	17.6	8.2	59.5	2.7	14.4
Test Entry Means	131.1	21.3	6.2	57.0	15.7	27.3	Test Entry Means	134.8	18.8	7.2	57.6	4.8	8.3
Check Means	161.4	21.9	7.4	56.7	5.1	18.3	Check Means	164.1	21.5	7.6	56.7	2.6	8.1
CV	15.8	4.8					CV	15.5	8.4				
F-value	1.7	7.7					F-value	2.3	4.2				
LSD (p=0.05)	30.1	1.5					LSD (p=0.05)	27.1	2.0				

121302		Tester: LH287			Rep: 4		121303		Tester: LH287			Rep: 5			
		Yield	%	Y/	%	%			Yield	%	Y/	%	%		
Ent.	Pedigree	B/A	Moist	M	TWT	S.L.	R.L.	Ent.	Pedigree	B/A	Moist	M	TWT	S.L.	R.L.
59	Pioneer 33F85	178.6	19.6	9.1	57.8	2.6	1.9	37	LH200xLH262	188.2	23.3	8.1	55.4	7.0	6.2
22	BR105:S1646-B-031	164.1	19.9	8.2	56.9	26.2	7.8	22	CUBA164:T26aS41-B-040	179.0	21.1	8.5	57.1	6.5	19.2
26	BR105:S1646-B-036	160.4	18.1	8.9	56.7	5.4	8.2	23	CUBA164:T26aS41-B-041	178.8	21.0	8.5	58.5	15.1	8.8
57	LH200xLH262	159.1	24.0	6.6	55.4	4.8	5.1	39	Pioneer 33F85	172.0	19.4	8.9	57.1	8.0	7.8
58	Pioneer 31D58	153.9	22.1	7.0	57.1	1.1	0.4	36	HC33xLH287	166.2	19.3	8.6	57.7	6.6	20.9
33	BR105:S1646-B-043	150.9	20.4	7.4	56.2	22.2	1.5	40	Pioneer 34R65	163.0	19.3	8.5	58.5	0.6	0.0
43	BR105:S1646-B-056	150.4	21.5	7.0	57.0	2.0	4.1	17	CUBA164:T26aS41-B-028	162.7	22.1	7.4	56.1	5.9	19.3
60	Pioneer 34R65	149.0	18.5	8.1	59.0	1.9	1.9	12	CUBA164:T26aS41-B-022	160.7	22.3	7.2	55.5	8.5	8.8
56	HC33xLH287	148.7	18.7	8.0	57.4	8.4	8.1	34	CUBA164:T26aS41-B-063	157.2	19.5	8.0	57.2	12.2	23.6
14	BR105:S1646-B-018	146.4	18.7	7.8	56.7	4.5	3.1	3	CUBA164:T26aS41-B-004	157.0	21.7	7.3	57.7	3.5	22.1
2	BR105:S1646-B-004	142.5	18.9	7.5	59.2	27.1	5.4	8	CUBA164:T26aS41-B-011	156.7	20.5	7.7	57.5	7.4	12.6
15	BR105:S1646-B-019	142.4	20.0	7.1	57.5	2.9	3.9	21	CUBA164:T26aS41-B-039	154.2	21.8	7.1	55.8	14.7	20.6
52	BR105:S1646-B-067	138.9	17.7	7.9	56.9	7.6	5.3	33	CUBA164:T26aS41-B-062	153.7	21.9	7.0	57.0	11.6	10.6
20	BR105:S1646-B-027	138.7	19.1	7.2	57.9	17.1	3.0	27	CUBA164:T26aS41-B-047	153.5	19.2	8.0	58.0	7.2	21.2
48	BR105:S1646-B-061	136.5	19.7	6.9	58.1	18.9	5.3	31	CUBA164:T26aS41-B-057	153.5	20.4	7.5	57.5	7.1	23.0
44	BR105:S1646-B-057	135.9	18.5	7.3	57.1	32.1	4.1	14	CUBA164:T26aS41-B-024	152.3	19.0	8.0	57.8	17.3	26.3
13	BR105:S1646-B-016	135.2	19.6	6.9	58.8	18.3	5.5	15	CUBA164:T26aS41-B-025	151.9	22.7	6.7	56.4	3.8	20.0
1	BR105:S1646-B-002	134.9	20.9	6.5	58.6	6.9	7.3	18	CUBA164:T26aS41-B-029	150.6	20.8	7.2	56.6	5.0	13.2
36	BR105:S1646-B-046	134.4	18.5	7.3	57.3	27.5	7.8	4	CUBA164:T26aS41-B-005	149.4	19.9	7.5	57.2	7.3	29.2
29	BR105:S1646-B-039	133.0	19.8	6.7	56.4	20.8	9.6	13	CUBA164:T26aS41-B-023	148.2	21.1	7.0	57.8	12.0	15.8
Test Entry Means		127.3	19.2	6.6	57.2	19.3	6.1	Test Entry Means		145.5	20.8	7.0	57.0	13.0	20.5
Check Means		157.8	20.6	7.7	57.3	3.7	3.5	Check Means		167.2	20.9	8.0	57.0	4.4	8.0
CV		23.1	6.1					CV		15.9	5.5				
F-value		1.0	4.1					F-value		2.2	7.0				
LSD (p=0.05)		43.3	1.7					LSD (p=0.05)		29.8	1.4				

121304		Tester: AGR-nSS		Rep: 5		121306		Tester: MBS8814		Rep: 6					
		Yield	%	Y/	%	%			Yield	%	Y/	%	%		
Ent.	Pedigree	B/A	Moist	M	TWT	S.L.	R.L.	Ent.	Pedigree	B/A	Moist	M	TWT	S.L.	R.L.
77	BR105:S1643-161-001	189.7	21.9	8.7	52.8	0.0	3.9	12	DK212:S0950-B-025	183.7	20.3	9.0	54.1		4.3
11	BR105:S1643-015-001	183.1	21.9	8.4	54.0	0.4	5.0	63	DK212:S0950-B-083	182.2	20.9	8.7	53.9		5.5
80	Agrigold 6533VT3PRO	182.3	19.3	9.4	55.9	0.8	1.4	24	DK212:S0950-B-038	175.2	20.4	8.6	54.1		11.2
88	Pioneer 33F85	178.4	19.3	9.3	56.8	0.3	2.8	54	DK212:S0950-B-072	175.0	21.3	8.2	53.7		6.7
57	BR105:S1643-105-001	175.9	21.9	8.0	56.6	0.0	8.3	10	DK212:S0950-B-021	171.6	21.9	7.8	53.5		3.4
66	BR105:S1643-126-001	175.3	21.1	8.3	54.7	0.0	3.3	26	DK212:S0950-B-041	171.3	21.5	8.0	53.7		5.5
86	Pioneer 31D58	175.0	21.1	8.3	57.5	0.0	2.1	7	DK212:S0950-B-018	169.4	21.2	8.0	53.7		3.7
42	BR105:S1643-077-001	172.4	21.1	8.2	58.2	2.8	8.3	13	DK212:S0950-B-026	168.6	20.7	8.1	54.0		4.9
3	BR105:S1643-004-001	171.4	21.3	8.0	53.9	3.5	10.5	29	DK212:S0950-B-003	165.8	21.0	7.9	54.9		6.7
25	BR105:S1643-041-001	171.0	20.1	8.5	55.5	2.8	10.6	8	DK212:S0950-B-019	165.7	20.5	8.1	54.1		8.4
71	BR105:S1643-142-001	170.8	20.8	8.2	57.0	0.0	3.1	32	DK212:S0950-B-048	165.6	20.8	8.0	56.4		
52	BR105:S1643-094-001	169.9	21.3	8.0	55.0	0.0	17.4	52	DK212:S0950-B-070	165.4	20.2	8.2	55.2		4.2
45	BR105:S1643-082-001	169.8	21.8	7.8	55.3	0.3	11.1	59	DK212:S0950-B-077	163.4	21.2	7.7	53.9		6.9
63	BR105:S1643-122-001	169.3	22.4	7.6	55.9	0.0	7.6	33	DK212:S0950-B-049	162.7	20.7	7.9	54.0		5.6
43	BR105:S1643-078-001	169.2	20.5	8.3	56.3	0.0	9.4	37	DK212:S0950-B-054	162.4	20.4	8.0	55.1		7.8
54	BR105:S1643-101-001	169.2	20.4	8.3	55.9	6.9	11.4	47	DK212:S0950-B-065	162.0	20.3	8.0	54.1		4.2
41	BR105:S1643-076-001	168.5	19.8	8.5	55.4	0.3	23.6	42	DK212:S0950-B-059	161.6	20.6	7.8	54.1		8.5
26	BR105:S1643-042-001	167.3	23.5	7.1	55.5	0.4	0.0	9	DK212:S0950-B-020	161.6	20.4	7.9	54.0		10.8
73	BR105:S1643-147-001	167.1	20.3	8.2	55.5	0.0	13.9	51	DK212:S0950-B-069	161.4	20.9	7.7	53.9		5.7
72	BR105:S1643-146-001	166.6	22.9	7.3	54.6	0.0	1.4	70	DK212:S0950-B-158	161.1	21.7	7.4	53.7		5.5
Test Entry Means		151.5	21.1	7.2	55.6	1.0	7.9	Test Entry Means		155.6	20.9	7.4	54.2		6.5
Check Means		162.1	19.6	8.3	56.2	0.2	3.3	Check Means		149.0	20.4	7.3	54.0		7.6
CV		15.1	6.9					CV		14.7	5.6				
F-value		2.4	4.1					F-value		1.2	2.2				
LSD (p=0.05)		29.7	1.8					LSD (p=0.05)		26.7	1.4				

121307

Tester: MON-nSS Rep: 4

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
19 NS1:S0852-B-021	175.0	20.5	8.6	56.3	5.7	3.5
2 Pioneer 33F85	174.6	20.1	8.7	58.1	0.9	0.0
23 NS1:S0852-B-026	168.7	18.5	9.1	57.3	10.3	0.6
50 NS1:S0852-B-070	161.5	17.3	9.3	59.5	25.0	0.0
4 HC33xLH287	160.9	18.7	8.6	58.7	11.7	0.0
35 NS1:S0852-B-053	160.2	17.8	9.0	58.0	18.8	0.9
48 NS1:S0852-B-068	160.1	17.9	9.0	58.3	15.6	0.6
36 NS1:S0852-B-054	159.4	17.5	9.1	57.9	9.7	0.3
46 NS1:S0852-B-066	159.1	19.3	8.2	56.9	24.2	0.3
33 NS1:S0852-B-049	159.1	19.8	8.0	57.6	14.0	0.0
15 NS1:S0852-B-013	159.0	19.1	8.3	59.6	17.6	0.0
57 NS1:S0852-B-081	158.8	17.9	8.9	58.6	8.0	0.9
5 LH200xLH262	157.9	25.1	6.3	57.1	2.9	0.6
7 NS1:S0852-B-003	156.5	17.9	8.8	58.2	20.8	1.1
54 NS1:S0852-B-075	156.2	18.5	8.4	58.0	14.6	0.3
51 NS1:S0852-B-071	155.2	18.2	8.6	57.7	19.4	0.0
26 NS1:S0852-B-036	154.1	18.2	8.5	57.2	19.9	0.3
30 NS1:S0852-B-043	153.8	19.1	8.0	59.6	17.1	0.0
25 NS1:S0852-B-030	152.9	17.0	9.0	57.1	21.1	0.0
31 NS1:S0852-B-044	152.4	18.3	8.3	58.9	7.2	0.0
Test Entry Means	143.2	18.9	7.6	58.1	16.6	0.5
Check Means	154.7	20.9	7.4	58.2	3.5	0.2
CV	14.8	6.9				
F-value	1.5	4.9				
LSD (p=0.05)	29.7	2.0				

121308

Tester: MON-SS Rep: 2

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
2 Pioneer 33F85	173.2	20.4	8.5	55.3	15.1	
5 LH200xLH262	128.2	31.2	4.1	56.0	3.5	
10 MBRC10:N1749b-B-016	126.2	16.8	7.5	58.4	5.3	0.0
3 Pioneer 31D58	122.6	30.0	4.1	56.2	2.3	
33 MBRC10:N1749b-B-071	122.0	14.3	8.5	58.8	1.2	
1 Pioneer 34R65	120.7	20.3	6.0	58.3	1.8	38.9
25 MBRC10:N1749b-B-048	115.7	15.4	7.5	56.7	4.1	0.0
21 MBRC10:N1749b-B-044	115.2	16.7	6.9	59.8	15.1	5.6
27 MBRC10:N1749b-B-058	115.2	18.2	6.3	59.4	0.0	24.4
22 MBRC10:N1749b-B-045	114.6	16.7	6.9	58.9	21.2	0.0
13 MBRC10:N1749b-B-023	113.2	16.4	6.9	58.1	10.8	11.1
42 MBRC10:N1749b-B-098	110.7	15.2	7.3	58.1	4.6	0.0
36 MBRC10:N1749b-B-080	110.5	15.6	7.1	54.8	9.2	7.8
48 MBRC10:N1749b-B-113	108.1	16.9	6.4	58.8	16.2	0.0
11 MBRC10:N1749b-B-019	108.0	16.7	6.5	57.7	21.8	0.0
28 MBRC10:N1749b-B-059	107.3	14.7	7.3	57.2	5.2	0.0
24 MBRC10:N1749b-B-047	107.3	15.5	6.9	58.9	30.8	0.0
35 MBRC10:N1749b-B-077	102.6	17.1	6.0	58.5	15.1	5.6
41 MBRC10:N1749b-B-097	102.5	16.3	6.3	57.9	9.2	7.8
32 MBRC10:N1749b-B-070	101.6	16.2	6.3	59.2	16.3	36.7
Test Entry Means	95.7	15.9	6.0	57.9	12.1	5.6
Check Means	127.8	24.8	5.2	56.6	5.1	19.5
CV	21.5	4.9				
F-value	1.3	19.7				
LSD (p=0.05)	45.5	1.8				

121309

Tester: MON-SS Rep: 3

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
3 Pioneer 31D58	179.7	30.6	5.9	57.0	1.8	0.0
5 LH200xLH262	163.4	26.5	6.2	56.5	1.2	1.2
46 MBRC10:N1730-B-095	156.6	15.7	10.0	56.0	3.1	0.0
4 HC33xLH287	156.2	19.7	7.9	57.3	0.8	0.0
2 Pioneer 33F85	156.0	23.1	6.7	56.3	3.9	0.0
1 Pioneer 34R65	155.3	18.2	8.5	56.7	0.0	0.0
59 MBRC10:N1730-B-128	150.7	15.6	9.6	56.3	4.2	0.0
48 MBRC10:N1730-B-097	144.7	15.7	9.2	56.3	3.1	8.1
63 MBRC10:N1730-B-135	143.3	15.3	9.4	54.7	14.7	0.0
35 MBRC10:N1730-B-074	141.2	15.3	9.3	55.6	3.9	0.0
33 MBRC10:N1730-B-070	138.0	14.1	9.8	55.1	24.4	0.0
6 MBRC10:N1730-B-001	137.8	16.2	8.5	55.4	16.3	0.0
56 MBRC10:N1730-B-113	137.8	14.1	9.8	55.6	0.4	0.0
40 MBRC10:N1730-B-087	137.1	14.4	9.5	56.4	2.3	0.0
19 MBRC10:N1730-B-039	136.7	14.7	9.3	55.6	1.9	0.0
55 MBRC10:N1730-B-108	135.3	15.2	8.9	54.9	0.8	0.0
8 MBRC10:N1730-B-010	134.1	15.1	8.9	58.1	11.2	0.0
53 MBRC10:N1730-B-104	134.1	13.9	9.6	56.2	8.8	0.0
49 MBRC10:N1730-B-099	132.8	14.7	9.0	56.0	1.1	0.0
54 MBRC10:N1730-B-105	132.4	14.5	9.1	55.7	4.6	2.2
Test Entry Means	124.7	14.9	8.4	55.8	7.4	0.7
Check Means	162.1	23.6	6.9	56.8	1.5	0.2
CV	13.8	7.1				
F-value	1.9	13.2				
LSD (p=0.05)	28.8	1.8				

121310

Tester: SYG-nSS Rep: 5

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
58 HC33xLH287	151.0	21.5	7.0		1.5	29.4
18 BR105:S1641-062-001	150.5	24.1	6.2	60.9	14.7	44.1
56 Pioneer 33F85	148.4	20.3	7.3		3.7	0.0
39 BR105:S1641-119-001	147.3	26.0	5.7		8.8	
57 Pioneer 31D58	146.8	23.8	6.2	62.6	1.5	0.0
7 BR105:S1641-017-001	146.8	21.4	6.9	62.9	27.2	22.1
44 BR105:S1641-130-001	143.1	23.4	6.1	62.8	19.1	
21 BR105:S1641-070-001	142.9	24.2	5.9	63.5	2.2	2.9
17 BR105:S1641-061-001	141.8	22.5	6.3	63.0	5.9	
3 BR105:S1641-006-001	140.2	25.8	5.4	63.5	3.0	14.7
52 BR105:S1641-150-001	140.2	24.3	5.8	63.1	13.2	
19 BR105:S1641-063-001	138.9	25.0	5.6	60.8	1.5	36.8
49 BR105:S1641-142-001	138.7	22.4	6.2	55.6	0.8	19.1
40 BR105:S1641-124-001	138.6	24.7	5.6	61.7	14.7	44.1
4 BR105:S1641-007-001	138.2	22.6	6.1	61.9	5.2	14.7
54 BR105:S1641-166-001	138.0	23.6	5.9	56.1	4.4	0.0
55 Pioneer 34R65	136.0	18.5	7.4	60.5	0.0	0.0
53 BR105:S1641-156-001	135.5	24.5	5.5	62.4	11.8	100.0
6 BR105:S1641-011-001	134.9	23.5	5.7	62.8	3.0	29.4
30 BR105:S1641-094-001	133.2	24.3	5.5	62.2	3.7	1.5
Test Entry Means	128.3	23.9	5.4	61.5	8.0	23.8
Check Means	138.4	21.8	6.4	61.1	7.2	25.9
CV	14.3	7.4				
F-value	1.9	3.2				
LSD (p=0.05)	24.0	2.3				

121311

Tester: SYG-nSS

Rep: 5

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
58	HC33xLH287	169.4	20.9	8.1		3.0	100.0
56	Pioneer 33F85	159.6	20.2	7.9	61.3	7.4	8.8
18	BR105:S1641-212-001	153.0	24.3	6.3	63.7	8.1	51.5
57	Pioneer 31D58	149.8	23.7	6.3	60.8	2.9	0.0
7	BR105:S1641-178-001	147.9	25.2	5.9		4.4	14.7
3	BR105:S1641-170-001	147.5	24.5	6.0	61.0	9.6	44.1
20	BR105:S1641-214-001	147.4	23.7	6.2	62.3	22.1	
10	BR105:S1641-189-001	147.1	23.3	6.3	62.4	7.4	100.0
55	Pioneer 34R65	146.8	19.1	7.7	59.7	3.7	14.7
41	BR105:S1641-262-001	146.3	24.1	6.1	64.4	12.5	8.8
21	BR105:S1641-217-001	145.8	25.8	5.6		0.0	17.6
19	BR105:S1641-213-001	141.9	23.5	6.0	61.6	3.0	17.6
9	BR105:S1641-187-001	141.4	24.4	5.8	63.3	8.8	36.8
24	BR105:S1641-227-001	140.6	25.1	5.6	63.5	11.0	58.8
1	BR105:S1641-167-001	140.6	23.6	6.0	61.7	0.0	
31	BR105:S1641-238-001	139.8	23.1	6.0	60.3	10.3	100.0
42	BR105:S1641-266-001	139.2	24.1	5.8	63.1	1.5	44.1
8	BR105:S1641-186-001	139.2	25.9	5.4	61.6	16.2	
46	BR105:S1641-277-001	137.7	22.6	6.1	61.2	3.7	2.9
33	BR105:S1641-240-001	137.5	22.2	6.2	62.9	1.5	4.4
Test Entry Means		130.4	23.6	5.5	62.0	8.5	33.1
Check Means		152.2	21.3	7.2	61.0	6.0	33.5
CV		12.6	7.0				
F-value		3.0	3.6				
LSD (p=0.05)		21.4	2.1				

121401

Tester: HC33

Rep: 5

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
45	NEI9008:N082699ai-B-051	186.9	22.8	8.2	55.7	4.7	2.9
56	NEI9008:N082699ai-B-062	182.3	24.7	7.4	55.5	3.5	2.5
28	NEI9008:N082699ai-B-033	179.5	23.8	7.5	57.1	1.2	20.9
51	NEI9008:N082699ai-B-057	178.3	24.1	7.4	56.2	2.4	10.6
69	Pioneer 33F85	176.3	20.7	8.5	57.0	3.6	5.9
41	NEI9008:N082699ai-B-047	174.3	23.3	7.5	56.2	6.6	17.9
39	NEI9008:N082699ai-B-045	172.7	21.9	7.9	56.3	8.2	11.9
7	NEI9008:N082699ai-B-007	172.7	22.4	7.7	58.0	6.1	6.6
67	LH200xLH262	172.3	25.9	6.7	54.9	1.5	10.1
17	NEI9008:N082699ai-B-020	171.3	24.2	7.1	54.8	1.3	30.8
35	NEI9008:N082699ai-B-041	171.0	22.4	7.6	55.5	0.3	4.4
68	Pioneer 31D58	171.0	24.8	6.9	57.0	2.8	3.8
42	NEI9008:N082699ai-B-048	170.3	24.1	7.1	57.2	2.6	9.8
4	NEI9008:N082699ai-B-004	168.7	24.5	6.9	55.5	3.4	4.8
65	NEI9008:N082699ai-B-072	168.1	24.7	6.8	55.3	3.3	3.7
46	NEI9008:N082699ai-B-052	168.0	23.6	7.1	56.5	1.8	18.0
21	NEI9008:N082699ai-B-026	166.4	24.3	6.8	56.1	6.7	7.6
60	NEI9008:N082699ai-B-066	166.3	24.0	6.9	56.3	5.8	12.8
66	HC33xLH287	165.8	19.2	8.6	55.9	2.7	9.0
47	NEI9008:N082699ai-B-053	165.1	22.7	7.3	56.0	11.9	13.5
Test Entry Means		156.7	23.0	6.8	56.6	4.4	7.5
Check Means		163.8	21.9	7.5	56.5	2.4	6.7
CV		15.4	6.4				
F-value		1.4	6.6				
LSD (p=0.05)		30.3	1.8				

121402

Tester: HC33

Rep: 5

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
11	NEI9008:N082699ai-B-084	188.0	23.9	7.9	55.9	10.1	5.6
69	Pioneer 33F85	187.0	20.9	8.9	57.1	3.5	4.5
25	NEI9008:N082699ai-B-100	182.4	23.0	7.9	55.0	3.0	5.7
2	NEI9008:N082699ai-B-074	178.0	22.5	7.9	56.4	2.2	1.1
67	LH200xLH262	171.8	25.3	6.8	55.8	4.6	22.9
43	NEI9008:N082699ai-B-118	168.8	25.6	6.6	56.6	2.6	8.6
1	NEI9008:N082699ai-B-073	168.5	22.6	7.5	56.6	7.8	23.4
58	NEI9008:N082699ai-B-137	167.6	22.1	7.6	58.1	2.1	4.7
53	NEI9008:N082699ai-B-131	167.2	23.3	7.2	56.3	3.0	9.1
15	NEI9008:N082699ai-B-088	167.0	25.7	6.5	55.9	2.9	2.6
65	NEI9008:N082699ai-B-145	163.9	22.5	7.3	55.6	3.6	26.9
21	NEI9008:N082699ai-B-095	163.6	23.5	7.0	56.5	1.5	8.7
56	NEI9008:N082699ai-B-134	161.0	23.2	6.9	56.4	2.2	5.0
59	NEI9008:N082699ai-B-138	160.9	21.7	7.4	56.3	7.7	6.6
32	NEI9008:N082699ai-B-107	160.6	21.7	7.4	57.4	0.9	2.8
63	NEI9008:N082699ai-B-143	160.4	20.4	7.9	58.2	15.3	12.3
33	NEI9008:N082699ai-B-108	160.4	24.0	6.7	55.6	3.2	20.6
8	NEI9008:N082699ai-B-081	159.9	22.6	7.1	57.1	7.3	2.0
51	NEI9008:N082699ai-B-129	158.5	21.1	7.5	58.5	5.5	3.1
64	NEI9008:N082699ai-B-144	158.0	25.9	6.1	55.4	4.6	20.6
Test Entry Means		147.4	23.2	6.4	56.3	4.9	9.0
Check Means		157.7	21.7	7.3	56.8	3.8	11.4
CV		16.1	6.7				
F-value		2.6	6.0				
LSD (p=0.05)		30.2	2.0				

121403

Tester: MBS9508

Rep: 4

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
11	BR105:S162699aj-B-012	160.3	24.1	6.7	56.4	2.7	5.9
15	BR105:S162699aj-B-016	159.2	22.3	7.1	57.0	4.8	7.8
43	BR105:S162699aj-B-049	158.3	21.4	7.4	58.8	0.4	8.1
28	BR105:S162699aj-B-032	157.9	22.0	7.2	58.6	4.7	10.6
40	BR105:S162699aj-B-044	155.4	22.4	6.9	56.6	2.2	7.3
16	BR105:S162699aj-B-017	151.8	21.3	7.1	58.8	2.7	14.4
47	LH200xLH262	150.5	26.2	5.8	54.9	0.9	14.0
44	BR105:S162699aj-B-050	150.5	22.1	6.8	58.1	4.1	12.2
31	BR105:S162699aj-B-035	150.3	21.0	7.2	58.2	0.9	1.3
13	BR105:S162699aj-B-014	149.7	22.1	6.8	58.3	0.6	1.1
14	BR105:S162699aj-B-015	148.2	23.6	6.3	57.2	1.9	5.0
21	BR105:S162699aj-B-023	143.0	23.2	6.2	56.3	2.6	17.4
30	BR105:S162699aj-B-034	142.5	20.3	7.0	58.7	0.8	2.7
49	Pioneer 33F85	141.9	20.9	6.8	56.4	3.4	3.5
17	BR105:S162699aj-B-019	140.4	21.7	6.5	58.1	12.9	8.6
45	BR105:S162699aj-B-051	139.9	23.3	6.0	57.5	7.2	19.4
20	BR105:S162699aj-B-022	139.6	23.1	6.0	58.3	4.9	19.9
9	BR105:S162699aj-B-010	139.3	21.8	6.4	58.3	7.0	5.5
33	BR105:S162699aj-B-037	138.6	23.2	6.0	57.5	1.6	11.5
19	BR105:S162699aj-B-021	138.6	21.0	6.6	58.3	5.4	7.7
Test Entry Means		135.2	22.0	6.2	58.2	4.6	10.3
Check Means		134.7	21.5	6.3	56.9	1.0	8.5
CV		15.7	4.3				
F-value		1.5	8.3				
LSD (p=0.05)		30.4	1.3				

121404 (Retest)**Tester: LH287****Rep: 7**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
69 Pioneer 33F85	182.9	19.4	9.4	57.3	1.5	3.7
12 DKXL212:S0928-B-002	179.6	20.8	8.6	54.0	2.2	15.2
42 CUBA173:S0446-B-009	173.8	20.5	8.5	57.1	37.0	4.8
38 NEI9004:S2818-376-001-B-B-B	165.1	20.1	8.2	55.1	9.9	11.5
55 DKXL212:S0943b-066-001-B	162.8	21.2	7.7	54.2	4.5	4.9
10 PASCO14:S0146-143-001	162.6	21.0	7.8	56.9	10.8	4.1
67 LH200xLH262	161.6	21.6	7.5	54.5	6.8	8.0
64 DKXL212:S0943b-B-232-B	155.0	19.9	7.8	56.9	28.0	6.6
6 DKXL370:S08c17c-B-040	152.2	18.9	8.0	55.4	21.3	16.4
29 DKXL370:S08c17c-B-008	152.1	18.5	8.2	56.1	19.2	4.8
56 DKXL212:S0943b-077-001-B	150.1	19.5	7.7	56.9	2.4	5.2
49 CML325:S18-001-002-B	150.0	19.8	7.6	55.6	20.9	6.6
31 DKXL370:S08c17c-B-033	149.6	18.6	8.0	55.8	7.4	10.5
65 DKXL212:S0943b-(2n)-025	149.2	18.9	7.9	55.2	9.6	13.8
40 GEMS-0202	148.6	20.0	7.4	55.1	2.2	12.3
16 DKXL380:S08a15-B-005	148.4	22.6	6.6	53.8	13.2	13.4
68 Pioneer 31D58	148.3	21.9	6.8	55.3	4.2	2.4
20 BR105:S1699n-B-012	147.9	19.6	7.5	56.4	9.8	2.9
34 DKXL370:S08c17c-B-061	147.4	19.3	7.6	56.9	9.6	4.6
70 Pioneer 34R65	147.3	17.7	8.3	59.3	0.0	3.1
Test Entry Means	139.6	19.7	7.1	55.8	11.0	7.9
Check Means	154.7	19.7	7.9	56.6	3.5	4.7
CV	20.8	6.8				
F-value	1.4	5.1				
LSD (p=0.05)	31.5	1.4				

121405 (Retest)**Tester: MBS8814****Rep: 7**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
31 CUBA173:S0446-B-034	178.1	24.0	7.4	53.0	7.2	1.6
32 CUBA173:S0446-B-046	177.7	24.8	7.2	53.6	0.5	9.0
21 DKXL370:S08c17c-B-049	173.8	23.9	7.3	54.7	0.0	3.1
49 Pioneer 33F85	173.7	21.1	8.2	57.2	0.7	1.1
16 DKXL370:S08c17c-B-008	173.2	21.3	8.1	54.2	4.5	7.2
30 CUBA173:S0446-B-030	170.1	25.4	6.7	53.5	3.1	0.0
15 DKXL370:S08c17c-B-004	169.4	24.3	7.0	54.1	0.0	2.1
40 GEMS-0189	169.3	22.5	7.5	54.0	1.9	4.6
19 DKXL370:S08c17c-B-033	165.5	22.8	7.2	53.8	1.2	2.8
39 GEMS-0188	165.2	20.6	8.0	56.1	5.0	10.2
1 BG070404:D27S42-B-001	164.3	24.3	6.8	54.2	4.1	1.6
22 DKXL370:S08c17c-B-050	163.8	24.0	6.8	53.5	3.9	2.3
20 DKXL370:S08c17c-B-040	163.1	24.8	6.6	53.2	3.7	0.0
44 GEMS-0203	162.5	24.2	6.7	53.8	3.0	8.7
24 DKXL370:S08c17c-B-070	161.7	22.4	7.2	54.9	2.0	1.0
29 CUBA173:S0446-B-016	160.6	26.1	6.2	53.5	0.8	6.0
23 DKXL370:S08c17c-B-061	160.1	23.1	6.9	56.3	5.0	0.7
12 BVIR103:S3115-B-038	159.6	24.0	6.7	53.8	6.2	2.3
46 HC33xLH287	159.5	19.6	8.1	56.0	0.3	6.8
18 DKXL370:S08c17c-B-021	159.1	23.9	6.7	54.1	0.5	8.6
Test Entry Means	156.1	24.2	6.4	54.0	4.6	4.7
Check Means	157.4	22.2	7.1	55.9	1.2	3.4
CV	13.8	5.6				
F-value	1.6	12.1				
LSD (p=0.05)	22.6	1.4				

121406 (GEM Derived)**Tester: BAS-SS1****Rep: 6**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
39 Pioneer 33F85	167.6	19.8	8.5	57.2	18.8	0.0
38 LH200/LH262	156.3	24.2	6.5	55.4	23.4	8.1
5 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-007	147.7	20.1	7.4	57.0	12.5	0.0
14 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-019	147.5	19.5	7.6	57.4	1.6	0.0
1 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-001	147.4	19.0	7.8	57.7	6.2	0.0
30 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-039	147.2	19.6	7.5	57.4	6.3	0.0
9 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-013	141.7	19.6	7.2	57.4	0.0	0.0
35 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-050	141.2	20.0	7.1	57.4	3.1	0.0
18 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-023	140.1	20.3	6.9	57.0	0.0	0.0
13 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-018	140.0	21.9	6.4	56.4	0.0	0.0
23 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-028	138.7	22.9	6.1	55.9	1.6	0.0
3 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-004	138.1	18.9	7.3	57.8	7.8	0.0
29 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-038	138.0	18.1	7.6	58.2	1.6	0.0
6 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-008	137.7	19.8	7.0	57.5	6.3	0.0
22 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-027	137.6	18.9	7.3	57.7	3.1	0.0
32 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-044	137.3	19.3	7.1	57.6	3.1	0.0
15 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-020	136.6	18.8	7.3	57.8	17.2	0.0
12 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-016	136.3	20.1	6.8	57.1	3.1	0.0
28 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-036	133.9	19.6	6.8	57.3	4.7	0.0
37 HC33/LH287	133.6	18.0	7.4	58.3	0.0	2.7
Test Entry Means	132.7	19.6	6.8	57.4	5.0	0.0
Check Means	145.1	19.8	7.3	57.4	10.6	2.7
CV	14.4	6.3				
F-value	1.9	7.4				
LSD (p=0.05)	21.9	1.4				

121407 (GEM Derived)**Tester: BAS-SS2****Rep: 6**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
31 Pioneer 33F85	158.9	20.1	7.9	57.0	6.3	0.0
32 Pioneer 34R65	153.8	18.0	8.6	58.1	3.1	0.0
30 LH200/LH262	145.5	24.0	6.1	55.4	39.1	5.4
29 HC33/LH287	143.7	17.9	8.0	58.3	4.7	0.0
21 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-039	140.1	20.0	7.0	57.2	17.2	0.0
17 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-031	139.2	19.7	7.1	57.3	17.2	0.0
7 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-019	138.4	19.0	7.3	57.7	4.7	0.0
26 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-051	133.7	20.7	6.5	57.0	7.8	0.0
3 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-007	133.7	18.7	7.2	57.7	17.2	0.0
8 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-020	132.4	19.1	6.9	57.8	20.3	0.0
25 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-050	132.4	21.3	6.2	56.6	3.1	0.0
27 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-001	129.4	18.8	6.9	57.7	7.8	0.0
13 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-025	129.3	19.1	6.8	57.6	10.9	0.0
20 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-036	128.1	19.9	6.4	57.1	17.2	0.0
23 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-044	127.6	18.8	6.8	57.8	14.1	0.0
11 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-023	127.4	20.5	6.2	56.9	3.1	0.0
16 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-028	126.5	23.5	5.4	55.6	9.4	0.0
22 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-043	125.5	19.2	6.5	57.6	18.7	0.0
4 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-008	125.1	19.5	6.4	57.4	21.9	0.0
1 (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-004	124.2	20.1	6.2	57.0	17.2	0.0
Test Entry Means	124.6	19.7	6.3	57.3	12.3	0.0
Check Means	150.5	20.0	7.5	57.2	13.3	1.3
CV	13.7	5.5				
F-value	2.8	9.8				
LSD (p=0.05)	20.0	1.2				

125001 (Retest)**Tester: LH287****Rep: 7****125002 (Retest)****Tester: MBS8814****Rep: 7**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
69 Pioneer 33F85	196.2	19.7	10.0	57.7	0.8	5.6
68 Pioneer 31D58	193.6	22.4	8.7	56.8	2.5	1.0
66 HC33xLH287	186.8	18.3	10.2	55.8	2.7	6.6
37 UR13085:S99g99u-B-025	184.7	21.4	8.6	54.2	3.1	7.4
36 UR13085:S99g99u-B-023	183.0	21.2	8.6	54.3	2.1	4.8
56 AR16026:S1716-221-001-B	182.7	20.0	9.1	57.1	2.0	19.1
42 UR13085:S99g99u-B-058	182.0	22.7	8.0	53.8	3.1	4.5
44 AR17026:S1648-B-030	180.3	18.8	9.6	56.9	5.5	15.4
27 AR16035:S0209-B-011	178.9	18.4	9.7	57.4	1.3	13.7
64 AR16035:S0209-(2n)-026	178.7	20.5	8.7	54.6	0.6	18.4
30 AR16035:S0209-B-055	175.3	16.8	10.5	57.3	4.7	9.6
13 UR11002:S1446-038-001	175.1	19.5	9.0	55.3	4.9	6.8
40 UR13085:S99g99u-B-048	174.5	22.2	7.8	55.2	5.4	6.7
60 AR16035:S0209-196-001-B	174.3	19.1	9.1	57.8	2.8	6.1
41 UR13085:S99g99u-B-050	173.5	22.4	7.7	53.8	3.6	16.4
18 AR16021:S08b09b-B-108	172.7	19.9	8.7	57.0	3.3	6.9
46 AR17056:S1216-022-001	171.7	20.9	8.2	54.5	4.4	6.4
43 AR17026:S1648-B-010	170.6	19.8	8.6	55.8	6.6	14.8
47 AR17056:S1216-036-001	170.5	20.3	8.4	56.0	1.8	8.7
28 AR16035:S0209-B-036	170.4	20.6	8.3	54.3	5.1	4.0
Test Entry Means	162.7	20.2	8.0	55.9	5.0	12.0
Check Means	182.6	20.2	9.0	57.0	1.5	4.3
CV	11.3	6.7				
F-value	3.1	8.6				
LSD (p=0.05)	19.9	1.4				

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
32 UR13085:S99g99u-B-050	201.1	26.5	7.6	51.8	1.3	1.0
47 LH200xLH262	195.7	24.5	8.0	55.6	0.3	17.3
29 UR13085:S99g99u-B-036	193.9	24.6	7.9	53.8	3.2	4.1
35 AR17026:S1648-B-030	191.4	22.0	8.7	54.3	0.9	5.7
23 UR13085:S99g99u-B-001	191.0	27.1	7.0	53.4	4.8	0.3
33 UR13085:S99g99u-B-058	191.0	25.8	7.4	52.4	4.4	1.3
28 UR13085:S99g99u-B-026	190.6	26.7	7.1	51.2	4.2	3.8
45 MBS3633/MBS8814	190.0	22.3	8.5	53.5	8.3	2.0
44 GEMS-0199	188.3	23.4	8.1	53.7	0.6	0.0
41 AR17056:S1216-089-001	187.7	23.1	8.1	53.4	2.1	0.6
31 UR13085:S99g99u-B-048	187.2	26.4	7.1	53.9	6.8	0.9
25 UR13085:S99g99u-B-013	187.1	25.1	7.5	53.9	3.4	0.0
46 HC33xLH287	186.5	20.0	9.3	55.9	0.5	0.9
49 Pioneer 33F85	186.2	20.8	9.0	57.0	0.4	4.1
30 UR13085:S99g99u-B-039	185.4	25.6	7.2	52.1	4.8	1.2
26 UR13085:S99g99u-B-023	184.1	25.0	7.4	52.3	4.5	1.0
20 UR05017:S0409-B-036	180.8	22.7	7.9	53.4	2.7	7.6
16 AR16035:S0209-B-055	180.3	21.0	8.6	54.3	1.4	2.0
48 Pioneer 31D58	180.0	24.3	7.4	57.2	0.0	1.0
15 AR16035:S0209-B-045	179.9	23.5	7.7	52.3	2.3	1.2
Test Entry Means	175.7	23.5	7.5	53.8	3.7	1.9
Check Means	184.9	21.8	8.5	56.2	1.6	4.6
CV	12.3	5.4				
F-value	1.9	16.7				
LSD (p=0.05)	22.8	1.3				

125301								125302							
Tester: HC33								Tester: LH287							
Rep: 5								Rep: 4							
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.		Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	
69 Pioneer 33F85	213.4	18.9	11.3	57.8	0.0	0.0		59 Pioneer 33F85	193.2	18.7	10.4	58.2	1.6	0.0	
68 Pioneer 31D58	207.4	21.5	9.6	57.9	0.3	0.0		56 HC33xLH287	183.2	17.9	10.2	57.0	1.2	5.4	
66 HC33xLH287	190.2	16.8	11.3	57.9	0.6	1.3		58 Pioneer 31D58	179.5	21.6	8.3	56.8	0.0	0.4	
14 AR03056:N1630a-B-015	186.5	15.6	11.9	57.4	2.2	0.0		20 AR17056:S1217-B-025	164.2	20.9	7.9	56.0	0.5	5.5	
67 LH200xLH262	185.1	23.4	7.9	55.5	4.2	1.3		1 AR17056:S1217-B-001	162.3	18.8	8.6	56.2	3.8	6.9	
70 Pioneer 34R65	168.4	16.2	10.4	59.1	1.2	1.0		30 AR17056:S1217-B-038	161.6	18.6	8.7	56.5	12.5	3.0	
51 AR03056:N1630a-B-055	167.7	18.5	9.0	56.8	1.6	3.1		36 AR17056:S1217-B-044	155.9	19.3	8.1	56.6	0.0	1.1	
17 AR03056:N1630a-B-018	167.3	17.4	9.6	56.8	3.5	2.6		10 AR17056:S1217-B-014	155.6	18.9	8.2	58.1	0.4	2.5	
64 AR03056:N1630a-B-069	163.3	17.1	9.6	57.9	2.7	2.9		17 AR17056:S1217-B-022	155.3	19.5	8.0	57.3	0.0	2.8	
57 AR03056:N1630a-B-062	160.9	14.6	11.0	59.3	1.8	0.3		38 AR17056:S1217-B-046	154.7	21.0	7.4	56.9	0.0	3.7	
36 AR03056:N1630a-B-038	160.3	17.1	9.4	57.0	1.3	1.7		11 AR17056:S1217-B-016	153.4	17.8	8.6	56.1	7.1	3.9	
50 AR03056:N1630a-B-054	159.6	16.7	9.5	58.7	8.1	3.0		52 AR17056:S1217-B-065	152.4	20.7	7.4	55.1	6.7	4.3	
6 AR03056:N1630a-B-007	154.6	16.1	9.6	58.1	1.2	1.0		4 AR17056:S1217-B-005	151.5	17.7	8.6	56.7	0.9	0.8	
12 AR03056:N1630a-B-013	154.3	16.0	9.7	57.5	1.3	4.9		15 AR17056:S1217-B-020	150.3	18.9	7.9	58.3	2.7	8.9	
41 AR03056:N1630a-B-045	154.3	15.4	10.0	57.1	0.8	0.5		47 AR17056:S1217-B-057	149.6	20.9	7.2	55.5	0.8	0.0	
15 AR03056:N1630a-B-016	153.3	16.8	9.1	56.1	2.6	3.1		32 AR17056:S1217-B-040	149.3	18.3	8.2	58.0	9.0	0.5	
10 AR03056:N1630a-B-011	150.9	15.6	9.7	57.9	0.0	2.1		28 AR17056:S1217-B-034	148.8	18.9	7.9	57.9	6.8	7.4	
54 AR03056:N1630a-B-058	150.5	17.6	8.6	56.1	2.1	5.4		57 LH200xLH262	148.3	24.1	6.2	54.7	10.5	2.3	
18 AR03056:N1630a-B-019	150.2	16.7	9.0	56.3	1.0	0.6		8 AR17056:S1217-B-012	145.7	18.5	7.9	56.4	0.0	4.7	
1 AR03056:N1630a-B-001	149.4	16.2	9.2	57.4	2.5	0.0		19 AR17056:S1217-B-024	145.5	18.7	7.8	56.2	6.6	16.0	
Test Entry Means	141.1	16.1	8.8	57.6	2.2	1.3		Test Entry Means	139.1	18.5	7.5	56.9	6.9	4.7	
Check Means	192.9	19.4	10.0	57.6	1.3	0.7		Check Means	169.6	19.8	8.6	56.6	2.6	1.9	
CV	11.7	6.1						CV	15.2	5.3					
F-value	6.2	11.2						F-value	2.0	7.5					
LSD (p=0.05)	21.1	1.3						LSD (p=0.05)	30.4	1.4					

125303								125304							
Tester: LH287								Tester: JFS-SS							
Rep: 4								Rep: 4							
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.		Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	
57 LH200xLH262	200.6	24.6	8.2	55.5	1.7	2.2		38 Pioneer 31D58	189.4	22.3	8.5	57.1	0.8	0.0	
59 Pioneer 33F85	196.6	19.6	10.0	57.5	6.1	3.2		39 Pioneer 33F85	163.9	20.9	7.9	58.3	1.6	0.0	
15 UR05017:S0409-054-001	183.5	18.7	9.8	57.0	0.4	3.0		35 Pioneer 32B16	162.4	23.7	6.9	56.6	1.8	2.7	
56 HC33xLH287	182.8	18.6	9.8	56.8	1.1	5.0		36 HC33xLH287	156.8	19.3	8.1	58.3	1.6	6.3	
27 UR05017:S0409-088-001	180.7	19.3	9.4	58.3	9.0	1.1		13 AR03056:N0902a-B-038	156.6	23.9	6.6	56.9	3.1	3.4	
31 UR05017:S0409-098-001	177.2	20.1	8.8	56.6	6.6	4.4		26 AR03056:N0902a-B-055	151.8	24.0	6.3	56.2	3.7	2.7	
8 UR05017:S0409-015-001	176.4	20.3	8.7	57.2	0.8	8.7		32 AR03056:N0902a-B-064	151.0	21.8	6.9	58.1	5.8	3.3	
54 UR05017:S0409-178-001	174.0	19.7	8.8	56.8	0.0	4.3		5 AR03056:N0902a-B-007	150.6	22.5	6.7	56.6	4.0	7.6	
18 UR05017:S0409-065-001	172.7	20.1	8.6	56.7	0.7	2.5		10 AR03056:N0902a-B-022	148.7	23.7	6.3	57.3	1.8	1.8	
10 UR05017:S0409-023-001	171.1	21.1	8.1	55.8	0.0	0.0		20 AR03056:N0902a-B-049	148.7	23.0	6.5	58.3	4.2	0.0	
14 UR05017:S0409-042-001	169.3	19.4	8.7	57.3	0.0	0.6		29 AR03056:N0902a-B-061	142.8	24.8	5.8	55.9	9.8	3.9	
6 UR05017:S0409-012-001	168.0	20.9	8.1	56.2	3.6	5.7		15 AR03056:N0902a-B-043	142.7	24.0	6.0	56.5	1.1	2.8	
40 UR05017:S0409-121-001	167.3	20.4	8.2	56.7	5.8	2.0		4 AR03056:N0902a-B-006	142.1	24.2	5.9	57.1	1.0	4.0	
53 UR05017:S0409-172-001	167.1	19.3	8.7	56.6	0.0	5.3		18 AR03056:N0902a-B-047	140.2	24.6	5.7	55.9	1.4	0.3	
58 Pioneer 31D58	164.7	22.7	7.2	57.2	0.8	0.0		37 LH200xLH262	139.9	24.6	5.7	57.5	2.4	1.8	
49 UR05017:S0409-156-001	163.8	21.9	7.5	55.5	7.8	2.8		2 AR03056:N0902a-B-002	139.7	24.1	5.8	56.1	0.8	1.2	
42 UR05017:S0409-126-001	163.1	20.2	8.1	56.7	5.9	0.0		40 Pioneer 34R65	138.2	19.3	7.1	58.0	1.6	0.7	
35 UR05017:S0409-112-001	162.9	20.0	8.2	56.9	0.4	6.9		28 AR03056:N0902a-B-059	135.5	23.5	5.8	58.1	6.8	0.8	
9 UR05017:S0409-018-001	161.7	19.5	8.3	58.6	4.1	1.7		25 AR03056:N0902a-B-054	135.1	24.1	5.6	57.2	1.9	1.2	
16 UR05017:S0409-059-001	160.9	19.6	8.2	57.8	0.4	1.2		33 AR03056:N0902a-B-066	131.9	21.8	6.0	58.2	6.4	2.1	
Test Entry Means	155.1	19.8	7.8	57.0	5.0	4.0		Test Entry Means	128.9	23.8	5.4	56.7	4.5	1.9	
Check Means	180.1	20.6	8.7	57.0	1.9	2.1		Check Means	158.4	21.7	7.3	57.6	1.6	1.9	
CV	14.5	4.3						CV	17.7	5.1					
F-value	1.9	8.2						F-value	2.4	6.5					
LSD (p=0.05)	32.1	1.2						LSD (p=0.05)	33.7	1.7					

125305								125306 (Retest)							
Tester: JFS-nSS Rep: 3								Tester: HC33 Rep: 7							
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.		Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	
55 Pioneer 32B16	216.4	23.0	9.4	56.2	0.5	1.6		38 Pioneer 31D58	206.8	22.3	9.3	57.5	3.4	1.1	
59 Pioneer 33F85	208.1	20.7	10.1	57.3	0.0	3.6		39 Pioneer 33F85	198.8	19.1	10.4	58.4	2.7	2.0	
58 Pioneer 31D58	192.3	22.1	8.7	56.4	1.8	4.3		37 LH200xLH262	188.1	24.4	7.7	57.1	3.2	1.5	
60 Pioneer 34R65	181.1	18.6	9.7	58.8	0.0	0.0		36 HC33xLH287	181.0	17.9	10.1	58.1	3.8	3.6	
56 HC33xLH287	178.2	19.0	9.4	57.3	1.8	9.1		40 Pioneer 34R65	173.0	18.0	9.6	59.3	0.8	1.1	
32 UR10001:S99x51-057-001	170.4	21.2	8.1	56.4	1.9	1.4		7 AR03056:N0902-040-001	170.4	20.4	8.4	57.5	3.3	4.2	
38 UR10001:S99x51-092-001	163.6	23.6	6.9	55.2	0.9	0.5		4 AR01150:N0402-B-004	167.2	18.4	9.1	57.9	2.8	5.8	
4 UR10001:S99x51-008-001	162.1	23.7	6.8	55.0	2.0	6.3		25 AR17026:N1019-B-069	166.8	19.6	8.5	58.4	0.8	1.2	
57 LH200xLH262	158.7	24.8	6.4	56.0	2.6	6.2		8 AR03056:N0902-064-001	166.1	22.1	7.5	55.5	6.0	3.7	
52 UR10001:S99x51-143-001	157.3	22.7	6.9	55.6	0.4	1.2		35 AR17056:N2016-B-066	162.9	18.9	8.6	58.1	4.0	2.0	
10 UR10001:S99x51-017-001	155.6	23.3	6.7	54.3	6.8	4.2		5 AR01150:N0402-B-035	161.1	18.4	8.7	58.1	9.2	3.1	
15 UR10001:S99x51-023-001	155.4	24.8	6.3	55.0	0.0	1.5		3 AR01150:N0402-B-001	160.8	19.2	8.4	57.6	7.2	3.2	
40 UR10001:S99x51-095-001	155.3	23.8	6.5	55.5	0.6	1.9		34 AR17056:N2016-B-061	159.9	19.0	8.4	58.6	10.3	1.9	
39 UR10001:S99x51-094-001	149.5	26.5	5.6	53.4	2.0	4.8		15 AR03056:N1625-B-040	157.9	18.0	8.8	59.1	6.6	8.6	
54 UR10001:S99x51-153-001	147.6	25.4	5.8	56.4	6.5	6.0		24 AR17026:N1019-B-042	154.1	18.5	8.3	59.3	10.2	2.8	
37 UR10001:S99x51-088-001	146.4	23.9	6.1	55.5	0.0	0.0		6 AR13026:N08a04-054-001	153.5	18.1	8.5	59.6	3.9	2.1	
24 UR10001:S99x51-044-001	143.8	22.9	6.3	56.0	2.6	3.0		28 UR10001:N1708e-B-018	151.2	15.8	9.5	60.0	8.1	4.6	
35 UR10001:S99x51-084-001	141.7	23.2	6.1	56.4	2.8	3.3		14 AR03056:N1625-B-018	149.8	16.6	9.1	60.6	3.3	4.4	
26 UR10001:S99x51-046-001	141.2	24.8	5.7	55.1	0.4	2.8		29 UR10001:N1708e-B-020	149.1	17.8	8.4	59.4	4.3	1.4	
49 UR10001:S99x51-121-001	139.9	27.6	5.1	55.0	0.0	2.6		31 AR17056:N2016-B-018	148.5	17.1	8.7	57.9	3.4	4.8	
Test Entry Means	132.4	24.1	5.5	55.5	1.7	2.1		Test Entry Means	148.9	18.2	8.2	58.5	5.3	2.8	
Check Means	189.1	21.4	8.9	57.0	1.1	4.1		Check Means	189.5	20.3	9.3	58.1	2.8	1.8	
CV	16.2	5.7						CV	11.9	7.1					
F-value	3.5	4.6						F-value	6.4	12.1					
LSD (p=0.05)	37.1	2.3						LSD (p=0.05)	19.3	1.4					

125307 (Retest)								125308							
Tester: MBS3633 Rep: 7								Tester: SGI994HX Rep: 4							
Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.		Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.	
29 Pioneer 33F85	192.0	19.1	10.1	58.3	5.2	1.2		58 Pioneer 31D58	187.4	21.5	8.7		0.0	0.0	
28 Pioneer 31D58	189.7	22.4	8.5	57.2	2.1	1.1		59 HC33xLH287	158.6	18.4	8.6		10.6	0.0	
27 LH200xLH262	184.3	23.4	7.9	57.0	7.4	12.1		57 Pioneer 33F85	157.1	21.1	7.5		0.0	0.0	
6 AR03056:N1625-B-040	181.8	18.6	9.8	59.0	5.6	7.9		56 Pioneer 34R65	156.2	19.0	8.2		0.0	0.0	
25 MBS3633/MBS8814	181.7	20.5	8.9	55.9	6.3	0.0		48 CH05015:N4049a-B-060	151.5	19.6	7.7		4.3	0.0	
24 GEMN-0193	169.0	19.0	8.9	58.7	4.6	1.4		20 CH05015:N4049a-B-024	147.0	19.2	7.7		10.8	0.0	
30 Pioneer 34R65	167.4	17.9	9.4	58.6	3.2	0.4		60 LH200xLH262	144.4	24.2	6.0		2.8	0.0	
10 AR17026:N1019-B-013	166.5	19.7	8.4	57.3	7.2	10.6		12 CH05015:N4049a-B-014	138.2	20.7	6.7		0.0	0.0	
12 AR17026:N1019-B-042	166.3	17.9	9.3	58.6	5.4	3.5		17 CH05015:N4049a-B-020	138.0	20.2	6.8		5.6	1.4	
26 HC33xLH287	164.7	16.8	9.8	57.5	12.3	12.8		10 CH05015:N4049a-B-012	136.8	20.1	6.8		12.9	0.0	
13 AR17026:N1019-B-069	163.0	19.3	8.4	57.6	1.3	1.3		52 CH05015:N4049a-B-065	135.7	19.1	7.1		1.5	0.0	
22 AR17056:N2016-B-061	162.7	18.9	8.6	57.4	11.5	6.1		31 CH05015:N4049a-B-036	135.4	20.7	6.6		0.0	0.0	
1 AR01150:N0406-B-030	160.4	18.0	8.9	58.0	6.6	3.8		3 CH05015:N4049a-B-003	135.4	18.0	7.5		0.0	0.0	
15 UR10001:N1708e-B-010	158.2	19.2	8.2	59.5	3.9	9.0		29 CH05015:N4049a-B-034	134.7	20.4	6.6		14.3	1.4	
11 AR17026:N1019-B-024	157.5	19.6	8.0	57.4	2.9	2.0		18 CH05015:N4049a-B-022	134.4	21.0	6.4		7.2	0.0	
20 AR17056:N2016-B-018	154.9	16.7	9.3	57.8	5.5	0.9		21 CH05015:N4049a-B-025	133.1	21.0	6.3		0.0	0.0	
5 AR03056:N1625-B-018	154.8	17.7	8.7	60.1	4.3	3.2		2 CH05015:N4049a-B-002	131.0	17.4	7.5		11.8	2.9	
3 AR01150:N0406-B-058	152.8	18.0	8.5	58.6	4.7	4.7		37 CH05015:N4049a-B-048	130.7	19.6	6.7		1.8	0.0	
18 UR10001:N1708e-B-020	151.7	17.9	8.5	58.6	7.7	9.8		6 CH05015:N4049a-B-007	127.8	19.5	6.6		0.0	0.0	
8 AR16021:N2199q-B-058	150.5	17.5	8.6	58.9	2.0	2.2		13 CH05015:N4049a-B-015	127.4	17.8	7.1		0.0	0.0	
Test Entry Means	153.3	18.2	8.4	58.6	6.5	4.2		Test Entry Means	121.2	19.2	6.3		3.9	0.2	
Check Means	180.0	20.0	9.0	57.4	6.1	4.6		Check Means	160.7	20.8	7.7		2.7	0.0	
CV	11.1	6.0						CV	13.9	10.3					
F-value	5.4	14.6						F-value	3.4	2.3					
LSD (p=0.05)	18.7	1.2						LSD (p=0.05)	24.7	2.8					

125401 (GEM Derived)**Tester: HC33****Rep: 5**

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
64	LH200xLH262	196.8	23.0	8.6	56.2	1.3	0.8
65	Pioneer 31D58	189.6	21.7	8.7	57.6	1.6	0.8
29	(GEMN-0140/GEMN-0097)-B-B-034	171.6	14.4	11.9	58.6	0.9	5.8
26	(GEMN-0140/GEMN-0097)-B-B-029	167.1	16.1	10.4	58.1	3.5	0.0
42	(GEMN-0140/GEMN-0097)-B-B-047	166.5	16.0	10.4	56.6	2.8	8.5
66	Pioneer 33F85	163.4	18.7	8.7	57.7	0.6	10.2
49	(GEMN-0140/GEMN-0097)-B-B-054	162.9	17.1	9.5	58.0	4.6	10.8
6	(GEMN-0140/GEMN-0097)-B-B-007	161.0	15.9	10.1	58.4	9.1	15.0
56	(GEMN-0140/GEMN-0097)-B-B-064	160.5	15.4	10.4	60.0	4.3	2.4
23	(GEMN-0140/GEMN-0097)-B-B-026	160.5	17.0	9.5	55.5	1.6	5.2
24	(GEMN-0140/GEMN-0097)-B-B-027	157.8	15.2	10.4	57.4	2.3	12.3
51	(GEMN-0140/GEMN-0097)-B-B-056	157.7	15.4	10.2	56.3	1.5	4.2
50	(GEMN-0140/GEMN-0097)-B-B-055	157.5	16.0	9.9	57.6	1.3	11.2
54	(GEMN-0140/GEMN-0097)-B-B-061	156.9	15.4	10.2	57.9	0.3	0.0
20	(GEMN-0140/GEMN-0097)-B-B-023	156.2	14.7	10.6	56.1	0.9	2.9
62	(GEMN-0140/GEMN-0097)-B-B-070	156.1	14.2	11.0	58.2	1.6	3.2
63	HC33xLH287	155.8	17.1	9.1	56.8	4.8	3.7
35	(GEMN-0140/GEMN-0097)-B-B-040	154.8	15.9	9.8	57.0	1.2	10.1
27	(GEMN-0140/GEMN-0097)-B-B-031	153.7	16.0	9.6	58.9	5.0	0.8
60	(GEMN-0140/GEMN-0097)-B-B-068	152.5	15.7	9.7	58.5	4.5	6.1
Test Entry Means		143.6	15.5	9.3	57.8	4.5	7.3
Check Means		168.3	19.4	8.7	57.3	2.2	4.1
CV		15.5	7.2				
F-value		1.9	8.0				
LSD (p=0.05)		28.7	1.5				

125402 (GEM Derived)**Tester: HC33****Rep: 5**

Ent.	Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
69	Pioneer 33F85	172.3	19.5	8.8	58.5	5.7	19.6
49	(GEMN-0156/GEMN-0174)-B-B-053	169.8	19.2	8.9	58.1	1.2	5.2
68	Pioneer 31D58	162.4	23.5	6.9	56.0	2.9	5.5
70	Pioneer 34R65	160.9	18.6	8.6	58.4	1.0	0.3
8	(GEMN-0156/GEMN-0174)-B-B-009	155.1	18.6	8.3	57.4	4.0	7.9
41	(GEMN-0156/GEMN-0174)-B-B-045	155.1	19.3	8.1	57.9	0.8	7.6
21	(GEMN-0156/GEMN-0174)-B-B-022	154.2	19.0	8.1	58.6	6.7	4.6
66	HC33xLH287	151.8	17.5	8.7	57.5	7.8	11.5
25	(GEMN-0156/GEMN-0174)-B-B-026	151.1	20.0	7.6	58.2	10.8	4.4
42	(GEMN-0156/GEMN-0174)-B-B-046	150.9	20.4	7.4	57.7	5.0	4.0
61	(GEMN-0156/GEMN-0174)-B-B-066	150.5	18.5	8.1	60.3	3.1	2.5
43	(GEMN-0156/GEMN-0174)-B-B-047	149.7	19.6	7.6	58.3	3.5	6.0
35	(GEMN-0156/GEMN-0174)-B-B-038	148.7	17.5	8.5	59.7	15.5	21.1
46	(GEMN-0156/GEMN-0174)-B-B-050	147.9	18.9	7.8	58.0	2.2	17.3
57	(GEMN-0156/GEMN-0174)-B-B-062	147.7	19.2	7.7	58.2	5.3	4.7
7	(GEMN-0156/GEMN-0174)-B-B-007	146.8	18.2	8.1	59.2	1.0	8.9
33	(GEMN-0156/GEMN-0174)-B-B-036	146.1	19.2	7.6	58.8	1.3	5.0
10	(GEMN-0156/GEMN-0174)-B-B-011	145.3	18.2	8.0	59.8	2.9	12.7
13	(GEMN-0156/GEMN-0174)-B-B-014	145.1	21.6	6.7	57.7	3.8	9.9
15	(GEMN-0156/GEMN-0174)-B-B-016	145.0	19.2	7.6	58.7	10.0	4.2
Test Entry Means		135.4	19.2	7.0	58.5	5.9	8.5
Check Means		157.3	21.0	7.5	57.6	6.6	10.1
CV		16.3	6.8				
F-value		1.5	5.3				
LSD (p=0.05)		28.1	1.7				

125403 (GEM Derived)**Tester: LH287****Rep: 5**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
39 Pioneer 33F85	177.0	20.6	8.6	57.4	8.3	26.9
38 Pioneer 31D58	173.5	21.3	8.1	58.0	10.6	17.7
8 (GEMS-0149/GEMS-0061)-B-B-011	170.5	23.2	7.3	55.6	20.0	26.2
36 HC33xLH287	169.9	17.9	9.5	56.4	3.8	30.2
5 (GEMS-0149/GEMS-0061)-B-B-006	165.2	23.4	7.1	55.1	20.5	19.3
33 (GEMS-0149/GEMS-0061)-B-B-038	158.4	23.2	6.8	54.0	6.3	35.2
26 (GEMS-0149/GEMS-0061)-B-B-030	158.2	23.8	6.6	54.6	11.7	26.9
37 LH200xLH262	157.8	27.0	5.8	53.9	3.2	36.5
1 (GEMS-0149/GEMS-0061)-B-B-001	156.8	23.4	6.7	54.3	23.7	21.3
13 (GEMS-0149/GEMS-0061)-B-B-016	156.0	22.9	6.8	55.7	9.1	26.1
18 (GEMS-0149/GEMS-0061)-B-B-021	153.7	24.5	6.3	55.2	9.0	27.2
12 (GEMS-0149/GEMS-0061)-B-B-015	152.7	21.9	7.0	56.1	6.0	28.6
11 (GEMS-0149/GEMS-0061)-B-B-014	152.5	21.8	7.0	56.0	2.5	45.0
34 (GEMS-0149/GEMS-0061)-B-B-039	151.2	23.0	6.6	55.1	18.4	9.3
17 (GEMS-0149/GEMS-0061)-B-B-020	150.2	23.6	6.4	54.2	17.3	19.7
21 (GEMS-0149/GEMS-0061)-B-B-024	149.2	23.4	6.4	53.5	15.5	28.4
14 (GEMS-0149/GEMS-0061)-B-B-017	148.9	23.4	6.4	55.0	19.0	23.5
25 (GEMS-0149/GEMS-0061)-B-B-029	148.5	22.5	6.6	55.4	15.3	27.0
30 (GEMS-0149/GEMS-0061)-B-B-035	148.0	22.6	6.5	56.3	13.6	26.7
32 (GEMS-0149/GEMS-0061)-B-B-037	147.8	23.9	6.2	53.9	14.0	36.0
Test Entry Means	145.2	23.0	6.3	54.9	15.2	25.6
Check Means	162.4	21.1	7.7	56.7	5.6	23.3
CV	16.4	7.3				
F-value	1.5	4.8				
LSD (p=0.05)	30.5	2.1				

125404 (GEM Derived)**Tester: LH287****Rep: 4**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
19 (GEMS-0175/GEMS-0115)-B-B-024	186.6	20.9	8.9	55.2	1.6	2.4
59 Pioneer 33F85	184.6	18.9	9.8	56.9	0.0	0.0
3 (GEMS-0175/GEMS-0115)-B-B-003	184.1	19.8	9.3	54.7	4.3	3.8
21 (GEMS-0175/GEMS-0115)-B-B-026	178.9	20.4	8.8	55.6	7.6	0.8
57 LH200xLH262	176.7	24.6	7.2	55.1	1.1	5.2
44 (GEMS-0175/GEMS-0115)-B-B-051	175.6	22.1	7.9	55.2	3.1	2.5
49 (GEMS-0175/GEMS-0115)-B-B-058	172.1	20.7	8.3	56.4	2.2	2.8
17 (GEMS-0175/GEMS-0115)-B-B-022	169.9	19.5	8.7	56.6	5.4	2.2
9 (GEMS-0175/GEMS-0115)-B-B-010	168.9	21.3	7.9	56.0	6.7	1.2
16 (GEMS-0175/GEMS-0115)-B-B-021	167.3	21.6	7.8	54.1	0.0	1.3
26 (GEMS-0175/GEMS-0115)-B-B-033	166.7	22.1	7.6	54.3	0.0	0.9
40 (GEMS-0175/GEMS-0115)-B-B-047	166.1	21.6	7.7	55.8	0.0	8.8
56 HC33xLH287	166.0	17.9	9.3	57.1	0.8	6.1
35 (GEMS-0175/GEMS-0115)-B-B-042	165.9	20.1	8.3	54.8	0.0	3.0
24 (GEMS-0175/GEMS-0115)-B-B-029	165.9	19.0	8.7	57.1	1.0	4.6
15 (GEMS-0175/GEMS-0115)-B-B-019	165.2	19.6	8.4	55.2	4.9	6.9
5 (GEMS-0175/GEMS-0115)-B-B-006	165.0	19.1	8.6	54.8	2.0	1.5
11 (GEMS-0175/GEMS-0115)-B-B-012	164.7	20.1	8.2	56.2	2.7	8.0
25 (GEMS-0175/GEMS-0115)-B-B-030	163.9	20.7	7.9	55.5	2.9	0.9
43 (GEMS-0175/GEMS-0115)-B-B-050	162.4	21.6	7.5	56.0	4.1	2.2
Test Entry Means	156.7	20.4	7.7	55.9	3.7	3.3
Check Means	167.6	20.6	8.1	56.6	0.4	2.4
CV	13.7	5.1				
F-value	1.4	6.8				
LSD (p=0.05)	30.1	1.4				

125405 (GEM Derived)**Tester: LH287****Rep: 5**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
1 (GEMS-0147/GEMS-0115)-B-002-001	172.9	23.9	7.2	53.9	5.5	25.0
48 Pioneer 31D58	172.8	24.7	7.0	56.6	0.3	19.2
47 LH200xLH262	172.1	26.2	6.6	54.0	0.5	20.6
46 HC33xLH287	170.1	19.5	8.7	56.7	1.6	20.0
49 Pioneer 33F85	169.4	20.6	8.2	57.5	1.5	5.2
5 (GEMS-0147/GEMS-0115)-B-011-001	165.6	22.0	7.5	55.8	0.0	30.6
16 (GEMS-0147/GEMS-0115)-B-046-001	164.7	23.9	6.9	54.9	10.0	21.7
30 (GEMS-0147/GEMS-0115)-B-102-001	161.2	21.3	7.6	54.7	17.0	22.7
24 (GEMS-0147/GEMS-0115)-B-081-001	160.0	21.7	7.4	54.3	4.2	19.3
12 (GEMS-0147/GEMS-0115)-B-037-001	159.6	25.0	6.4	53.8	0.9	11.3
19 (GEMS-0147/GEMS-0115)-B-064-001	159.4	23.4	6.8	55.1	0.3	21.9
35 (GEMS-0147/GEMS-0115)-B-116-001	159.1	21.8	7.3	56.1	1.9	14.0
34 (GEMS-0147/GEMS-0115)-B-114-001	158.3	24.7	6.4	54.5	0.4	8.6
38 (GEMS-0147/GEMS-0115)-B-159-001	156.4	24.7	6.3	54.1	4.8	10.9
3 (GEMS-0147/GEMS-0115)-B-005-001	155.8	20.9	7.4	56.4	9.9	17.2
27 (GEMS-0147/GEMS-0115)-B-095-001	155.2	21.0	7.4	56.7	0.4	14.5
21 (GEMS-0147/GEMS-0115)-B-070-001	154.5	23.5	6.6	54.1	4.0	5.4
44 (GEMS-0147/GEMS-0115)-B-182-001	154.3	19.9	7.8	57.0	2.4	11.6
22 (GEMS-0147/GEMS-0115)-B-073-001	154.2	21.6	7.1	56.0	4.1	28.0
36 (GEMS-0147/GEMS-0115)-B-149-001	154.2	23.5	6.6	55.3	0.3	22.2
Test Entry Means	151.2	22.4	6.7	55.3	5.0	17.6
Check Means	164.0	21.8	7.5	56.6	0.8	13.5
CV	13.4	5.6				
F-value	1.2	7.2				
LSD (p=0.05)	25.7	1.6				

125406 (GEM Derived)**Tester: LH287****Rep: 5**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
27 LH200xLH262	184.4	24.1	7.7	54.7	13.4	16.6
20 (GEMS-0147/GEMS-0180)-B-104-001	182.0	21.1	8.6	55.9	5.6	24.7
6 (GEMS-0147/GEMS-0180)-B-033-001	181.1	22.6	8.0	55.2	2.5	33.8
29 Pioneer 33F85	178.8	20.4	8.8	56.8	0.9	8.2
9 (GEMS-0147/GEMS-0180)-B-039-001	177.4	24.2	7.3	54.2	1.1	24.6
13 (GEMS-0147/GEMS-0180)-B-082-001	175.8	23.5	7.5	55.2	5.6	33.7
22 (GEMS-0147/GEMS-0180)-B-112-001	175.0	21.9	8.0	55.0	3.8	36.3
28 Pioneer 31D58	168.2	24.4	6.9	56.3	2.5	11.1
12 (GEMS-0147/GEMS-0180)-B-079-001	166.1	24.0	6.9	53.9	10.6	20.7
11 (GEMS-0147/GEMS-0180)-B-077-001	165.1	23.2	7.1	54.3	15.2	27.2
19 (GEMS-0147/GEMS-0180)-B-103-001	164.5	23.7	6.9	54.8	0.0	18.0
15 (GEMS-0147/GEMS-0180)-B-091-001	162.6	22.5	7.2	56.2	12.9	29.8
18 (GEMS-0147/GEMS-0180)-B-100-001	161.9	21.8	7.4	55.7	10.8	22.7
2 (GEMS-0147/GEMS-0180)-B-022-001	159.0	21.8	7.3	54.5	18.0	16.4
14 (GEMS-0147/GEMS-0180)-B-086-001	157.9	22.7	6.9	55.0	14.2	28.7
3 (GEMS-0147/GEMS-0180)-B-023-001	157.1	22.6	6.9	55.2	8.4	28.6
21 (GEMS-0147/GEMS-0180)-B-106-001	156.8	22.5	7.0	55.9	15.6	24.8
7 (GEMS-0147/GEMS-0180)-B-034-001	153.4	21.6	7.1	56.0	4.9	28.9
1 (GEMS-0147/GEMS-0180)-B-019-001	151.8	23.9	6.4	53.7	19.3	21.8
17 (GEMS-0147/GEMS-0180)-B-098-001	151.2	21.2	7.1	55.7	15.8	24.0
Test Entry Means	158.3	22.4	7.1	55.2	10.7	25.8
Check Means	165.3	21.2	7.8	56.6	4.6	11.8
CV	12.5	5.1				
F-value	2.3	8.6				
LSD (p=0.05)	25.1	1.4				

125407 (Ex-PVP)**Tester: NA****Rep: 4**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
27 LH200xLH262	200.3	25.8	7.8	54.6	5.4	1.5
26 HC33xLH287	198.7	18.9	10.5	57.2	2.4	3.5
29 Pioneer 33F85	193.6	20.7	9.3	57.1	0.8	1.5
25 MBS3633/MBS8814	190.7	22.0	8.7	55.0	9.9	3.2
28 Pioneer 31D58	184.9	23.4	7.9	56.6	0.7	5.5
3 G39/GEMN-0097	184.3	18.8	9.8	57.8	0.9	1.1
7 LH195/LH287	179.2	21.8	8.2	55.8	7.9	7.2
5 LH132/LH287	177.8	20.6	8.6	56.9	5.9	7.8
6 LH202/LH287	174.0	18.1	9.6	56.8	7.0	2.9
23 PHK93/HC33	171.1	24.0	7.1	56.3	1.6	0.4
11 PHR55/HC33	164.9	20.8	7.9	57.1	4.8	2.4
22 PHR58/HC33	159.9	20.7	7.7	58.2	0.0	0.0
17 MBUB/HC33	159.2	21.5	7.4	55.0	0.0	0.4
4 LH191/LH287	158.3	19.4	8.2	55.9	14.6	8.2
13 Oh7B/HC33	157.9	19.6	8.1	57.9	8.5	6.8
18 PHP60/HC33	155.3	21.9	7.1	58.1	2.6	12.1
10 WIL903/HC33	154.4	20.0	7.7	57.4	3.9	5.5
2 PHB47/LH287	151.8	18.9	8.0	57.3	15.4	9.3
8 PHN66/LH287	151.4	17.4	8.7	56.8	0.0	0.0
21 PHW30/HC33	148.9	18.6	8.0	58.7	1.9	7.5
Test Entry Means	149.8	18.7	8.0	57.6	3.5	4.1
Check Means	185.2	21.5	8.6	56.5	3.3	2.9
CV	15.7	5.1				
F-value	4.1	30.3				
LSD (p=0.05)	35.4	1.4				

126401 (Early Retest)**Tester: NA****Rep: 7**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
38 Pioneer 31D58	217.4	22.7	9.6	57.3	1.5	2.0
37 LH200xLH262	214.8	23.5	9.2	56.9	2.1	4.1
39 Pioneer 33F85	200.2	21.2	9.4	57.8	3.8	1.3
36 HC33xLH287	187.9	19.3	9.8	56.8	3.2	3.5
35 MBS3633/MBS8814	185.6	22.2	8.4	55.1	4.2	0.4
2 UR11002:S1446-038-001/LH287	185.1	20.4	9.1	55.3	10.3	3.3
15 CL-G1703:S17c43-B-039/LH287	184.8	22.0	8.4	56.5	10.9	4.7
23 794/GEMN-0097	183.5	17.6	10.4	56.9	0.9	2.4
19 (GEMN-0111/GEMN-0140)-B-B-043/HC33	181.4	18.0	10.1	58.6	0.7	0.7
13 CL-G1703:S17c43-B-010/LH287	175.7	22.9	7.7	56.4	3.4	3.5
11 UR02005:N2011c-B-022/HC33	171.5	18.9	9.1	58.8	2.2	1.0
3 BG070404:D27S42-B-001/LH287	168.8	20.3	8.3	57.4	8.4	8.0
34 S49w/HC33	168.5	23.8	7.1	56.2	8.0	1.3
8 AR17026:N1019-B-042/HC33	168.3	18.4	9.1	58.4	2.1	3.7
40 Pioneer 34R65	167.7	18.9	8.9	58.5	1.3	1.1
1 HC33/GEMN-0097	164.1	17.3	9.5	56.2	2.8	2.3
22 SCROGP3:N3215-B-053/HC33	163.7	20.3	8.1	55.7	1.3	2.2
10 AR17026:N1012-066-001/HC33	162.1	18.7	8.7	57.6	1.3	0.4
5 BR105:S1699n-B-056/LH287	162.1	20.0	8.1	58.5	9.8	3.5
16 (GEMN-0111/GEMN-0140)-B-B-002/HC33	160.9	17.0	9.4	59.4	0.6	0.0
Test Entry Means	154.5	19.3	8.0	57.4	3.8	2.0
Check Means	195.6	21.3	9.2	57.0	2.6	2.1
CV	13.4	6.8				
F-value	7.7	13.6				
LSD (p=0.05)	23.1	1.4				

126402 (GEMxGEM)**Tester: NA****Rep: 5**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
49 Pioneer 33F85	179.3	21.0	8.5	56.7	1.8	18.3
47 LH200xLH262	176.4	26.5	6.7	55.4	2.7	19.8
48 Pioneer 31D58	176.0	25.4	6.9	56.1	0.0	0.7
15 (GEMS-0147/GEMS-0115)-B-B-020/MBS8814CBLLRW	175.0	25.7	6.8	53.5	3.5	18.3
22 GEMS-0115/GEMN-0204	174.4	23.6	7.4	55.8	4.1	4.4
33 GEMS-0115/GEMN-0190	173.7	24.0	7.2	55.7	2.6	19.6
26 GEMS-0222/GEMN-0178	171.1	21.0	8.1	56.0	5.5	6.2
3 GEMS-0219/LH287	170.0	19.0	8.9	58.2	4.9	12.0
45 MBS3633/MBS8814	167.5	19.8	8.5	56.8	6.1	4.7
31 GEMS-0218/GEMN-0190	166.5	21.8	7.6	58.7	1.0	3.9
1 GEMN-0178/HC33	163.8	23.3	7.0	55.9	0.6	0.6
14 PHT55/GEMN-0097	163.8	23.0	7.1	56.4	0.0	0.0
41 GEMS-0206/CH05015:N12-183-001-B wx	161.0	23.6	6.8	56.1	9.5	7.2
8 (GEMN-0111/GEMN-0140)-B-B-020/HC33	159.7	16.6	9.6	57.3	0.9	4.8
25 GEMS-0176/GEMN-0097	158.7	22.4	7.1	55.4	3.3	25.1
30 GEMS-0218/GEMN-0205	158.5	23.4	6.8	56.5	1.2	0.3
11 LH51/GEMS-0115	158.4	23.7	6.7	56.7	4.5	12.6
24 GEMS-0176/GEMN-0190	158.0	25.2	6.3	54.9	1.2	16.8
6 (GEMS-0002/GEMS-0003)-B-B-064/LH287	156.6	21.1	7.4	57.3	0.9	7.9
32 GEMS-0115/GEMN-0205	154.7	25.6	6.1	55.0	2.7	13.8
Test Entry Means	148.3	22.3	6.7	56.3	5.9	9.3
Check Means	160.7	22.4	7.2	56.7	1.9	11.0
CV	17.6	5.8				
F-value	2.3	22.2				
LSD (p=0.05)	33.1	1.6				

126403 (Wx Test)**Tester: NA****Rep: 6**

Ent. Pedigree	Yield B/A	% Moist	Y/ M	TWT	% S.L.	% R.L.
35 LH200xLH262	138.7	23.3	6.0	57.8	0.3	0.0
33 Pioneer 31D58	138.6	23.1	6.0	56.7	0.0	0.0
32 Pioneer 33F85	136.9	22.4	6.1	58.8	0.0	0.0
38 Cuba164:S2012-966-001-B wx/SCR01:N1310-509-001-B wx	133.4	23.0	5.8	57.0	0.0	0.0
34 HC33xLH287	133.2	19.6	6.8	57.9	0.5	0.0
22 wxBR51721:N2012-164-002 x wxGEMS-0185	130.6	22.5	5.8	57.6	0.0	0.0
40 INGR Dent CHK	128.6	21.5	6.0	57.8	0.0	0.0
31 Pioneer 34R65	128.3	21.0	6.1	58.9	0.0	0.0
19 wxCH05015:N12-183-1-B x wxGEMS-0185	128.2	22.2	5.8	57.6	0.8	0.0
8 wxGEMS-0115 x wxUR13085:N0215-14-1-B	126.9	23.2	5.5	58.7	1.8	0.3
39 INGR Waxy CHK1	124.4	22.3	5.6	57.5	0.0	0.0
3 wxINGR8 x wxFS8B(T):N1802-525-2-B	124.0	23.4	5.3	59.0	0.0	0.0
9 wxINGR8 x wxBR51721:N2012-098-002	123.0	21.2	5.8	59.7	0.0	0.0
23 wxGEMS-0185 x wxSCR01:N1310-509-1-B	121.6	23.0	5.3	58.0	0.0	0.0
10 wxINGR8 x wxBR51721:N2012-164-002	120.3	21.3	5.6	60.7	0.0	0.0
14 wxGEMS-0185 x wxGEMN-0186	119.8	24.5	4.9	57.1	0.0	0.6
11 wxINGR8 x wxGEMS-0097	118.2	21.2	5.6	60.0	1.8	0.0
12 wxGEMS-0113 x wxINGR7	118.2	22.1	5.4	59.1	0.0	0.0
26 wxGEMS-0185 x wxINGR41	117.4	20.9	5.6	60.7	0.6	0.0
36 AR16035:S02-615-001-B wx/UR13085:N0215-014-001-B wx	116.0	24.0	4.8	58.7	0.9	0.0
Test Entry Means	111.4	22.9	4.9	58.8	0.4	0.0
Check Means	128.9	22.4	5.8	58.0	0.2	0.0
CV	15.1	4.8				
F-value	2.9	9.7				
LSD (p=0.05)	20.4	1.3				

2012 GEM Yield Trial Summary										
Expt #	Material	Tester	Total Entry	# Reps	Source	Entry Yield Avg.	Check Yield Avg.	CV (%)	LSD (p=0.05)	# above check avg.
121001	Retest	HC33	60	8	GEM	135.2	154.0	16.7	22.6	1
121002	Retest	MBS3633	60	8	GEM	134.4	148.8	18.7	25.2	2
121201	TZISTRI112:S99n	LH287	50	4	GEM	131.1	161.4	15.8	30.1	0
121301	MDI022:N99d99h	HC33	70	5	GEM	134.8	164.1	15.5	27.1	1
121302	BR105:S1646	LH287	60	4	GEM	127.3	157.8	23.1	43.3	2
121303	CUBA164:T26aS41	LH287	40	5	GEM	145.5	167.2	15.9	29.8	2
121304	BR105:S1643	AGR-nSS	90	5	AGR	151.5	162.1	15.1	29.7	23
121306	DKXL212:S0950	MBS8814CBLLRW	72	6	FGI	155.6	149.0	14.7	26.7	51
121307	NS1:S0852	MON-nSS	72	4	MON	143.2	154.7	14.8	29.7	13
121308	MBRC10:N1749b	MON-SS	60	2	MON	95.7	127.8	21.5	45.5	0
121309	MBRC10:N1730	MON-SS	72	3	MON	124.7	162.1	13.8	28.8	0
121310	BR105:S1641	SYG-nSS	60	5	SYG	128.3	138.4	14.3	24.0	11
121311	BR105:S1641	SYG-nSS	60	5	SYG	130.4	152.2	12.6	21.4	1
121401	NEI9008:N082699ai	HC33	70	5	GEM	156.7	163.8	15.4	30.3	17
121402	NEI9008:N082699ai	HC33	70	5	GEM	147.4	157.7	16.1	30.2	18
121403	BR105:S162699aj	MBS9508	50	4	GEM	135.2	134.7	15.7	30.4	22
121404	Retest	LH287	70	7	GEM	139.6	154.7	20.8	31.5	5
121405	Retest	MBS8814	50	7	GEM	156.1	157.4	13.8	22.6	21
121406	GEMN-0117/DKXL212:N11A-139-001-001-B-B-B-B-B-B	BAS-SS1	40	6	BAS	132.7	145.1	14.4	21.9	4
121407	GEMN-0117/DKXL212:N11A-139-001-001-B-B-B-B-B-B	BAS-SS2	32	6	BAS	124.6	150.5	13.7	20.0	0
125001	Retest	LH287	70	7	GEM	162.7	182.6	11.3	19.9	3
125002	Retest	MBS8814	50	7	GEM	175.7	184.9	12.3	22.8	11
125301	AR03056:N1630a	HC33	70	5	GEM	141.1	192.9	11.7	21.1	0
125302	AR17056:S1217	LH287	60	4	GEM	139.1	169.6	15.2	30.4	0
125303	UR05017:S0409	LH287	60	4	GEM	155.1	180.1	14.5	32.1	2
125304	AR03056:N0902a	JFS-SS	40	4	GEM	128.9	158.4	17.7	33.7	0
125305	UR10001:S99x51	JFS-nSS	60	3	GEM	132.4	189.1	16.2	37.1	0
125306	Retest	HC33	40	7	GEM	148.9	189.5	11.9	19.3	0
125307	Retest	MBS3633	30	7	GEM	153.3	180	11.1	18.7	1
125308	CH05015:N4049a	SGI994HX	60	4	IFS	121.2	160.7	13.9	24.7	0
125401	GEMN-0140/GEMN-0097	HC33	70	5	GEM	143.6	168.3	15.5	28.7	1
125402	GEMN-0156/GEMN-0174	HC33	70	5	GEM	135.4	157.3	16.3	28.1	1
125403	GEMS-0149/GEMS-0061	LH287	40	5	GEM	145.2	162.4	16.4	30.5	2
125404	GEMS-0175/GEMS-0115	LH287	60	4	GEM	156.7	167.6	13.7	30.1	7
125405	GEMS-0147/GEMS-0115	LH287	50	5	GEM	151.2	164.3	13.4	25.7	3
125406	GEMS-0147/GEMS-0180	LH287	30	5	GEM	158.3	165.3	12.5	25.1	6
125407	Ex-PVP	NA	30	4	GEM	149.8	185.2	15.7	35.4	0
126401	Early Retest	NA	40	7	GEM	154.5	195.6	13.4	23.1	0
126402	GEMxGEM	NA	50	5	GEM	148.3	160.7	17.6	33.1	9
126403	Wx Test	NA	40	6	ING	111.4	128.9	15.1	20.4	2
40						141.1	162.7	15.2	27.8	242
Total number of entries above the check means =			242							
Number of Reps lost			29							
Percentage of Reps lost (%)			12.3							

GEM 99 Decode

Type	KEY:	
SS	LH132	a
NS	LH123	b
NS	DE4	c
NS	PHG35	d
SS	PHG39	e
SS	B73	f
SS	N28	g
NS	LH39	h
NS	LH38	i
SS	6103	j
SS	LH74	k
SS	G80	l
NS	LH51	m
SS	PHB47	n
NS	MDF-13D	o
NS	MBNA	p
NS	LH57	q
NS	207	r
SS	GEMS-0002	s
SS	GEMS-0006	t
SS	CUBA117:S1520-156-1-B-B	u
NS	PHZ51	v
SS	NEI9004	w
SS	PHW17	x
SS	GEMS-0115	y
NS	GEMN-0097	z

Type	KEY:	
SS	GEMS-0149	aa
NS	GEMN-0133	ab
NS	GEMN-0137	ac
SS	GEMS-0016	ad
NS	GEMN-0179	ae
NS	GEMN-0174	af
SS	790	ag
SS	GEMS-0162	ah
NS	GEMN-0155	ai
SS	GEMS-0175	aj
NS	GEMN-0156	ak
SS	DJ7	al
NS	SG17	am
NS	PHR36	an
NS	PHV63	ao
NS	LH52	ap
SS	GEMS-0163	aq
NS	PHG47	ar
NS	HBA1	as
SS	87916W	at
SS	4676A	au
SS	GEMS-0188	av
NS	GEMN-0177	aw
NS	PHT60	ax
SS	Mp717	ay
SS	794	az
NS	LH82	ba
NS	LH61	bb
NS	PHK76	bc
SS	PHJ40	bd
SS	LH202	be
NS	LH162	bf
NS	LH220HT	bg
SS	Wilson 903	bh
NS	L 139	bi
NS	GEMN-0192	bj
NS	GEMN-0205	bk
NS	GEMS-0219	bl
SS	H8431	bm
SS	PHW20	bn
SS	GEMS-0200	bo
NS	GEMN-0046	bp
NS	GEMN-0178	bq
NS	ANTIG03:N1242-B-007-B	br
SS	GEMS-0147	bs