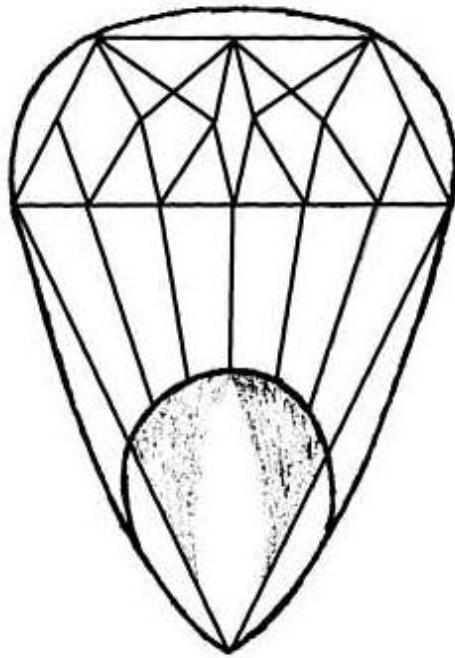


United States Department of Agriculture
Agricultural Research Service



Germplasm Enhancement of Maize

2015 GEM Cooperator Booklet

December 9th 2015

*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 is achieved through collaborative efforts of USDA-ARS, 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 shared and 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

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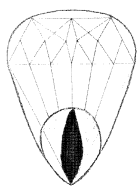
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Rear Cover

GEM WEBSITE

<http://www.public.iastate.edu/~usda-gem/>



**Germplasm
Enhancement of
Maize**

Cooperator Meeting:

DATE: December 9, 2015
HOUR: 1:00 PM-5:00 PM
LOCATION: Regency Ball Room D
Hyatt Regency Hotel, Chicago

Meeting called by: W. Trevisan, Chair

Agenda Topics

Minutes of Dec 8, 2014	T. Koch	1:00-1:10 PM
Update from ASTA	Jane DeMarchi	1:10-1:25 PM
GEM Going Forward	W. Trevisan	1:25-1:50
GEM Annual Reports, YT Results, New Releases	M. Krakowsky, C. Gardner	1:50-2:30 PM
Plot and data report	M. Shen	2:30-2:40 PM
Maize Disease Update	W. Dolezal	2:40-3:00
Break		3:00-3:15 PM
Combining Ability and Density Response of Elite GEM Lines	Jode Edwards	3:15-4:00 PM
Encountering Ways to Identify Useful Germplasm Within Maize Landraces	Martha Willcox	4:00-4:45 PM
Elections & Discussion		4:45-5:00 PM
Adjourn		5:00 PM

Allelic Diversity

GEM Allelic Diversity Project 2014

Table 1: Total AD Races by Country

Country	Races #	% of Total Races*	Races with Acc.&	Accessions	% of Total Acc.\$
ARGENTINA	35	8.2	28	34	8.3
BOLIVIA	45	10.5	31	42	10.2
BRAZIL	44	10.3	34	34	8.3
CHILE	19	4.4	19	20	4.9
COLOMBIA	29	6.8	23	34	8.3
COSTA RICA	4	0.9	4	4	1.0
ECUADOR	40	9.3	33	38	9.3
EL SALVADOR	1	0.2	1	1	0.2
GUATEMALA	24	5.6	20	23	5.6
MEXICO	57	13.3	51	57	13.9
PANAMA	1	0.2	1	0	0.0
PARAGUAY	9	2.1	7	7	1.7
PERU	61	14.3	51	55	13.4
UNITED STATES [#]	17	4.0	17	17	4.1
URUGUAY	4	0.9	4	4	1.0
VENEZUELA	23	5.4	19	21	5.1
WEST INDIES	15	3.5	13	19	4.6
Grand Total	428	100	356	410	100

[#] Unique races for each country; some races are represented in more than one country

* Includes only races that are listed on spreadsheet, not all races of maize

& Races to which accessions have been assigned on spreadsheet; Some accessions may not be readily available from NPGS or other collections...

\$ Includes only accessions that are listed on spreadsheet, not all accessions of maize

[#] All of the "races" are Native American varieties that have been studied only lightly

Table 2: Completed as of October 2015

	F ₁ with PHB47	BC ₁ with PHB47	BC ₁ F ₂ [#]	BC ₁ F ₃	BC ₁ F ₄	BC ₁ F ₅	BC ₁ F ₆	DH	F ₁ with PHZ51	BC ₁ with PHZ51	BC ₁ F ₂	BC ₁ F ₃	BC ₁ F ₄	BC ₁ F ₅	BC ₁ F ₆	DH
ARGENTINA	27 races (28 acc.) [@]	27 races (28 acc.)	5	1					26 races (26 acc.)	22 races (22 acc.)	10					
BOLIVIA	29 races (31 acc.)	29 races (31 acc.)	1	5	5	2			29 races (31 acc.)	27 races (28 acc.)	7	6	6	1		
BRAZIL	34 races (34 acc.)	34 races (34 acc.)	10						34 races (34 acc.)	33 races (33 acc.)	10	2				
CHILE	15 races (15 acc.)	15 races (15 acc.)		1					12 races (12 acc.)	12 races (12 acc.)	1					
COLOMBIA	23 races (34 acc.)	23 races (34 acc.)	3	8	1				22 races (32 acc.)	22 races (31 acc.)	3	9		1		
COSTA RICA	2 races (2 acc.)	2 races (2 acc.)							2 races (2 acc.)	1 races (1 acc.)						
ECUADOR	33 races (36 acc.)	32 races (35 acc.)	9	6	1				33 races (35 acc.)	31 races (33 acc.)	10	7		1		
EL SALVADOR	1 races (1 acc.)	1 races (1 acc.)							1 races (1 acc.)	1 races (1 acc.)						
GUATEMALA	19 races (22 acc.)	18 races (21 acc.)	7	2			2		19 races (22 acc.)	18 races (20 acc.)	8	4				
MEXICO	50 races (54 acc.)	50 races (54 acc.)	9	7			1		48 races (52 acc.)	43 races (45 acc.)	12	8				
PANAMA	1 races (1 acc.)	1 races (1 acc.)							0 races (0 acc.)	0 races (0 acc.)						
PARAGUAY	7 races (7 acc.)	7 races (7 acc.)	3						6 races (6 acc.)	6 races (6 acc.)	4					
PERU	51 races (53 acc.)	50 races (52 acc.)	12	8	4				46 races (48 acc.)	37 races (39 acc.)	12	9	4			
UNITED STATES	17 races (17 acc.)	17 races (17 acc.)							8 races (8 acc.)	0 races (0 acc.)						
URUGUAY	4 races (4 acc.)	4 races (4 acc.)							4 races (4 acc.)	4 races (4 acc.)						
VENEZUELA	19 races (20 acc.)	19 races (20 acc.)	7	1					19 races (20 acc.)	19 races (20 acc.)	12	2				
WEST INDIES	12 races (18 acc.)	12 races (18 acc.)		1					12 races (16 acc.)	12 races (16 acc.)		1				

2015 TOTAL 344 races (377 acc.) 341 races (374 acc.)

321 races (349 acc.) 288 races (311 acc.)

2014 TOTAL 333 races (369 acc.) 324 races (358 acc.)

270 races (289 acc.) 213 races (230 acc.)

[@]Note that some races may be represented by more than one accession and/or are present in more than one country

[#] Does not include material in Pioneer inventory

DH₀ Lines Advanced to DH₁ Generation in 2015

Rec #	Pedigree	Rec #	Pedigree
1	((Arizona - LIB 16/PHZ51 B)/PHZ51)-(2n)-007	50	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-004
2	((CUZCO CUZ217/PHZ51)/PHZ51)-(2n)-004	51	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-005
3	((PATILLO GRANDE BOV649/PHB47)/PHB47)-(2n)-007	52	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-004
4	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-005	53	((PHZ51/Amagaceño - ANT 343)/PHZ51)-(2n)-003
5	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-004	54	((PHZ51/Celaya - GTO 36)/PHZ51)-(2n)-007
6	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-005	55	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-006
7	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-008	56	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-009
8	((PHB47/Celaya - GTO 36)/PHB47)-(2n)-004	57	((PHZ51/Huancavelicano - HVC 179)/PHZ51)-(2n)-004
9	((PHB47/Celaya - GTO 36)/PHB47)-(2n)-005	58	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-006
10	((PHB47/Celaya - GTO 36)/PHB47)-(2n)-007	59	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-007
11	((PHB47/Conico - PUE 48)/PHB47)-(2n)-002	60	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-003
12	((PHB47/Cuzco Cristalino Amarillo - CUZ 363)/PHB47)-(2n)-002	61	((Puya Grande - VEN 651/PHB47)/PHB47)-(2n)-004
13	((PHB47/Cuzco Cristalino Amarillo - CUZ 363)/PHB47)-(2n)-003	62	((SABANERO CUN342/PHB47)/PHB47)-(2n)-002
14	((PHB47/Cuzco Cristalino Amarillo - CUZ 363)/PHB47)-(2n)-004	63	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-007
15	((Puya Grande - VEN 651/PHZ51)/PHZ51)-(2n)-003	64	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-008
16	((Puya Grande - VEN 651/PHZ51)/PHZ51)-(2n)-004	65	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-010
17	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-006	66	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-004
18	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-004	67	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-005
19	((Arizona - LIB 16/PHZ51 B)/PHZ51)-(2n)-008	68	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-007
20	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-006	69	((SinClass.CAU454/PHB47)/PHB47)-(2n)-004
21	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-003	70	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-004
22	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-004	71	((CUZCO CUZ217/PHZ51)/PHZ51)-(2n)-001
23	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-003	72	((CUZCO CUZ217/PHZ51)/PHZ51)-(2n)-005
24	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-006	73	((CUZCO CUZ363/PHZ51)/PHZ51)-(2n)-002
25	((PHZ51/Celaya - GTO 36)/PHZ51)-(2n)-005	74	((CUZCO CUZ363/PHZ51)/PHZ51)-(2n)-003
26	((PHZ51/Celaya - GTO 36)/PHZ51)-(2n)-006	75	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-002
27	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-008	76	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-003
28	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-005	77	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-006
29	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-008	78	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-005
30	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-009	79	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-005
31	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-004	80	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-008
32	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-006	81	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-010
33	((SABANERO CUN342/PHB47)/PHB47)-(2n)-003	82	((PHZ51/Cacahuacintle - MEX 7)/PHZ51)-(2n)-003
34	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-009	83	((PHZ51/Cacahuacintle - MEX 7)/PHZ51)-(2n)-004
35	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-003	84	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-003
36	((Tuxpeño Norteño - CHH287/PHB47 B)/PHB47)-(2n)-009	85	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-004
37	((PHB47/PHB47/(Chillo - ECU 411))-(2n)-001	86	((PHZ51/CORO BOV1064)/PHZ51)-(2n)-001
38	((PHB47/PHB47/(Chillo - ECU 411))-(2n)-005	87	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-010
39	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-006	88	((PHZ51/Huancavelicano - HVC 179)/PHZ51)-(2n)-003
40	((PATILLO GRANDE BOV649/PHB47)/PHB47)-(2n)-002	89	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-004
41	((PATILLO GRANDE BOV649/PHB47)/PHB47)-(2n)-004	90	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-005
42	((PATILLO GRANDE BOV649/PHB47)/PHB47)-(2n)-006	91	((Puya Grande - VEN 651/PHB47)/PHB47)-(2n)-005
43	((PATILLO GRANDE BOV649/PHB47)/PHB47)-(2n)-008	92	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-005
44	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-004	93	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-006
45	((PHB47/Conico - PUE 48)/PHB47)-(2n)-003	94	((Tuxpeño Norteño - CHH287/PHB47 B)/PHB47)-(2n)-010
46	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-003	95	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-005
47	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-005	96	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-006
48	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-006	97	((PHB47/PHB47/(Chillo - ECU 411))-(2n)-002

DH1 Lines Advanced to DH2 Generation in 2015

Rec #	Pedigree	Rec #	Pedigree
1	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-001-001	71	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-001-002
2	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-001-002	72	((PHZ51/CORO BOV1064)/PHZ51 #001)-(2n)-001-003
3	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-001-003	73	((PHZ51/CORO BOV1064)/PHZ51 #001)-(2n)-001-001
4	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-001-004	74	((PHZ51/CORO BOV1064)/PHZ51 #001)-(2n)-001-B
5	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-002-003	75	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-001-003
6	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-002-002	76	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-001-001
7	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-002-001	77	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-001-002
8	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-003-001	78	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-001-004
9	((Arizona - LIB 16/PHB47 B)/PHB47)-(2n)-003-002	79	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-002-001
10	((Chillo - ECU 411/PHZ51)/PHZ51)-(2n)-001-002	80	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-003-001
11	((Chillo - ECU 411/PHZ51)/PHZ51)-(2n)-001-001	81	((PHZ51/Harinoso de Ocho - NAY 24)/PHZ51)-(2n)-004-001
12	((Chillo - ECU 411/PHZ51)/PHZ51)-(2n)-002-001	82	((PHZ51/Huancavelicano - HVC 179)/PHZ51)-(2n)-001-003
13	((Chillo - ECU 411/PHZ51)/PHZ51)-(2n)-003-002	83	((PHZ51/Huancavelicano - HVC 179)/PHZ51)-(2n)-001-001
14	((Conico Norteño - ZAC 161/PHZ51)/PHZ51)-(2n)-001-001	84	((PHZ51/Huancavelicano - HVC 179)/PHZ51)-(2n)-002-001
15	((CORO BOV1064/PHB47)/PHB47 #001)-(2n)-001-003	85	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-001-003
16	((CORO BOV1064/PHB47)/PHB47 #001)-(2n)-001-001	86	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-001-001
17	((CORO BOV1064/PHB47)/PHB47 #001)-(2n)-001-002	87	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-001-002
18	((CORO BOV1064/PHB47)/PHB47 #001)-(2n)-002-001	88	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-002-003
19	((CORO BOV1064/PHB47)/PHB47 #001)-(2n)-003-001	89	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-002-002
20	((CUZCO CUZ363/PHZ51)/PHZ51)-(2n)-001-001	90	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-002-001
21	((PATILLO GRANDE BOV649/PHB47)/PHB47 #001)-(2n)-001-002	91	((PHZ51/San Marceño - GUA 506)/PHZ51)-(2n)-003-001
22	((PATILLO GRANDE BOV649/PHB47)/PHB47 #001)-(2n)-001-001	92	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-003-001
23	((PATILLO GRANDE BOV649/PHZ51)/PHZ51 #001)-(2n)-001-001	93	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-004-001
24	((PHB47/Amagaceño - ANT 343)/PHB47)-(2n)-001-001	94	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-005-001
25	((PHB47/Azul - CHH 218)/PHB47)-(2n)-02-001	95	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-007-001
26	((PHB47/Azul - CHH 218)/PHB47)-(2n)-03-001	96	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-008-001
27	((PHB47/Azul - CHH 218)/PHB47)-(2n)-04-001	97	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-009-001
28	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-001-001	98	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-010-001
29	((PHB47/Cacahuacintle - MEX 7)/PHB47)-(2n)-002-001	99	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-011-001
30	((PHB47/Celaya - GTO 36)/PHB47)-(2n)-002-001	100	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-012-001
31	((PHB47/Conico - PUE 48)/PHB47)-(2n)-001-001	101	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-013-001
32	((PHB47/Conico - PUE 48)/PHB47)-(2n)-001-002	102	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-015-001
33	((PHB47/Conico - PUE 48)/PHB47)-(2n)-001-003	103	((PHZ51/Shajatu - ANC 117)/PHZ51)-(2n)-016-001
34	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-001-001	104	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-001-001
35	((PHB47/Cuzco - CUZ 217)/PHB47)-(2n)-002-001	105	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-001-002
36	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-002	106	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-001-003
37	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-001	107	((PHZ51/Tuxpeño - VER 143)/PHZ51)-(2n)-002-001
38	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-003	108	((Pollo - VEN 310/PHZ51)/PHZ51)-(2n)-003-001
39	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-005	109	((Pollo - VEN 310/PHZ51)/PHZ51)-(2n)-004-001
40	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-004	110	((Pollo - VEN 310/PHZ51)/PHZ51)-(2n)-006-001
41	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-001-006	111	((Puya Grande - VEN 651/PHB47)/PHB47)-(2n)-001-002
42	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-002-001	112	((Puya Grande - VEN 651/PHB47)/PHB47)-(2n)-001-001
43	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-002-002	113	((Puya Grande - VEN 651/PHB47)/PHB47)-(2n)-002-003
44	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-002-003	114	((Puya Grande - VEN 651/PHZ51)/PHZ51)-(2n)-001-003
45	((PHB47/Harinoso de Ocho - NAY 24)/PHB47)-(2n)-003-001	115	((Puya Grande - VEN 651/PHZ51)/PHZ51)-(2n)-002-001
46	((PHB47/Huancavelicano - HVC 179)/PHB47)-(2n)-001-002	116	((Puya Grande - VEN 651/PHZ51)/PHZ51)-(2n)-002-002
47	((PHB47/Huancavelicano - HVC 179)/PHB47)-(2n)-001-001	117	((SABANERO CUN342/PHB47)/PHB47 #001)-(2n)-001-003
48	((PHB47/Huancavelicano - HVC 179)/PHB47)-(2n)-002-001	118	((SABANERO CUN342/PHB47)/PHB47 #001)-(2n)-001-001
49	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-001-003	119	((SABANERO CUN342/PHB47)/PHB47 #001)-(2n)-001-002
50	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-001-004	120	((SABANERO CUN342/PHB47)/PHB47 #001)-(2n)-002-001
51	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-001-001	121	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-001-004
52	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-001-B	122	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-001-003
53	((PHB47/San Marceño - GUA 506)/PHB47)-(2n)-002-001	123	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-001-002
54	((PHB47/Tabloncillo perla-NAY 12)/PHB47)-(2n)-04-001	124	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-001-001
55	((PHB47/Tabloncillo perla-NAY 12)/PHB47)-(2n)-05-001	125	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-002-001
56	((PHB47/Tabloncillo perla-NAY 12)/PHB47)-(2n)-06-001	126	((SABANERO CUN342/PHZ51)/PHZ51)-(2n)-003-001
57	((PHB47/Tabloncillo perla-NAY 12)/PHB47)-(2n)-07-001	127	((Sin Clasificación - CAU454/PHZ51)/PHZ51)-(2n)-001-001
58	((PHB47/Tabloncillo perla-NAY 12)/PHB47)-(2n)-08-001	128	((SinClass.CAU454/PHB47)/PHB47)-(2n)-002-001
59	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-001-001	129	((St Croix - IVC 2/PHZ51)/PHZ51)-(2n)-01-001
60	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-001-002	130	((Tabloncillo - JAL 103/PHZ51)/PHZ51)-(2n)-02-001
61	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-001-003	131	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-001-001
62	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-002-001	132	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-002-001
63	((PHZ51/Cacahuacintle - MEX 7)/PHZ51)-(2n)-001-001	133	((Tuxpeño Norteño - CHH287/PHZ51)/PHZ51)-(2n)-003-001
64	((PHZ51/Cacahuacintle - MEX 7)/PHZ51)-(2n)-002-001	134	((PHB47/((PHB47/((Chillo - ECU 411 #001)))-(2n)-001-002
65	((PHZ51/Celaya - GTO 36)/PHZ51)-(2n)-002-001	135	((PHB47/((PHB47/((Chillo - ECU 411 #001)))-(2n)-001-001
66	((PHZ51/Celaya - GTO 36)/PHZ51)-(2n)-002-002	136	((PHB47/((PHB47/Narino 330)))-(2n)-02-001
67	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-001-005	137	((PHB47/((PHB47/Narino 330)))-(2n)-05-001
68	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-001-B	138	((PHB47/((PHB47/Narino 330)))-(2n)-07-001
69	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-001-004	139	((PHB47/((PHB47/Narino 330)))-(2n)-08-001
70	((PHZ51/Conico - PUE 48)/PHZ51)-(2n)-001-B	140	((PHB47/((PHB47/Narino 330)))-(2n)-09-001
		141	((PHB47/((PHB47/Narino 330)))-(2n)-10-001

2014 Doubled Haploid Lines - Jointly Released by USDA-ARS and Iowa State University

DH Code	Pedigree	Het GRP	Race	Country	Accession No.	Alt. (M)	Avg GDU Shd - 3	Avg GDU Slk - 3	Plant Height	Ear Height
							Env	Env	(cm)	(cm)
BGEM-0001-N	(ALTIPLANO BOV903/PHZ51)/PHZ51 #002-(2n)-003	NS	Altiplano	Bolivia	PI 485364	2980	1561	1546	200	70
BGEM-0003-N	(ALTIPLANO BOV903/PHZ51)/PHZ51 #005-(2n)-001	NS	Altiplano	Bolivia	PI 485364	2980	1592	1599	217	105
BGEM-0005-N	(ALTIPLANO BOV903/PHZ51)/PHZ51 #005-(2n)-005	NS	Altiplano	Bolivia	PI 485364	2980	1509	1584	175	80
BGEM-0006-S	(ALTIPLANO BOV903/PHB47)/PHB47 #001-(2n)-002	SS	Altiplano	Bolivia	PI 485364	2980	1576	1571	185	95
BGEM-0007-S	(ALTIPLANO BOV903/PHB47)/PHB47 #001-(2n)-004	SS	Altiplano	Bolivia	PI 485364	2980	1522	1555	210	100
BGEM-0008-S	(ALTIPLANO BOV903/PHB47)/PHB47 #001-(2n)-005	SS	Altiplano	Bolivia	PI 485364	2980	1509	1575	165	70
BGEM-0010-S	(ALTIPLANO BOV903/PHB47)/PHB47 #003-(2n)-002	SS	Altiplano	Bolivia	PI 485364	2980	989	996	175	80
BGEM-0011-S	(ALTIPLANO BOV903/PHB47)/PHB47 #004-(2n)-002	SS	Altiplano	Bolivia	PI 485364	2980	1510	1599	175	75
BGEM-0012-S	(ALTIPLANO BOV903/PHB47)/PHB47 #004-(2n)-003	SS	Altiplano	Bolivia	PI 485364	2980	1510	1538	130	22
BGEM-0013-S	(ALTIPLANO BOV903/PHB47)/PHB47 #005-(2n)-001	SS	Altiplano	Bolivia	PI 485364	2980	1483	1558	175	85
BGEM-0014-S	(ALTIPLANO BOV903/PHB47)/PHB47 #005-(2n)-003	SS	Altiplano	Bolivia	PI 485364	2980	1554	1578	145	80
BGEM-0015-S	(ANCASHINO ANC102/PHB47)/PHB47 #002-(2n)-001	SS	Ancashino	Peru	PI 514763	2700-3100	1535	1602	190	80
BGEM-0018-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #003-(2n)-002	SS	Andaqui	Colombia	PI 444284	610	1524	1555	175	75
BGEM-0019-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #003-(2n)-004	SS	Andaqui	Colombia	PI 444284	610	1592	1568	185	100
BGEM-0020-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #003-(2n)-005	SS	Andaqui	Colombia	PI 444284	610	1507	1529	180	90
BGEM-0022-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #003-(2n)-007	SS	Andaqui	Colombia	PI 444284	610	1742	1673	150	75
BGEM-0023-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #005-(2n)-001	SS	Andaqui	Colombia	PI 444284	610	1535	1540	160	80
BGEM-0024-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #006-(2n)-001	SS	Andaqui	Colombia	PI 444284	610	1495	1526	150	70
BGEM-0025-S	(ANDAQUI CAQ307 FT/PHB47)/PHB47 #007-(2n)-002	SS	Andaqui	Colombia	PI 444284	610	1588	1572	200	80
BGEM-0026-S	(ARAGUITO VEN678/PHB47)/PHB47 #003-(2n)-002	SS	Araguito	Venezuela	NSL 283561	170	1470	1522	130	70
BGEM-0027-S	(ARAGUITO VEN678/PHB47)/PHB47 #003-(2n)-003	SS	Araguito	Venezuela	NSL 283561	170	1570	1528	185	90
BGEM-0028-S	(ARAGUITO VEN678/PHB47)/PHB47 #003-(2n)-004	SS	Araguito	Venezuela	NSL 283561	170	1473	1572	150	70
BGEM-0029-S	(ARAGUITO VEN678/PHB47)/PHB47 #005-(2n)-003	SS	Araguito	Venezuela	NSL 283561	170	1576	1593	140	60
BGEM-0030-S	(ARAGUITO VEN678/PHB47)/PHB47 #005-(2n)-004	SS	Araguito	Venezuela	NSL 283561	170	1638	1599	150	95
BGEM-0031-S	(ARAGUITO VEN678/PHB47)/PHB47 #005-(2n)-005	SS	Araguito	Venezuela	NSL 283561	170	1552	1556	190	90
BGEM-0032-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-002	SS	Araguito	Venezuela	NSL 283561	170	1489	1551	150	75
BGEM-0033-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-004	SS	Araguito	Venezuela	NSL 283561	170	1550	1642	185	110
BGEM-0034-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-006	SS	Araguito	Venezuela	NSL 283561	170	1505	1528	170	80
BGEM-0035-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-007	SS	Araguito	Venezuela	NSL 283561	170	1604	1564	170	70
BGEM-0036-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-008	SS	Araguito	Venezuela	NSL 283561	170	1566	1562	160	100
BGEM-0037-S	(ARAGUITO VEN678/PHB47)/PHB47 #006-(2n)-009	SS	Araguito	Venezuela	NSL 283561	170	1582	1566	145	65
BGEM-0039-N	((Arizona - LIB 16/PHZ51)/PHZ51)-(2n)-002	NS	Arizona	Peru	PI 485359	1500	1493	1566	190	95
BGEM-0040-N	((Arizona - LIB 16/PHZ51)/PHZ51)-(2n)-003	NS	Arizona	Peru	PI 485359	1500	1476	1504	180	95
BGEM-0041-S	((Arizona - LIB 16/PHB47)/PHB47)-(2n)-001	SS	Arizona	Peru	PI 485359	1500	1539	1565	185	90
BGEM-0042-S	((Avati Moroti Guapi - PAG 139/PHB47)/PHB47)-(2n)-003	SS	Avati Moroti Guapi	Paraguay	PI 485458	600	1621	1594	160	90
BGEM-0044-S	((Blanco Blandito - ECU 523/PHB47)/PHB47)-(2n)-001	SS	Blanco Blandito	Ecuador	PI 488113	2660	1560	1579	190	100
BGEM-0045-N	(BOFO DGO123/PHZ51)/PHZ51 #002-(2n)-001	NS	Bofo	Mexico	Ames 28481	2458	1462	1523	215	95
BGEM-0046-N	(BOFO DGO123/PHZ51)/PHZ51 #002-(2n)-002	NS	Bofo	Mexico	Ames 28481	2458	1572	1564	185	90
BGEM-0047-S	(BOFO DGO123/PHB47)/PHB47 #001-(2n)-001	SS	Bofo	Mexico	Ames 28481	2458	1571	1583	155	70
BGEM-0048-S	(BOFO DGO123/PHB47)/PHB47 #002-(2n)-003	SS	Bofo	Mexico	Ames 28481	2458	1572	1539	160	80
BGEM-0049-S	(BOFO DGO123/PHB47)/PHB47 #003-(2n)-003	SS	Bofo	Mexico	Ames 28481	2458	1471	1530	195	105
BGEM-0050-S	(BOFO DGO123/PHB47)/PHB47 #004-(2n)-001	SS	Bofo	Mexico	Ames 28481	2458	1485	1486	170	80
BGEM-0051-S	(BOFO DGO123/PHB47)/PHB47 #004-(2n)-002	SS	Bofo	Mexico	Ames 28481	2458	1594	1587	175	90

DH Code	Pedigree	Het GRP	Race	Country	Accession No.	Alt. (M)	Avg GDU Shd - 3	Avg GDU Slk - 3	Plant Height (cm)	Ear Height (cm)
							Env	Env		
BGEM-0052-S	(BOFO DGO123/PHB47)/PHB47 #004-(2n)-003	SS	Bofo	Mexico	Ames 28481	2458	1551	1604	180	90
BGEM-0054-S	(CAMELIA CHI411/PHB47)/PHB47 #002-(2n)-001	SS	Camelia	Chile	NSL 42755	510	1507	1517	190	90
BGEM-0055-S	(CAMELIA CHI411/PHB47)/PHB47 #005-(2n)-002	SS	Camelia	Chile	NSL 42755	510	1499	1500	150	60
BGEM-0056-S	(CAMELIA CHI411/PHB47)/PHB47 #005-(2n)-003	SS	Camelia	Chile	NSL 42755	510	1485	1528	170	70
BGEM-0057-S	(CAMELIA CHI411/PHB47)/PHB47 #005-(2n)-006	SS	Camelia	Chile	NSL 42755	510	1531	1549		
BGEM-0059-S	(CANDELA ECU531/PHB47)/PHB47 #003-(2n)-001	SS	Candela	Ecuador	NSL 287040	10-300	1608	1615	170	85
BGEM-0061-N	((Capiro rosado - ARG 460/PHZ51)/PHZ51)-(2n)-001	NS	Capiro rosado	Argentina	Ames 28794	2400	1653	1606	190	95
BGEM-0063-N	(CHANDELLE CUB68 CI/PHZ51)/PHZ51 #004-(2n)-001	NS	Chandelle	Cuba	Ames 28574	Low	1504	1593	190	95
BGEM-0066-N	(PHZ51/CON PN CUZ13)/PHZ51 #007-(2n)-001	NS	Confite Puntigudo	Peru	Ames 28653	2500-3500	1648	1665	155	65
BGEM-0067-S	(PHB47/CON PUNT CUZ13)/PHB47 #002-(2n)-001	SS	Confite Puntigudo	Peru	Ames 28653	2500-3500	1573	1602	160	80
BGEM-0068-S	(PHB47/CON PUNT CUZ13)/PHB47 #005-(2n)-001	SS	Confite Puntigudo	Peru	Ames 28653	2500-3500	1478	1518	160	65
BGEM-0070-S	(CON NORT ZAC161/PHB47)/PHB47 #003-(2n)-001	SS	Conico Norteno	Mexico	PI 515577	1600-2100	1626	1578	165	80
BGEM-0071-S	(CON NORT ZAC161/PHB47)/PHB47 #004-(2n)-001	SS	Conico Norteno	Mexico	PI 515577	1600-2100	1538	1603	165	80
BGEM-0072-S	(CON NORT ZAC161/PHB47)/PHB47 #004-(2n)-004	SS	Conico Norteno	Mexico	PI 515577	1600-2100	1582	1609	165	75
BGEM-0073-S	(CON NORT ZAC161/PHB47)/PHB47 #005-(2n)-001	SS	Conico Norteno	Mexico	PI 515577	1600-2100	1535	1595	150	75
BGEM-0074-S	(CON NORT ZAC161/PHB47)/PHB47 #005-(2n)-003	SS	Conico Norteno	Mexico	PI 515577	1600-2100	1618	1600	165	85
BGEM-0077-S	(CRISTALINO AMAR AR21004/PHB47)/PHB47 #001-(2n)-001	SS	Cristalino amarillo	Argentina	PI 516163	345	1475	1518	175	65
BGEM-0078-S	(CRISTALINO AMAR AR21004/PHB47)/PHB47 #001-(2n)-002	SS	Cristalino amarillo	Argentina	PI 516163	345	1503	1547	175	80
BGEM-0079-S	(CRISTALINO AMAR AR21004/PHB47)/PHB47 #005-(2n)-003	SS	Cristalino amarillo	Argentina	PI 516163	345	1479	1553	160	80
BGEM-0080-S	(CRISTALINO AMAR AR21004/PHB47)/PHB47 #005-(2n)-004	SS	Cristalino amarillo	Argentina	PI 516163	345	1496	1586	180	80
BGEM-0082-S	(CRISTALINO AMAR AR21004/PHB47)/PHB47 #007-(2n)-002	SS	Cristalino amarillo	Argentina	PI 516163	345	1511	1521	130	60
BGEM-0083-S	((Cubano dentado - BOV 585/PHB47)/PHB47)-(2n)-001	SS	Cubano dentado	Bolivia	PI 485383	440	1511	1565	180	100
BGEM-0085-N	(CUZCO CUZ217/PHZ51)/PHZ51 #002-(2n)-001	NS	Cuzco	Peru	PI 485274	2400-3300	1498	1557	170	105
BGEM-0087-N	(DULCILLO DEL NO SON57/PHZ51)/PHZ51 #001-(2n)-001	NS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1544	1558	220	120
BGEM-0088-N	(DULCILLO DEL NO SON57/PHZ51)/PHZ51 #002-(2n)-002	NS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1596	1614	185	90
BGEM-0089-N	(DULCILLO DEL NO SON57/PHZ51)/PHZ51 #002-(2n)-003	NS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1539	1550	150	70
BGEM-0090-N	(DULCILLO DEL NO SON57/PHZ51)/PHZ51 #002-(2n)-004	NS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1586	1627	180	80
BGEM-0094-S	(DULCILLO DE NO SON57/PHB47)/PHB47 #005-(2n)-003	SS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1500	1569	150	70
BGEM-0095-S	(DULCILLO DE NO SON57/PHB47)/PHB47 #006-(2n)-001	SS	Dulcillo del Noroeste	Mexico	PI 490973	1500	1607	1595	155	75
BGEM-0097-S	(EARLY CARIBBEAN MAR9/PHB47)/PHB47 #001-(2n)-002	SS	Early Caribbean	Martinique	Ames 28579	Low	1539	1549	155	75
BGEM-0099-S	(EARLY CARIBBEAN MAR9/PHB47)/PHB47 #006-(2n)-002	SS	Early Caribbean	Martinique	Ames 28579	Low	1598	1618	155	70
BGEM-0100-S	(EARLY CARIBBEAN MAR9/PHB47)/PHB47 #007-(2n)-001	SS	Early Caribbean	Martinique	Ames 28579	Low	1482	1533	150	70
BGEM-0102-N	(ELOTES OCCIDENT NAY29/PHZ51)/PHZ51 #002-(2n)-001	NS	Elotes Occident	Mexico	PI 484828	0-1500	1569	1578	170	70
BGEM-0107-N	(ELOTES OCCIDENT NAY29/PHZ51)/PHZ51 #004-(2n)-004	NS	Elotes Occident	Mexico	PI 484828	0-1500	1625	1617	175	85
BGEM-0108-S	(ELOTES OCCIDENT NAY29/PHB47)/PHB47 #002-(2n)-001	SS	Elotes Occident	Mexico	PI 484828	0-1500	1549	1569	170	80
BGEM-0110-N	(ELOTES OCCIDENT DGO236/PHZ51)/PHZ51 #007-(2n)-001	NS	Elotes Occidentales	Mexico	PI 628414	1200	1462	1517	205	80
BGEM-0111-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-001	SS	Gordo	Mexico	PI 484406	2912	1412	1529	180	90
BGEM-0112-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-002	SS	Gordo	Mexico	PI 484406	2912	1429	1511	180	75
BGEM-0113-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-003	SS	Gordo	Mexico	PI 484406	2912	1439	1549	165	70
BGEM-0114-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-004	SS	Gordo	Mexico	PI 484406	2912	1426	1558	180	80
BGEM-0115-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-005	SS	Gordo	Mexico	PI 484406	2912	1405	1497	170	80
BGEM-0116-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-006	SS	Gordo	Mexico	PI 484406	2912	1431	1516	170	80
BGEM-0117-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-007	SS	Gordo	Mexico	PI 484406	2912	1431	1496	175	80
BGEM-0118-S	(PHB47/GORDO [CHH131]{CIMYT})-B-B-SIB-011-001-001-(2n)-008	SS	Gordo	Mexico	PI 484406	2912	1445	1539	175	75

DH Code	Pedigree	Het GRP	Race	Country	Accession No.	Alt. (M)	Avg GDU Shd - 3	Avg GDU Slk - 3	Plant Height	Ear Height
							Env	Env	(cm)	(cm)
BGEM-0120-N	((Jora - ANC 1/PHZ51)/PHZ51)-(2n)-001	NS	Jora	Peru	PI 571477	400	1540	1595	160	90
BGEM-0121-N	((Jora - ANC 1/PHZ51)/PHZ51)-(2n)-002	NS	Jora	Peru	PI 571477	400	1592	1637	200	115
BGEM-0122-N	((Jora - ANC 1/PHZ51)/PHZ51)-(2n)-003	NS	Jora	Peru	PI 571477	400	1589	1638	185	90
BGEM-0123-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #001-(2n)-001	NS	Karapampa	Bolivia	NSL 286824	2120	1571	1620	190	90
BGEM-0124-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-001	NS	Karapampa	Bolivia	NSL 286824	2120	1508	1582	210	95
BGEM-0125-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-002	NS	Karapampa	Bolivia	NSL 286824	2120	1571	1601	210	105
BGEM-0126-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-003	NS	Karapampa	Bolivia	NSL 286824	2120	1495	1589	195	80
BGEM-0127-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-004	NS	Karapampa	Bolivia	NSL 286824	2120	499	1029	170	80
BGEM-0129-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-006	NS	Karapampa	Bolivia	NSL 286824	2120	1158	1674	150	70
BGEM-0130-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-007	NS	Karapampa	Bolivia	NSL 286824	2120	1582	1596	180	75
BGEM-0131-N	(KARAPAMPA BOV978/PHZ51)/PHZ51 #003-(2n)-008	NS	Karapampa	Bolivia	NSL 286824	2120	1625	1668	170	80
BGEM-0133-S	(KARAPAMPA BOV978/PHB47)/PHB47 #003-(2n)-001	SS	Karapampa	Bolivia	NSL 286824	2120	1434	1536	180	90
BGEM-0134-S	(KARAPAMPA BOV978/PHB47)/PHB47 #004-(2n)-001	SS	Karapampa	Bolivia	NSL 286824	2120	1498	1590	180	105
BGEM-0136-S	(KARAPAMPA BOV978/PHB47)/PHB47 #005-(2n)-002	SS	Karapampa	Bolivia	NSL 286824	2120	1542	1548	165	85
BGEM-0137-S	(KARAPAMPA BOV978/PHB47)/PHB47 #005-(2n)-003	SS	Karapampa	Bolivia	NSL 286824	2120	1521	1545	170	70
BGEM-0138-S	(KARAPAMPA BOV978/PHB47)/PHB47 #005-(2n)-005	SS	Karapampa	Bolivia	NSL 286824	2120	1534	1596	180	95
BGEM-0140-N	(PHZ51/KCELO BOV948)/PHZ51 #001-(2n)-002	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1494	1556	175	70
BGEM-0141-N	(PHZ51/KCELO BOV948)/PHZ51 #001-(2n)-005	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1446	1527	135	75
BGEM-0143-N	(PHZ51/KCELO BOV948)/PHZ51 #003-(2n)-001	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1504	1512	180	75
BGEM-0144-N	(PHZ51/KCELO BOV948)/PHZ51 #003-(2n)-002	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1541	1574	175	85
BGEM-0145-N	(PHZ51/KCELO BOV948)/PHZ51 #004-(2n)-001	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1503	1564	180	85
BGEM-0146-N	(PHZ51/KCELO BOV948)/PHZ51 #004-(2n)-002	NS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1670	1671	180	80
BGEM-0149-S	(PHB47/KCELO BOV948)/PHB47 #001-(2n)-003	SS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1522	1568	170	70
BGEM-0150-S	(PHB47/KCELO BOV948)/PHB47 #003-(2n)-002	SS	Kcello Ecuatoriano	Bolivia	Ames 28740	3560	1530	1539	145	60
BGEM-0151-N	(PHZ51/MISHC ECU321)/PHZ51 #004-(2n)-002	NS	Mishca	Ecuador	PI 488016	2620	1540	1570	170	70
BGEM-0152-N	(PHZ51/MISHC ECU321)/PHZ51 #004-(2n)-003	NS	Mishca	Ecuador	PI 488016	2620	1595	1636	190	90
BGEM-0153-S	(PHB47/MISHCA ECU321)/PHB47 #002-(2n)-001	SS	Mishca	Ecuador	PI 488016	2620	1571	1572	190	95
BGEM-0154-S	(PHB47/MISHCA ECU321)/PHB47 #003-(2n)-001	SS	Mishca	Ecuador	PI 488016	2620	1582	1610	185	90
BGEM-0155-S	(PHB47/MISHCA ECU321)/PHB47 #004-(2n)-001	SS	Mishca	Ecuador	PI 488016	2620	1147	1656	170	80
BGEM-0156-S	(PHB47/MISHCA ECU321)/PHB47 #004-(2n)-002	SS	Mishca	Ecuador	PI 488016	2620	1531	1617	170	95
BGEM-0157-N	CUBA164:N(PHZ51)(PHZ51)-(2n)-002	NS	Mixed Creole	Cuba	PI 489361	Low	1544	1575	175	90
BGEM-0158-S	(MONTANA NAR625/PHB47)/PHB47 #003-(2n)-002	SS	Montana	Colombia	PI 445252	2105	1586	1602	205	95
BGEM-0159-S	(MONTANA NAR625/PHB47)/PHB47 #003-(2n)-003	SS	Montana	Colombia	PI 445252	2105	1612	1647	190	100
BGEM-0160-S	(MONTANA NAR625/PHB47)/PHB47 #006-(2n)-001	SS	Montana	Colombia	PI 445252	2105	1648	1603	200	110
BGEM-0161-S	(MONTANA NAR625/PHB47)/PHB47 #006-(2n)-003	SS	Montana	Colombia	PI 445252	2105	1143	1690	170	90
BGEM-0162-S	(MORADO BOV567/PHB47)/PHB47 #002-(2n)-001	SS	Morado	Bolivia	PI 485373	1590	1625	1615	160	70
BGEM-0164-S	(MORADO BOV567/PHB47)/PHB47 #003-(2n)-002	SS	Morado	Bolivia	PI 485373	1590	1462	1537	160	80
BGEM-0165-S	(MORADO BOV567/PHB47)/PHB47 #003-(2n)-003	SS	Morado	Bolivia	PI 485373	1590	1624	1604	210	105
BGEM-0166-S	(MORADO BOV567/PHB47)/PHB47 #005-(2n)-002	SS	Morado	Bolivia	PI 485373	1590	1609	1547	215	105
BGEM-0167-S	(MORADO BOV567/PHB47)/PHB47 #005-(2n)-003	SS	Morado	Bolivia	PI 485373	1590	1513	1521	160	70
BGEM-0169-S	(MORADO BOV567/PHB47)/PHB47 #006-(2n)-002	SS	Morado	Bolivia	PI 485373	1590	1658	1601	175	85
BGEM-0170-S	(MORADO BOV567/PHB47)/PHB47 #006-(2n)-003	SS	Morado	Bolivia	PI 485373	1590	1641	1642	150	70
BGEM-0172-S	(MORADO CANTENO LIM55/PHB47)/PHB47 #002-(2n)-002	SS	Morado Canteno	Peru	PI 515026	1900	1632	1615	220	110
BGEM-0173-S	(MORADO CANTENO LIM55/PHB47)/PHB47 #002-(2n)-004	SS	Morado Canteno	Peru	PI 515026	1900	1553	1567	175	90

DH Code	Pedigree	Het GRP	Race	Country	Accession No.	Alt. (M)	Avg GDU Shd - 3	Avg GDU Slk - 3	Plant Height (cm)	Ear Height (cm)
							Env	Env		
BGEM-0174-N	(PHZ51/(PHZ51/MOROCHO APC67) #001-(2n))-001	NS	Morocho	Peru	PI 571413	2700	1595	1616	150	65
BGEM-0175-S	(MOROCHO APUC77/PHB47)/PHB47 #003-(2n)-001	SS	Morocho	Peru	PI 503511	2700	1565	1579	195	90
BGEM-0178-S	(PHB47/(PHB47/OLOTON [GUA383]{CIMYT}))-SIB-005-001-001-(2n)-001	SS	Oloton	Guatemala	Ames 28539	1200-2500	1542	1554	220	110
BGEM-0179-S	(PHB47/(PHB47/OLOTON [GUA383]{CIMYT}))-SIB-005-001-001-(2n)-003	SS	Oloton	Guatemala	Ames 28539	1200-2500	1582	1624	200	95
BGEM-0182-N	(ONAVENO SON24/PHZ51)/PHZ51 #004-(2n)-001	NS	Onaveno	Mexico	PI 484880	0-500	1451	1536	195	90
BGEM-0184-N	(ONAVENO SON24/PHZ51)/PHZ51 #005-(2n)-002	NS	Onaveno	Mexico	PI 484880	0-500	1587	1544	185	85
BGEM-0186-S	(ONAVENO SON24/PHB47)/PHB47 #002-(2n)-001	SS	Onaveno	Mexico	PI 484880	0-500	1561	1565	175	90
BGEM-0187-S	(ONAVENO SON24/PHB47)/PHB47 #003-(2n)-001	SS	Onaveno	Mexico	PI 484880	0-500	1556	1612	140	65
BGEM-0188-S	(ONAVENO SON24/PHB47)/PHB47 #004-(2n)-001	SS	Onaveno	Mexico	PI 484880	0-500	1509	1548	195	90
BGEM-0190-N	((Patillo - ECU 417/PHZ51)/PHZ51)-(2n)-002	NS	Patillo	Ecuador	PI 488039	2600	1610	1609	160	75
BGEM-0191-N	(PATILLO BOV493/PHZ51)/PHZ51 #001-(2n)-001	NS	Patillo	Bolivia	Ames 28736	3280	1576	1599	150	75
BGEM-0192-N	(PATILLO BOV493/PHZ51)/PHZ51 #003-(2n)-001	NS	Patillo	Bolivia	Ames 28736	3280	1585	1586	185	90
BGEM-0193-N	(PATILLO BOV493/PHZ51)/PHZ51 #003-(2n)-002	NS	Patillo	Bolivia	Ames 28736	3280	1530	1540	180	90
BGEM-0196-N	(PATILLO GRANDE BOV649/PHZ51)/PHZ51 #006-(2n)-003	NS	Patillo Grande	Bolivia	Ames 28748	2320	1553	1576	230	80
BGEM-0197-S	(PATILLO GRANDE BOV649/PHB47)/PHB47 #002-(2n)-001	SS	Patillo Grande	Bolivia	Ames 28748	2320	1508	1562	160	75
BGEM-0198-S	(PATILLO GRANDE BOV649/PHB47)/PHB47 #003-(2n)-001	SS	Patillo Grande	Bolivia	Ames 28748	2320	1516	1552	195	95
BGEM-0199-S	(PATILLO GRANDE BOV649/PHB47)/PHB47 #006-(2n)-001	SS	Patillo Grande	Bolivia	Ames 28748	2320	1538	1594	195	75
BGEM-0200-S	(PHB47/PERLA ANC23)/PHB47 #002-(2n)-001	SS	Perla	Peru	PI 571479	10-900	1655	1671	170	95
BGEM-0201-N	(PIRA TOL405/PHZ51)/PHZ51 #001-(2n)-001	NS	Pira	Colombia	PI 445528	1100	1513	1544	180	95
BGEM-0202-N	(PIRA TOL405/PHZ51)/PHZ51 #002-(2n)-001	NS	Pira	Colombia	PI 445528	1100	1558	1589	180	85
BGEM-0203-N	(PHZ51/PISAN BOV344)/PHZ51 #001-(2n)-002	NS	Pisankalla	Bolivia	NSL 286568	2240	1532	1560	175	80
BGEM-0204-N	(PHZ51/PISAN BOV344)/PHZ51 #001-(2n)-003	NS	Pisankalla	Bolivia	NSL 286568	2240	1568	1610	205	100
BGEM-0205-N	(PHZ51/PISAN BOV344)/PHZ51 #001-(2n)-004	NS	Pisankalla	Bolivia	NSL 286568	2240	1478	1524	170	90
BGEM-0206-N	(PHZ51/PISAN BOV344)/PHZ51 #001-(2n)-005	NS	Pisankalla	Bolivia	NSL 286568	2240	1601	1607	180	90
BGEM-0207-N	(PHZ51/PISAN BOV344)/PHZ51 #001-(2n)-006	NS	Pisankalla	Bolivia	NSL 286568	2240	1567	1580	150	75
BGEM-0209-N	(PHZ51/PISAN BOV344)/PHZ51 #002-(2n)-002	NS	Pisankalla	Bolivia	NSL 286568	2240	1637	1617	190	90
BGEM-0210-N	(PHZ51/PISAN BOV344)/PHZ51 #003-(2n)-001	NS	Pisankalla	Bolivia	NSL 286568	2240	1571	1636	190	110
BGEM-0211-N	(PHZ51/PISAN BOV344)/PHZ51 #003-(2n)-002	NS	Pisankalla	Bolivia	NSL 286568	2240	1476	1546	185	95
BGEM-0212-N	(PHZ51/PISAN BOV344)/PHZ51 #005-(2n)-001	NS	Pisankalla	Bolivia	NSL 286568	2240	1507	1531	175	85
BGEM-0213-S	(PHB47/PISAN BOV344)/PHB47 #003-(2n)-001	SS	Pisankalla	Bolivia	NSL 286568	2240	1590	1556	205	100
BGEM-0215-N	(POJ CHICO BOV800/PHZ51)/PHZ51 #001-(2n)-001	NS	Pojoso Chico	Bolivia	NSL 286760	920	1686	1666	195	90
BGEM-0216-N	(POJ CHICO BOV800/PHZ51)/PHZ51 #006-(2n)-001	NS	Pojoso Chico	Bolivia	NSL 286760	920	1547	1618	165	95
BGEM-0218-S	(POJ CHICO BOV800/PHB47)/PHB47 #002-(2n)-001	SS	Pojoso Chico	Bolivia	NSL 286760	920	1503	1557	170	90
BGEM-0221-S	(POJ CHICO BOV800/PHB47)/PHB47 #006-(2n)-005	SS	Pojoso Chico	Bolivia	NSL 286760	920	1497	1548	175	75
BGEM-0222-S	(POJ CHICO BOV800/PHB47)/PHB47 #006-(2n)-006	SS	Pojoso Chico	Bolivia	NSL 286760	920	1536	1593	170	80
BGEM-0223-N	(SG HUANCAV JUN164/PHZ51)/PHZ51 #005-(2n)-001	NS	San Geronimo Huancavelicano	Peru	PI 503711	2500-3500	1588	1629	180	95
BGEM-0224-N	(SG HUANCAV JUN164/PHZ51)/PHZ51 #005-(2n)-002	NS	San Geronimo Huancavelicano	Peru	PI 503711	2500-3500	1583	1612	140	85
BGEM-0225-N	(SG HUANCAV JUN164/PHZ51)/PHZ51 #005-(2n)-003	NS	San Geronimo Huancavelicano	Peru	PI 503711	2500-3500	526	1045	160	80

DH Code	Pedigree	Het GRP	Race	Country	Accession No.	Alt. (M)	Avg GDU Shd - 3 Env	Avg GDU Slk - 3 Env	Plant Height (cm)	Ear Height (cm)
BGEM-0226-S	((Semi dentado paulista - PAG I/PHB47)/PHB47)-(2n)-002	SS	Semi dentado paulista	Paraguay	PI 449576	500	1525	1544	180	85
BGEM-0227-N	BR105:N(PHZ51)(PHZ51)-(2n)-001	NS	Suwan	Brazil	Ames 26251	Low	1667	1635	155	80
BGEM-0228-N	BR105:N(PHZ51)(PHZ51)-(2n)-003	NS	Suwan	Brazil	Ames 26251	Low	1683	1640	190	80
BGEM-0233-S	((Tehua - CHS29/PHB47)/PHB47)-(2n)-003	SS	Tehua	Mexico	Ames 29075	800	1583	1574	200	105
BGEM-0235-N	((Tuxpeño - GUA 456/PHZ51)/PHZ51)-(2n)-002	NS	Tuxpeño	Guatemala	Ames 28567	400	1572	1580	180	105
BGEM-0236-S	((Vandeño - GRO 96/PHB47)/PHB47)-(2n)-001	SS	Vandeño	Mexico	Ames 28466	500	1548	1537	175	100
BGEM-0237-N	(YUCATAN TOL389 ICA/PHZ51)/PHZ51 #003-(2n)-001	NS	Yucatan	Colombia	PI 445514	585	1558	1563	215	110
BGEM-0239-N	(YUCATAN TOL389 ICA/PHZ51)/PHZ51 #005-(2n)-001	NS	Yucatan	Colombia	PI 445514	585	1145	1638	195	90
BGEM-0240-N	(YUCATAN TOL389 ICA/PHZ51)/PHZ51 #005-(2n)-002	NS	Yucatan	Colombia	PI 445514	585	1557	1550	190	100
BGEM-0242-N	(YUCATAN TOL389 ICA/PHZ51)/PHZ51 #005-(2n)-005	NS	Yucatan	Colombia	PI 445514	585	1569	1575	160	80
BGEM-0243-S	(YUCATAN TOL389 ICA/PHB47)/PHB47 #002-(2n)-001	SS	Yucatan	Colombia	PI 445514	585	1508	1582	175	80
BGEM-0244-S	(YUCATAN TOL389 ICA/PHB47)/PHB47 #003-(2n)-001	SS	Yucatan	Colombia	PI 445514	585	1484	1507	180	85
BGEM-0246-N	(YUNGUENO BOV362/PHZ51)/PHZ51 #004-(2n)-001	NS	Yungueno	Bolivia	NSL 286578	1020	1535	1569	165	70
BGEM-0247-N	(YUNGUENO BOV362/PHZ51)/PHZ51 #005-(2n)-002	NS	Yungueno	Bolivia	NSL 286578	1020	1688	1575	150	85
BGEM-0248-N	(YUNGUENO BOV362/PHZ51)/PHZ51 #006-(2n)-002	NS	Yungueno	Bolivia	NSL 286578	1020	487	1563	195	95
BGEM-0250-S	(YUNGUENO BOV362/PHB47)/PHB47 #001-(2n)-001	SS	Yungueno	Bolivia	NSL 286578	1020	1653	1540	210	100
BGEM-0252-S	(YUNQUILANO F AND ECU710/PHB47)/PHB47 #007-(2n)-001	SS	Yunquillano forma andaqui	Ecuador	PI 485436	450	1561	1538	185	90
BGEM-0253-N	((Avati Moroti Guapi - PAG 139/PHZ51)/PHZ51)-(2n)-001	NS	Avati Moroti Guapi	Paraguay	PI 485458	600	1471	1538	205	85
BGEM-0254-S	((Chandelle - VEN 409/PHB47)/PHB47)-(2n)-001	SS	Chandelle	Venezuela	PI 488529	305	1449	1483	215	90
BGEM-0255-S	((Chirimito - VEN 703/PHB47)/PHB47)-(2n)-001	SS	Chirimito	Venezuela	PI 504168	100-300	1491	1588	230	105
BGEM-0256-N	((Chirimito - VEN 703/PHZ51)/PHZ51)-(2n)-001	NS	Chirimito	Venezuela	PI 504168	100-300	1466	1501	210	80
BGEM-0257-S	((Culli - ARG 471/PHB47)/PHB47)-(2n)-001	SS	Culli	Argentina	Ames 28799	2200	1457	1518	175	60
BGEM-0258-S	((Culli - ARG 471/PHB47)/PHB47)-(2n)-002	SS	Culli	Argentina	Ames 28799	2200	1486	1547	190	80
BGEM-0259-N	((PHZ51/Jala - JAL 44)/PHZ51)-(2n)-001	NS	Jala	Mexico	PI 484704	1000	1507	1558	240	90
BGEM-0260-N	((Puya - MAG 355/PHZ51 B)/PHZ51)-(2n)-001	NS	Puya	Colombia	PI 444923	30-1300	1489	1549	230	75
BGEM-0261-S	((Tepecintle - GUA 65/PHB47)/PHB47)-(2n)-001	SS	Tepecintle	Guatemala	Ames 29169	1000	1558	1539	200	70
BGEM-0262-S	((Tuxpeño Norteño - CHH287/PHB47)/PHB47)-(2n)-001	SS	Tuxpeño Norteño	Mexico	PI 629142	1000-1800	1479	1505	230	100
BGEM-0263-S	((Tuxpeño Norteño - CHH287/PHB47)/PHB47)-(2n)-002	SS	Tuxpeño Norteño	Mexico	PI 629142	1000-1800	1714	1646	240	95
BGEM-0264-S	((Tuxpeño Norteño - CHH287/PHB47)/PHB47)-(2n)-005	SS	Tuxpeño Norteño	Mexico	PI 629142	1000-1800	1516	1517	230	80
BGEM-0265-S	((Capio rosado - ARG 460/PHB47)/PHB47)-(2n)-001	SS	Capia Rosada	Argentina	Ames 28794	2400	1471	1500	210	70
BGEM-0266-S	((Cateto Nortista - GIN I/PHB47)/PHB47)-(2n)-003	SS	Cateto Nortista	Brazil (Guyana)	PI 449478	20	1567	1556	185	65
BGEM-0268-S	((Capio rosado - ARG 460/PHB47)/PHB47)-(2n)-002	SS	Capia Rosada	Argentina	Ames 28794	2400	1427	1495	280	115
BGEM-0269-S	((Cateto Nortista - GIN I/PHB47)/PHB47)-(2n)-002	NS	Cateto Nortista	Brazil (Guyana)	PI 449478	20	1540	1522	215	65
BGEM-0270-S	((Chandelle - VEN 409/PHB47)/PHB47)-(2n)-002	SS	Chandelle	Venezuela	PI 488529	305	1434	1553	215	65
BGEM-0272-S	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-002	SS	Tuxpeño	Mexico	PI 511649	40-1000	1539	1542	230	80
BGEM-0272-S	((PHB47/Tuxpeño - VER 143)/PHB47)-(2n)-002	SS	Tuxpeño	Mexico	PI 511649	40-1000	1603	1605	230	80

* BGEM-0253 through 0272: Flowering data from one environment

Breeding Cross Observation

2015 GEM Raleigh, NC Breeding Cross Observations *Inbred x Inbred*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Notes (WT = Trevisan, MK = Krakowsky, CG = Gardner)
DK F118/89291	64	1499	63	1471	110	280	MK=Very good
89291/DK MM402A	64	1499	61	1417	115	270	
89291/LH57	59	1369	58	1342	90	250	MK = Good but some stalk rot
LH195/89291	65	1523	63	1471	95	195	MK, CG = Good
LH197/89291	63	1471	60	1393	110	265	MK = Mediocre (Stalk Rot)
89291/LH198	61	1417	59	1369	105	270	MK = Good but some stalk rot
89291/LH210	64	1499	62	1444	140	285	MK = Poor (EHT, Stalk Rot)
89291/NK 787	67	1579	65	1523	110	265	MK, CG = Poor (Stalk lodged)
NK H8431/89291	60	1393	58	1342	105	250	MK = Early, needs another cross
NS701/89291	64	1499	63	1471	105	250	MK = Poor (Stalk Rot)
PHG47/89291	61	1417	60	1393	90	245	MK = Poor (Stalk Rot)
PHN46/89291	63	1471	63	1471	125	270	
PHP38/89291	62	1444	61	1417	105	270	CG = Good/Very Good
LH195/CML277	65	1523	66	1551	95	190	MK, CG, WT = Very Good/Excellent
NS701/CML277	64	1499	65	1523	95	255	MK, CG, WT = Good/Very Good
PHP38/CML277	64	1499	64	1499	110	265	CG = Very Good/Excellent
CML311/DK NL001	65	1523	64	1499	110	270	
CML311/LH197	64	1499	64	1499	110	270	
CML311/LH204	63	1471	63	1471	105	265	
NS701/CML311	67	1579	66	1551	130	265	WT = Good
CML312/DK NL001	64	1499	64	1499	105	255	
CML312/LH197	64	1499	64	1499	120	300	WT = Good
CML312/LH204	63	1471	62	1444	110	275	
NS701/CML312	65	1523	65	1523	135	285	
CML313/DK MBWZ	72	1721	71	1691	110	310	
CML313/DK MM402A	69	1636	68	1607	130	315	
CML313/LH185	65	1523	66	1551	105	280	
CML313/LH188	72	1721	71	1691	125	310	MK = Poor (Ear Quality, husk cover)
CML313/LH189Ht	68	1607	68	1607	125	280	
PHN46/CML313	68	1607	67	1579	140	295	
DK HBA1/CML339	68	1607	69	1636	140	305	
DK MM402A/CML339	68	1607	67	1579	130	295	
CML339/LH185	63	1471	64	1499	110	275	WT = Good
PHN46/CML339	66	1551	66	1551	135	290	
DK MM402A/CML340	66	1551	65	1523	125	300	
CML340/LH195	68	1607	68	1607	110	275	
LH210/CML340	66	1551	66	1551	145	315	WT = Very Good
NS701/CML340	65	1523	65	1523	145	290	MK = Poor (EHT, small ears)
CML340/PHEG9	67	1579	67	1579	130	295	MK, WT = Good/Very Good
PHN46/CML340	64	1499	64	1499	140	290	
DK MM402A/CML343	66	1551	66	1551	90	275	MK, WT = Good
CML343/LH186	65	1523	66	1551	95	255	MK = Good
LH195/CML343	67	1579	67	1579	90	250	MK = Good
LH210/CML343	66	1551	67	1579	125	290	WT = Good
NK_H8431/CML343	60	1393	60	1393	80	250	WT = Very Good; MK = Needs another cross (too early)
NK W8555/CML343	67	1579	66	1551	105	260	
CML343/PHEG9	67	1579	68	1607	105	260	MK, CG = Good/Very Good
PHN46/CML343	64	1499	65	1523	110	260	WT = Very Good
PHP38/CML343	64	1499	65	1523	105	275	WT = Very Good; MK = Good
NK H8431/CML373	60	1393	60	1393	85	245	
DK MM402A/CML395	68	1607	66	1551	135	320	MK = Poor (EHT)
DK F118/CML420	66	1551	66	1551	140	285	

2015 GEM Raleigh, NC Breeding Cross Observations *Inbred x Inbred*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Notes (WT = Trevisan, MK = Krakowsky, CG = Gardner)
LH197/CML420	64	1499	63	1471	110	275	
LH198/CML420	63	1471	63	1471	115	270	
NS701/CML420	65	1523	65	1523	115	260	CG = Good
DK HBA1/CML422	64	1499	64	1499	95	265	MK, CG, WT = Good
CML422/LH185	59	1369	57	1312	75	225	
CML422/LH210	64	1499	63	1471	125	275	
CML422/NK_787	68	1607	66	1551	75	265	MK, CG = Poor (Stalk lodged)
DK F118/CML423	64	1499	64	1499	130	270	
LH195/CML423	61	1417	60	1393	95	245	WT = Very Good; MK = Good but some Stalk Rot
CML423/LH197	59	1369	58	1342	105	250	MK = Mediocre (Stalk Rot)
NK H8431/CML423	59	1369	58	1342	75	215	MK = Poor (Stalk Rot)
CML423/NK_W8555	63	1471	63	1471	115	265	MK = Poor (Stalk Rot, EHT)
PHP38/CML423	60	1393	59	1369	105	255	WT = Very Good; MK = Good
DK HBA1/CML424	64	1499	63	1471	125	285	
LH185/CML424	59	1369	58	1342	80	250	
LH210/CML424	64	1499	62	1444	110	200	
NK_787/CML424	66	1551	64	1499	100	200	MK = Some root lodging
DK F118/CML425	68	1607	66	1551	145	280	
DK HBA1/CML425	66	1551	65	1523	115	285	
CML425/LH185	61	1417	58	1342	105	260	
LH210/CML425	68	1607	66	1551	145	270	MK = Poor (EHT, Husk Cover)
NK_787/CML425	69	1636	67	1579	125	285	MK = Poor (Root lodged)
CML425/NK_W8555	66	1551	64	1499	135	290	
DK F118/CML428	73	1750	72	1721	170	305	MK = Poor (EHT, Husk cover)
DK F118/CML429	72	1721	70	1663	145	300	MK = Poor (EHT, Husk cover)
CML429/DK HBA1	71	1691	69	1636	140	300	MK = Poor (EHT, Husk cover)
DK MM402A/CML429	67	1579	67	1579	125	290	MK = Mediocre (stalk rot and lodging)
CML429/LH185	65	1523	64	1499	145	295	
LH195/CML429	69	1636	69	1636	125	265	
CML429/LH197	69	1636	67	1579	150	305	MK = Poor (EHT, lodging, Stalk Rot)
CML429/LH198	66	1551	65	1523	120	290	
LH210/CML429	72	1721	69	1636	170	335	CG, MK = Poor (EHT)
NK_787/CML429	71	1691	69	1636	135	305	MK = Poor (Root lodged)
CML438/DK F118	66	1551	66	1551	130	285	
LH195/CML438	64	1499	64	1499	95	255	MK = Decent but stalk rot
LH197/CML438	62	1444	62	1444	115	275	MK = Mediocre (Stalk Rot)
CML438/LH198	61	1417	62	1444	110	275	MK = Poor (Stalk Rot)
CML438/LH210	65	1523	65	1523	115	280	MK = Poor (Stalk Rot)
CML438/NK_787	68	1607	67	1579	100	265	MK = Poor (Root lodged)
CML438/NK_W8555	64	1499	64	1499	115	275	MK = Poor (Stalk Rot)
CML438/PHN46	62	1444	62	1444	100	255	WT = Good; MK, CG = Poor (Stalk Rot)
DK F118/CML442	64	1499	65	1523	120	285	MK, WT = Good
LH195/CML442	66	1551	67	1579	115	270	
NS701/CML442	65	1523	65	1523	90	255	
DK MM402A/CML494	65	1523	65	1523	125	300	
LH195/CML494	66	1551	66	1551	105	200	
LH210/CML494	66	1551	66	1551	140	280	
NS701/CML494	65	1523	65	1523	125	260	
PHN46/CML494	63	1471	63	1471	135	265	
PHP38/CML494	63	1471	63	1471	120	265	WT = Very Good; MK = Good
LH195/CA00370	66	1551	67	1579	115	270	MK, WT = Good
LH210/CA00370	67	1579	67	1579	145	315	MK = Poor (EHT, lodged)

2015 GEM Raleigh, NC Breeding Cross Observations *Inbred x Inbred*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Notes (WT = Trevisan, MK = Krakowsky, CG = Gardner)
NS701/CA00370	65	1523	65	1523	155	310	MK = Poor (EHT, Stalk Rot)
CA00370/PHN46	64	1499	64	1499	135	285	
CA00370/PHP38	64	1499	64	1499	115	285	
DK_MM402A/CA34502	66	1551	65	1523	125	300	MK, WT = Good
LH195/CA34502	67	1579	66	1551	115	215	
LH210/CA34502	68	1607	66	1551	140	300	
NK_787/CA34502	69	1636	68	1607	125	300	
NS701/CA34502	65	1523	65	1523	150	295	WT = Good; MK = Poor (EHT, Stalk Rot)
PHN46/CA34502	62	1444	63	1471	125	265	WT = Good
PHP38/CA34502	65	1523	64	1499	105	265	
La Posta Sequia_C7_F71-1-1-1-2-B*3/DK_MM402A	64	1499	63	1471	110	265	WT = Excellent, MK=Very good but some stalk rot
La Posta Sequia_C7_F71-1-1-1-2-B*3/LH195	65	1523	65	1523	95	200	MK, WT = Very Good
La Posta Sequia_C7_F71-1-1-1-2-B*3/LH210	66	1551	66	1551	135	290	MK = Poor (lodged)
NK_787/La Posta Sequia_C7_F71-1-1-1-2-B*3	68	1607	68	1607	120	285	MK = Some root lodging
La Posta Sequia_C7_F71-1-1-1-2-B*3/NK_W8555	65	1523	65	1523	110	270	MK = Poor (Stalk Rot)
NS701/La Posta Sequia_C7_F71-1-1-1-2-B*3	64	1499	64	1499	115	270	MK, WT = Good/Very Good
La Posta Sequia_C7_F71-1-1-1-2-B*3/PHN46	63	1471	63	1471	130	275	WT = Good; MK = Poor (Stalk Rot)
La Posta Sequia_C7_F71-1-1-1-2-B*3/PHP38	63	1471	63	1471	90	250	MK, WT = Very Good/Excellent
KO679Y/LH195	63	1471	63	1471	85	220	MK, CG, WT = Excellent
N3-2-3-3/DK_F118	64	1499	64	1499	145	295	MK = Needs another cross
LH195/N3-2-3-3	65	1523	65	1523	115	280	WT = Very Good
NS701/N3-2-3-3	64	1499	63	1471	105	260	MK = Poor (Stalk Rot)
N3-2-3-3/PHP38	64	1499	63	1471	115	265	MK, CG = Poor (lodged)
TZI8/LH57	63	1471	60	1393	85	250	MK = Cross again
NK_H8431/TZI8	61	1417	60	1393	85	235	CG = Good; MK = Needs another cross (too early)
PHG47/TZI8	60	1393	60	1393	90	235	
LH132.PHG39	64	1500	63	1471	70	225	
LH283.LH287	58	1342	58	1342	60	200	
P1498	58	1342	57	1312	70	230	
MBS2655/MBS9508	58	1342	58	1342	85	250	MK = Good, some stalk rot
MBS3520/MBS8814	60	1393	59	1369	75	245	MK = Stalk Rot, poor husk cover
MBS5411/MBS3644	58	1342	57	1312	85	240	MK = Good

2015 GEM Raleigh, NC Breeding Cross Observations *Segregating F1s*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Ratings (WT = Trevisan; MK = Krakowsky; CG = Gardner)
GEMN-0048/89291	63	1571	61	1516	129	329	
GEMN-0158/89291	65	1630	62	1544	141	340	
GEMS-0175/89291	63	1571	61	1516	129	314	
GEMS-0200/89291	64	1600	62	1544	135	339	MK = Needs another cross
GEMS-0220/89291	62	1544	61	1516	124	334	MK, WT = Good
GEMN-0048/ATL100	68	1712	66	1658	130	331	MK, WT = Good
GEMN-0158/ATL100	70	1770	68	1712	148	330	
GEMS-0175/ATL100	68	1712	66	1658	134	316	MK = Poor (EHT, small ears)
GEMS-0200/ATL100	68	1712	67	1684	139	323	
GEMS-0220/ATL100	66	1658	63	1571	113	311	MK, WT = Good
DK MM402A/ATL100	66	1658	64	1600	111	318	MK = Good
LH195/ATL100	68	1712	66	1658	120	304	
NS701/ATL100	68	1712	66	1658	129	303	
ATL100/PHN46	65	1630	65	1630	126	304	WT, MK = Good
ATL100/PHP38	64	1600	63	1571	110	294	WT = Good, MK = Very Good
GEMN-0097/SX1078	64	1600	63	1571	119	311	
GEMS-0113/SX1078	67	1684	66	1658	141	329	MK, WT = Decent
NS701/SX1078	62	1544	62	1544	140	324	
GEMN-0097/SX2788	67	1684	65	1630	116	303	
GEMS-0113/SX2788	68	1712	67	1684	138	326	WT = Decent
NS701/SX2788	63	1571	63	1571	134	321	
GEMS-0113/CML311	68	1712	65	1630	158	354	WT = Decent, MK = Poor (EHT)
GEMS-0113/CML312	64	1600	63	1571	134	333	MK = Good, WT = Very Good
GEMS-0220/CML312	65	1630	64	1600	119	318	MK, WT = Very Good
CML313/GEMN-0048	69	1740	68	1712	133	343	MK = Cross again
CML313/GEMN-0097	68	1712	66	1658	141	346	MK = Cross again
CML339/GEMN-0048	68	1712	67	1684	140	340	MK = Cross again
CML339/GEMN-0097	64	1600	63	1571	131	340	WT = Decent; MK = Cross again
GEMN-0158/CML339	71	1799	69	1740	153	321	
CML343/GEMS-0032	74	1885	70	1770	146	336	WT = Good, MK = Needs another Cross
GEMN-0048/CML343	66	1658	65	1630	124	323	MK, WT = Excellent
CML343/GEMN-0158	71	1799	69	1740	138	323	MK = Poor (EHT, RL)
GEMS-0175/CML343	66	1658	65	1630	125	304	MK = Poor plant health
GEMS-0200/CML343	68	1712	67	1684	135	319	
GEMS-0220/CML343	68	1712	67	1684	125	310	WT, MK = Decent
GEMN-0048/CML395	71	1799	68	1712	138	341	
GEMN-0097/CML395	65	1630	65	1630	149	333	MK = Needs another cross
GEMN-0158/CML395	69	1740	66	1658	166	346	
GEMN-0048/CML438	64	1600	63	1571	116	294	
GEMN-0097/CML438	62	1544	61	1516	109	298	MK = Stalk rot
GEMS-0113/CML438	66	1658	65	1630	109	289	WT, MK = Decent but stalk rot
GEMS-0175/CML438	63	1571	62	1544	111	300	MK = Stalk rot, poor plant health
CML438/GEMS-0200	65	1630	62	1544	116	304	MK = Stalk rot
GEMS-0220/CML438	63	1571	62	1544	118	306	MK = Decent but stalk rot
CML494/GEMS-0032	72	1826	69	1740	145	316	MK = Needs another cross
GEMN-0048/CML494	65	1630	65	1630	133	320	
GEMN-0158/CML494	65	1630	65	1630	138	310	MK = Needs another cross
GEMS-0175/CML494	64	1600	64	1600	148	328	MK = Poor (EHT, plant health)

2015 GEM Raleigh, NC Breeding Cross Observations *Segregating F1s*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Ratings (WT = Trevisan; MK = Krakowsky; CG = Gardner)
GEMS-0200/CML494	67	1684	66	1658	125	313	MK = Good
GEMS-0220/CML494	65	1630	64	1600	139	316	WT, MK = Decent
GEMN-0158/CA00370	64	1600	63	1571	136	328	MK= EHT a problem
CA00370/GEMS-0175	63	1571	63	1571	138	326	WT, MK = Decent
CA00370/GEMS-0200	67	1684	65	1630	130	320	WT, MK = Good but EHT a problem
CA00370/GEMS-0220	65	1630	63	1571	136	335	MK= EHT a problem
GEMN-0048/LPS C7 F71-1-1-1-2-B	65	1630	64	1600	124	315	MK = Good, WT = Very good
GEMN-0158/LPS C7 F71-1-1-1-2-B	64	1600	64	1600	140	320	
GEMS-0175/LPS C7 F71-1-1-1-2-B	61	1516	61	1516	115	291	
LPS_C7_F71-1-1-1-2-B/GEMS-0200	66	1658	65	1630	140	335	WT = Very good, MK = Needs another cross
GEMS-0220/LPS C7 F71-1-1-1-2-B	63	1571	63	1571	124	316	MK = Very good, WT = Excellent
KO679Y/GEMS-0227	57	1408	56	1379	105	265	MK, WT = Very Good/Excellent
GEMS-0113/N3-2-3-3	61	1516	60	1488	134	323	WT = Decent
FL4BT7/DK MM402A	65	1630	65	1630	113	294	WT, MK = Very good/Excellent
PHN46/FL4BT7	67	1684	66	1658	121	293	MK = Decent/Good
GEMS-0050/CL-G1501:S17b-B-020-B	62	1544	61	1516	100	275	WT, MK = Decent
BR105:S16-042-001-B/CL-G1501:S17b-B-020-B	61	1516	61	1516	105	311	WT, MK = Decent
BR105:S16-042-001-B/GEMS-0113	65	1516	64	1516	130	317	MK = Poor plant health
GEMS-0175/GEMS-0027	59	1460	59	1460	101	291	MK = Poor plant health
GEMS-0220/GEMS-0027	60	1488	59	1460	105	315	MK, WT = Very Good
CL-G1501:S17b-B-020-B/GEMS-0027	60	1488	60	1488	116	318	WT = Decent, MK = Good
GEMS-0175/GEMS-0032	62	1544	61	1516	105	305	MK = Poor plant health
GEMS-0200/GEMS-0032	64	1600	63	1571	125	324	MK, WT = Decent
GEMS-0202/GEMS-0032	62	1544	61	1516	125	311	WT = Decent, MK = Needs another cross
CL-G1501:S17b-B-020-B/GEMS-0032	61	1516	61	1516	111	318	WT, MK = Very good
(NC368/CML343-001-008-003-B)/GEMS-0027	67	1684	65	1630	133	345	WT, MK = Decent
(NC368/CML343-001-008-003-B)/(CL-G1501:S17b-B-20-B)	65	1630	65	1630	105	295	WT, MK = Good
(NC368/CML343-001-023-001-B)/GEMS-0091	64	1600	62	1544	110	305	
(NC368/CML343-001-023-001-B)/GEMS-113	63	1571	62	1544	111	310	WT, MK = Decent
(NC368/CML343-001-023-001-B)/GEMS-175	63	1571	62	1544	113	299	MK = Poor (plant health)
G17(C34)HS208-001-002-002-002-#/GEMN-0097	58	1432	58	1432	109	298	WT, MK = Decent
G17(C34)HS208-001-002-002-002-#/DK HBA1	65	1630	63	1571	116	295	WT, MK = Good
G17(C34)HS208-001-002-002-002-#/LH210	61	1516	61	1516	136	316	WT = Decent; MK = Cross again
G17(C34)HS208-001-002-002-002-#/NK787	62	1544	61	1516	96	285	WT = Very good, MK = Good but problem with stalk rot
DK_F118/(DTPY C9/G18)-060-001-001-001-001-#	63	1571	63	1571	148	335	WT = Decent, MK = Needs another cross

2015 GEM Raleigh, NC Breeding Cross Observations *Segregating F1s*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Ratings (WT = Trevisan; MK = Krakowsky; CG = Gardner)
(DTPY C9/G18)-060-001-001-001-001-#/LH195	61	1516	61	1516	124	311	WT, MK = Very good
(DTPY C9/G18)-060-001-001-001-001-B/GEMS-0113	60	1488	60	1488	126	328	MK = Decent
(MBR/MDR C3 AMS1/G18)-123-002-002-002-003-#/DK F118	60	1488	60	1488	118	323	
(MBR/MDR C3 AMS1/G18)-123-002-002-002-003-#/LH195	61	1516	61	1516	94	301	WT, MK = Good
(MBR/MDR C3 AMS1/G18)-123-002-002-002-003-B/GEMS-0113	58	1432	59	1460	114	321	WT = Decent, MK = Good
Pool 33-128-001-001-B/GEMN-0097	59	1460	58	1432	99	284	
Pool 33-128-001-001-#/DK HBA1	60	1488	60	1488	114	296	MK, WT = Very Good
Pool 33-128-001-001-#/LH210	60	1488	59	1460	108	302	MK, WT = Good but stalk rot susceptible?
Pool 33-128-001-001-#/NK787	63	1571	62	1544	99	286	
Population 21/GEMS-0113	71	1799	68	1712	165	355	WT = Decent, MK = Needs another cross
GEMN-0048/Population 32	66	1658	64	1600	135	330	MK = Decent, WT = Good
Population 32/GEMN-0097	62	1544	62	1544	125	323	
Population 33 (IST) C2/DK HBA1	61	1516	61	1516	103	290	MK, WT = Good
Population 33 (IST) C2/LH210	61	1516	61	1516	109	300	MK = Poor (Stalk rot)
Population 33 (IST) C2/NK787	61	1516	60	1488	104	293	MK = Poor (Root lodged)
GEMN-0048/Population 35	66	1658	63	1571	131	334	
Population 35/GEMN-0097	61	1516	60	1488	118	329	WT = Decent
Population 45 (IST) C2/DK F118	60	1488	60	1488	116	303	
Population 45 (IST) C2/LH195	61	1516	61	1516	101	290	MK = Decent/Good
GEMN-0048/HB 83	75	1914	69	1740	123	315	
GEMN-0097/HB 83	67	1684	64	1600	134	334	
GEMN-0048/ICA 156	70	1770	66	1658	119	335	
GEMN-0097/ICA 156	64	1600	62	1544	133	340	WT, MK = Decent
GEMN-0097/INIA 160	58	1432	57	1408	103	314	
GEMN-0048/PM-102	66	1658	64	1600	154	350	
PM-102/GEMN-0097	63	1571	61	1516	141	343	MK = Poor (EHT, lodging)
PM-212/GEMN-0097	67	1684	64	1600	164	355	
GEMN-0048/PM-701	71	1799	68	1712	160	358	
PM-701/GEMN-0097	66	1658	65	1630	145	348	
GEMN-0097/Cubano Amarillo Duro-ECU 904	66	1658	62	1544	155	349	
GEMN-0048/Criollo-GUA Group 21-18A	70	1770	64	1600	156	351	
Criollo-GUA Group 21-18A/GEMN-0097	64	1600	62	1544	155	349	
GEMN-0097/Perla-LIM 13	66	1658	63	1571	165	355	
Puya-SAN 349/GEMN-0097	65	1630	62	1544	143	343	MK = Poor (Root lodged)
GEMN-0097/Cubano Amarillo Duro-UCA 12	66	1658	63	1571	143	349	

2015 GEM Raleigh, NC Breeding Cross Observations *Segregating F1s*

Pedigree	Days to Silk	GDU to Silk	Days to ANT	GDU to ANT	Ear Height (cm)	Plant Height (cm)	Ratings (WT = Trevisan; MK = Krakowsky; CG = Gardner)
Amarillo precoz-Valle 343/GEMN-0097	62	1544	62	1544	138	349	
GEMN-0097/Canilla-VEN 981	69	1740	64	1600	141	334	
Tuxpeño-VER 147/GEMS-0113	71	1799	66	1658	153	335	MK = Needs another cross
Tuxpeño-VER 147/GEMS-0220	65	1630	65	1630	150	335	MK = Needs another cross
DeKalb 65-18	57	1408	57	1408	71	252	
DeKalb 68-04	57	1408	56	1379	81	256	
HC33xTR7322	59	1460	58	1432	86	274	
MBS2975xMBS9703	60	1488	58	1432	84	260	MK = Stalk rot, early plant death
Pioneer 1498	56	1379	55	1352	81	260	
Pioneer 1745R	59	1460	59	1460	97	287	
Pioneer 2088R	60	1488	59	1460	76	279	

2015 GEM-Raleigh New Breeding Crosses

Pedigree	Source germplasm	% Exotic	Heterotic pattern
DK 6F629/CML287	CIMMYT Inbred x ex-PVP	50	SSS
DK_NL001/CML287	CIMMYT Inbred x ex-PVP	50	SSS
LH193/CML287	CIMMYT Inbred x ex-PVP	50	SSS
LH197/CML287	CIMMYT Inbred x ex-PVP	50	SSS
LH202/CML287	CIMMYT Inbred x ex-PVP	50	SSS
LH204/CML287	CIMMYT Inbred x ex-PVP	50	SSS
PHP38/CML287	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0219/CML287	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0220/CML287	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0227/CML287	GEM-Ames x CIMMYT Inbred	63	SSS
CML312/PHP38	CIMMYT Inbred x ex-PVP	50	SSS
CML312/DK_6F629	CIMMYT Inbred x ex-PVP	50	SSS
LH193/CML312	CIMMYT Inbred x ex-PVP	50	SSS
CML312/LH202	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0219/CML312	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0220/CML312	GEM-Ames x CIMMYT Inbred	63	SSS
PHKE6/CML313	CIMMYT Inbred x ex-PVP	50	NSSS
PHN37/CML313	CIMMYT Inbred x ex-PVP	50	NSSS
PHN73/CML313	CIMMYT Inbred x ex-PVP	50	NSSS
LH193/CML343	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0227/CML343	GEM-Ames x CIMMYT Inbred	63	SSS
DK_6F629/CML373	CIMMYT Inbred x ex-PVP	50	SSS
DK_F118/CML373	CIMMYT Inbred x ex-PVP	50	SSS
CML373/DK_NL001	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH193	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH195	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH198	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH197	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH202	CIMMYT Inbred x ex-PVP	50	SSS
CML373/LH204	CIMMYT Inbred x ex-PVP	50	SSS
PHP38/CML373	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0202/CML373	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0219/CML373	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0220/CML373	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0227/CML373	GEM-Ames x CIMMYT Inbred	63	SSS
CML375/DK_MM402A	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/PHKE6	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/PHN37	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/PHN73	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/LH185	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/PHN46	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/DK_HBA1	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/LH210	CIMMYT Inbred x ex-PVP	50	NSSS
CML375/NK787	CIMMYT Inbred x ex-PVP	50	NSSS
DK_HBA1/CML395	CIMMYT Inbred x ex-PVP	50	NSSS
NK787/CML395	CIMMYT Inbred x ex-PVP	50	NSSS
CML395/PHKE6	CIMMYT Inbred x ex-PVP	50	NSSS
PHN37/CML395	CIMMYT Inbred x ex-PVP	50	NSSS
CML395/PHN46	CIMMYT Inbred x ex-PVP	50	NSSS
PHN73/CML395	CIMMYT Inbred x ex-PVP	50	NSSS
DK_MM402A/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
LH185/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
PHKE6/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
PHN37/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
PHN73/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
PHN46/CML430	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/DK_MM402A	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/PHKE6	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/PHN37	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/PHN73	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/LH185	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/PHN46	CIMMYT Inbred x ex-PVP	50	NSSS

2015 GEM-Raleigh New Breeding Crosses

Pedigree	Source germplasm	% Exotic	Heterotic pattern
CML449/DK HBA1	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/LH210	CIMMYT Inbred x ex-PVP	50	NSSS
CML449/NK787	CIMMYT Inbred x ex-PVP	50	NSSS
GEMN-0048/CML449	GEM-Ames x CIMMYT Inbred	63	NSSS
LH204/CML494	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0227/CML494	GEM-Ames x CIMMYT Inbred	63	SSS
PHKE6/CA00370	CIMMYT Inbred x ex-PVP	50	NSSS
PHN37/CA00370	CIMMYT Inbred x ex-PVP	50	SSS
PHN73/CA00370	CIMMYT Inbred x ex-PVP	50	NSSS
PHN73/CA34502	CIMMYT Inbred x ex-PVP	50	NSSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/DK F118	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH193	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH195	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH198	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH197	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/PHP38	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/DK 6F629	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/DK NL001	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH202	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/LH204	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0113/La Posta Seq C7 F64-1-1-1-1-B-B-B	GEM-Ames x CIMMYT Inbred	63	SSS
La Posta Seq C7 F64-1-1-1-1-B-B-B/GEMS-0219	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0220/La Posta Seq C7 F64-1-1-1-1-B-B-B	GEM-Ames x CIMMYT Inbred	63	SSS
GEMS-0227/La Posta Seq C7 F64-1-1-1-1-B-B-B	GEM-Ames x CIMMYT Inbred	63	SSS
La Posta Sequia C7 F71-1-1-1-2-B-B-B/LH193	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Sequia C7 F71-1-1-1-2-B-B-B/LH197	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Sequia C7 F71-1-1-1-2-B-B-B/DK NL001	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Sequia C7 F71-1-1-1-2-B-B-B/LH202	CIMMYT Inbred x ex-PVP	50	SSS
La Posta Sequia C7 F71-1-1-1-2-B-B-B/LH204	CIMMYT Inbred x ex-PVP	50	SSS
GEMS-0227/La Posta Sequia C7 F71-1-1-1-2-B-B-B	GEM-Ames x CIMMYT Inbred	63	SSS
DK 6F629/Ki43	Thai Inbred x ex-PVP	50	SSS
Ki43/DK F118	Thai Inbred x ex-PVP	50	SSS
Ki43/DK HBA1	Thai Inbred x ex-PVP	50	NSSS
Ki43/DK MM402A	Thai Inbred x ex-PVP	50	NSSS
DK NL001/Ki43	Thai Inbred x ex-PVP	50	SSS
Ki43/LH185	Thai Inbred x ex-PVP	50	NSSS
LH193/Ki43	Thai Inbred x ex-PVP	50	SSS
Ki43/LH195	Thai Inbred x ex-PVP	50	SSS
Ki43/LH197	Thai Inbred x ex-PVP	50	SSS
Ki43/LH198	Thai Inbred x ex-PVP	50	SSS
LH204/Ki43	Thai Inbred x ex-PVP	50	SSS
Ki43/LH210	Thai Inbred x ex-PVP	50	NSSS
Ki43/NK787	Thai Inbred x ex-PVP	50	NSSS
Ki43/PHKE6	Thai Inbred x ex-PVP	50	NSSS
Ki43/PHN46	Thai Inbred x ex-PVP	50	NSSS
Ki43/PHN73	Thai Inbred x ex-PVP	50	NSSS
Ki43/PHP38	Thai Inbred x ex-PVP	50	SSS
GEMS-0027/GEMS-0227	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0219/GEMS-0032	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0227/GEMS-0032	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0113/GEMS-0258	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0258/GEMS-0219	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0220/GEMS-0258	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0258/GEMS-0227	GEM-Raleigh x GEM-Ames	37	SSS
GEMS-0220/BR105:S16-(373-7)-008-011-#	GEM-Ames x GEM-Raleigh Experimental	37	SSS
BR105:S16-(373-7)-008-011-#/GEMS-0227	GEM-Ames x GEM-Raleigh Experimental	37	SSS
BR105:S16-042-001-#/GEMS-0227	GEM-Ames x GEM-Raleigh Experimental	37	SSS
GEMS-0220/NC368/CML343-001-023-001-#	GEM-Ames x GEM-Raleigh Experimental	37	SSS
NC368/CML343-001-023-001-#/GEMS-0227	GEM-Ames x GEM-Raleigh Experimental	37	SSS
GEMN-0043/GEMN-0135	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0043/GEMN-0137	GEM-Raleigh x GEM-Raleigh	50	NSSS

2015 GEM-Raleigh New Breeding Crosses

Pedigree	Source germplasm	% Exotic	Heterotic pattern
GEMN-0043/GEMN-0232	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0048/GEMN-0119	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0135	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0137	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0208	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0213	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0232	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0242	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0257	GEM-Ames x GEM-Raleigh	37	NSSS
GEMN-0048/GEMN-0259	GEM-Ames x GEM-Raleigh	37	NSSS
(89291.LH59)/GEMN-0048	Breeding cross x GEM-Ames	37	NSSS
(89291.PHG47)/GEMN-0048	Breeding cross x GEM-Ames	37	NSSS
GEMN-0104/GEMN-0124	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0137	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0213	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0232	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0242	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0104/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0135	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0208	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0213	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0232	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0242	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0124/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
(89291.LH59)/GEMN-0124	Breeding cross x GEM-Raleigh	50	NSSS
(89291.PHG47)/GEMN-0124	Breeding cross x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0135/GEMN-0137	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0232	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0242	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0135/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0137/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0137/GEMN-0135	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0137/GEMN-0213	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0137/GEMN-0242	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0137/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0137/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0213/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0232/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0232/GEMN-0242	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0232/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0232/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0232/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0242/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0242/GEMN-0254	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0242/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0242/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0254/GEMN-0257	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0254/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0257/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS
GEMN-0257/GEMN-0259	GEM-Raleigh x GEM-Raleigh	50	NSSS
GEMN-0259/GEMN-0097	GEM-Raleigh x GEM-Ames	37	NSSS

2015 GEM Ames-Coordinated Breeding Cross Observations Summary (3 Locations)				
Pedigree	Ames Appearance Score	York, NE Ear rating	York, NE Overall rating	Ft. Branch, IN Overall Rating
((((NKS8326/CML373)/GEMN-0097)-SIB/3IIH6)	4.5	7	3	5
((((NKS8326/CML373)/GEMN-0097)-SIB/PHG29)	6	9	5	3.5
((B126xB84)/(GEMS-0147/GEMS-0227))	3	9	9	3
((B97xPHR03)/BG002:T26aN(GEMN-0155))	4	9	7	4
((GEMN-0140/GEMN-0097)-B-B-034-B/GEMN-0205)	7	7	7	4
((GEMN-0140/GEMN-0097)-B-B-034-B/MBRC10:N1730-B-128-B)	4	7	7	3
((GEMN-0173/KO679Y)/(GEMN-0140/GEMN-0097)-B-B-034-B)	6	9	9	6
((GEMN-0173/KO679Y)/3IIH6)	4			4.5
((GEMS-0147/GEMS-0227)/GEMS-0219)	9	9	9	4
((GEMS-0147/GEMS-0227)/PHP38)	6	9	9	4
((GEMS-0219)/(KO679Y/GEMS-0030))	6	7	7	6
((GEMS-0219)/3IIH6)	7	7	9	4.5
((GEMS-0227/Ki 14)/(B126xB84))	6	7	7	4.5
((GEMS-0227/Ki 14)/(B126xPHP38))	6	9	7	6.5
((GEMS-0227/Ki 14)/GEMS-0115)	5	9	7	6.5
((GEMS-0227/Ki 14)/PHP38)	8	7	7	5.5
((KO679Y/GEMS-0030)/4676A)	6.5	7	7	5
((KO679Y/GEMS-0030)/794)	5	5	7	5
((KO679Y/GEMS-0030)/GEMS-0219)	6	7	7	5
((LH195/KO679Y)/(B126xB84))	4	7	7	4
((LH195/KO679Y)/794)	5	7	7	3.5
((LH195/KO679Y)/GEMS-0227)	6	7	7	5
((LH61/(GEMN-0130/MP494))/BCC03)	4	7	5	5
((LH61/(GEMN-0130/MP494))/PHN46)	4	7	7	4
((LH61/MSU_1)/PHN82)	5	7	7	3.5
((LH61/MSU_1)/PHP02)	6	7	7	3.5
((LH61/MSU_1)/PHP55)	3	7	5	4
((N28/KO679Y)/(GEMS-0219))	6.5	7	5	6.5
((N28/KO679Y)/4676A)	6.6	7	5	5.5
((Oh7B/KO679Y)/3IIH6)	4.5	7	7	4.5
((Oh7B/KO679Y)/GEMN-0205)	7	7	7	6
((Oh7B/KO679Y)/LH185)	6.7	7	7	5
((SX2788:S(794)(GEMS-0188))/G39)	4	9	7	4.5
((SX2788:S(794)(GEMS-0188))/GEMS-0226)	7.5	9	7	4.5
((Tuxpeno Comp.(M)C5xB126)/GEMS-0219)	8	9	9	4.5
(3IIH6 /((NKS8326/CML373)/GEMN-0097)-SIB)	3.5	7	5	4.5
(3IIH6 /MBRC10:N1730-B-128-B)	3	7	7	3.5
(794/(LH195/KO679Y))	4	7	7	4
(BG002:T26aN(GEMN-0155)/(B97xPHR03))	4	9	7	4.5
(BG002:T26aN(GEMN-0155)/PHG29)	3.5	7	5	4.5
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0178)	5	9	9	5.5
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0221)	4	7	5	5
(CUBA164:T26aS41-B-040-B/GEMS-0115)	7	7	7	6.5
(DKB844:S0251/GEMS-0219)	6.5	9	5	6
(DKB844:S0251/GEMS-0227)	6.7	7	7	5.5
(G39/SX2788:S(794)(GEMS-0188))	6	7	7	5.5
(GEMN-0205/(GEMN-0140/GEMN-0097)-B-B-034-B)	3.5	9	5	3.5
(GEMN-0205/(Oh7B/KO679Y))	6	7	7	4
(GEMN-0221/BR105:N(GEMN-0174)(GEMN-0156)-101-001)	7	7	5	4.5
(GEMN-0239/(GEMN-0097/Ki 14))	6	7	7	6
(GEMS-0115/CUBA164:T26aS41-B-040-B)	7	7	9	6
(GEMS-0219/(GEMS-0147/GEMS-0227))	7	9	9	4
(GEMS-0219/(N28/KO679Y))	7	7	7	5.5
(GEMS-0219/DKB844:S0251)	6.5	9	5	5
(GEMS-0226/(SX2788:S(794)(GEMS-0188)))	3.5	7	7	5

2015 GEM Ames-Coordinated Breeding Cross Observations Summary (3 Locations)				
Pedigree	Ames Appearance Score	York, NE Ear rating	York, NE Overall rating	Ft. Branch, IN Overall Rating
(GEMS-0227/(LH195/KO679Y))	7	9	9	5
(GEMS-0227/CUBA164:T26aS41-B-040-B)	7.5	7	7	6
(GEMS-0227/DKB844:S0251)	7.5	9	9	6
(GEMS-0227/GEMS-0219)	8.5	9	9	5
(LH185/(LH61/MSU_1))	5	7	7	3.5
(LH185/(Oh7B/KO679Y))	4.5	7	7	3.5
(MBRC10:N1730-B-128-B/(GEMN-0140/GEMN-0097)-B-B-034-B)	5	7	7	3
(MBRC10:N1730-B-128-B/3IIH6)	5	7	7	3
(MBRC10:N1730-B-128-B/GEMN-0239)	5.5	3	3	3
(MBRC10:N1730-B-128-B/PHG29)	5	7	7	4
(MBRC10:N1730-B-128-B/PHP02)	5	7	7	3.5
(PHG29/((NKS8326/CML373)/GEMN-0097)-SIB)	4	7	5	3.5
(PHG29/MBRC10:N1730-B-128-B)	4	7	7	3.5
(PHP02/(LH61/MSU_1))	6	9	7	3
(PHP02/MBRC10:N1730-B-128-B)	6.5	7	7	3
(PHP38/(GEMS-0227/Ki 14))	7.5	9	9	6
(PHP55/(LH61/MSU_1))	7	7	7	3
(PHV78/(GEMN-0097/Ki 14))	5	9	5	5.5
(SX2788:S(794)(GEMS-0188)/(GEMS-0219)	5	9	5	4
(SX2788:S(794)(GEMS-0188)/GEMS-0227)	7	7	7	4.5
(Tuxpeno Comp.(M)C5xB126/(LH61/MSU_1))	6.5	7	3	3
A619xA632	5	7	5	3.5
B73/Mo17	3.5	7	5	3
GEMN-0173/KO679Y	2.5	7	3	6.5
KO679Y/GEMN-0173	3			6
KO679Y/LH195	8	9	9	7.5
KO679Y/N28	4	9	9	6.5
KO679Y/Oh7B	4	7	3	7
LH195/KO679Y	8	9	9	6.5
LH198/G39	5.5	9	5	3
LH200xLH262	5	9	7	5
MBS3520/MBS8814	6.5	9	9	4
MBS9508/MBS2655	8	7	7	5
N28/KO679Y	6	9	9	7.5
Oh7B/KO679Y	6	7	3	6

Data is based on averages of two reps. 1-9 Scale, 9 is best

2015 GEM Ames, IA Breeding Cross Observations

Pedigree	EARHT	PLTHT	Pollen GDU	Silk GDU	Barren Count	Husk Length	Husk Tightness	Appearance Score	Comments
((((NKS8326/CML373)/GEMN-0097)-SIB/3IIH6)	145	350	1253	1253	0	5	6	4.5	Animal damage, early maturity
((((NKS8326/CML373)/GEMN-0097)-SIB/PHG29)	145	315	1265	1275	2	5	5	6	
((B126xB84)/(GEMS-0147/GEMS-0227))	150	330	1222	1240	1	6	4.5	3	
((B97xPHR03)/BG002:T26aN(GEMN-0155))	145	325	1345	1370	2	6	5	4	
((GEMN-0140/GEMN-0097)-B-B-034-B/GEMN-0205)	135	315	1253	1253	1	6	4.5	7	
((GEMN-0140/GEMN-0097)-B-B-034-B/MBRC10:N1730-B-128-B)	120	300	1195	1195	0	5	5.5	4	Dry early
((GEMN-0173/KO679Y)/(GEMN-0140/GEMN-0097)-B-B-034-B)	140	315	1413	1465	2	6	3.5	6	
((GEMN-0173/KO679Y)/3IIH6)	170	310	1345	1345	4	6	6.5	4	
((GEMS-0147/GEMS-0227)/GEMS-0219)	160	310	1241	1222	1	6	5	9	Dry husk
((GEMS-0147/GEMS-0227)/PHP38)	140	320	1222	1240	1	6	4	6	
((GEMS-0219)/(KO679Y/GEMS-0030))	160	315	1369	1385	0	4	3.5	6	
((GEMS-0219)/3IIH6)	150	330	1222	1220	0	4.5	5	7	Good ears, but PMD
((GEMS-0227/Ki 14)/(B126xB84))	130	280	1345	1395	2	7	3.5	6	Nice appearance
((GEMS-0227/Ki 14)/(B126xPHP38))	150	305	1315	1369	1	5.6	3.5	6	
((GEMS-0227/Ki 14)/GEMS-0115)	155	325	1440	1395	1	5	3	5	
((GEMS-0227/Ki 14)/PHP38)	145	315	1313	1395	5	6.5	5	8	Nice appearance
((KO679Y/GEMS-0030)/4676A)	135	310	1315	1290	0	6	4	6.5	Nice appearance
((KO679Y/GEMS-0030)/794)	150	300	1315	1345	0	4	3.5	5	Some ear mold
((KO679Y/GEMS-0030)/GEMS-0219)	165	330	1369	1416	4	5	6	6	
((LH195/KO679Y)/(B126xB84))	140	275	1289	1318	1	6.5	5	4	High ear
((LH195/KO679Y)/794)	125	270	1345	1330	4	7	3	5	NLF
((LH195/KO679Y)/GEMS-0227)	130	290	1315	1290	0	6	4	6	
((LH61/(GEMN-0130/MP494))/BCC03)	150	310	1369	1465	3	3	3.5	4	Small, low ear, animal damage
((LH61/(GEMN-0130/MP494))/PHN46)	170	325	1369	1393	0	5	4.5	4	High ear, animal damage
((LH61/MSU_1)/PHN82)	130	300	1289	1345	0	6	4	5	
((LH61/MSU_1)/PHP02)	150	320	1241	1289	0	5	4	6	Nice appearance
((LH61/MSU_1)/PHP55)	150	315	1263	1318	0	5	4	3	bad NLF
((N28/KO679Y)/(GEMS-0219))	135	315	1345	1345	0	3	5.5	6.5	Nice appearance
((N28/KO679Y)/4676A)	140	300	1289	1318	2	6	7	6.6	Excellent appearance
((Oh7B/KO679Y)/3IIH6)	145	340	1318	1318	1	5	6.5	4.5	PMD, animal damage
((Oh7B/KO679Y)/GEMN-0205)	160	310	1345	1345	2	5	3.5	7	Nice appearance
((Oh7B/KO679Y)/LH185)	145	320	1345	1345	1	6.5	3.5	6.7	NLF, big ear
((SX2788:S(794)(GEMS-0188))/G39)	130	310	1345	1345	0	5.5	5	4	Nice appearance
((SX2788:S(794)(GEMS-0188))/GEMS-0226)	160	330	1438	1416	0	6	3	7.5	22k rows; upright, high ear
((Tuxpeno Comp.(M)C5xB126)/GEMS-0219)	180	295	1203	1203	0	5	2.5	8	Large ears
(3IIH6 /((NKS8326/CML373)/GEMN-0097)-SIB)	160	340	1289	1263	0	6	6	3.5	Stalks lodged
(3IIH6 /MBRC10:N1730-B-128-B)	150	320	1203	1203	1	4	7	3	Animal damage, PMD
(794/(LH195/KO679Y))	130	290	1345	1345	1	5.5	3	4	NLF, good ear developmen
(BG002:T26aN(GEMN-0155))/(B97xPHR03))	160	320	1369	1440	0	5.5	4	4	Late, green
(BG002:T26aN(GEMN-0155)/PHG29)	150	320	1369	1393	2	5	6	3.5	Stalks lodged
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0178)	160	340	1369	1369	2	9	3	5	Animal damage, bad stalks
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0221)	165	335	1345	1345	3	8	1	4	Too high ear, animal damage
(CUBA164:T26aS41-B-040-B/GEMS-0115)	145	315	1345	1345	0	6.5	2.5	7	Nice appearance
(DKB844:S0251/GEMS-0219)	160	325	1369	1369	2	4.5	4	6.5	Nice appearance
(DKB844:S0251/GEMS-0227)	130	320	1305	1345	3	5	4	6.7	Nice ears and ear height
(G39/SX2788:S(794)(GEMS-0188))	160	300	1369	1393	4	5	7	6	Nice appearance
(GEMN-0205/(GEMN-0140/GEMN-0097)-B-B-034-B)	160	325	1289	1318	0	6	5.5	3.5	Stalks lodged, high eared, late, greer
(GEMN-0205/(Oh7B/KO679Y))	165	325	1369	1393	1	6	6	6	
(GEMN-0221/BR105:N(GEMN-0174)(GEMN-0156)-101-001)	180	330	1345	1318	3	8	1.5	7	Animal damage
(GEMN-0239/(GEMN-0097/Ki 14))	195	335	1393	1438	0	6	5	6	Late, green, high ear
(GEMS-0115/CUBA164:T26aS41-B-040-B)	140	315	1369	1369	0	6.5	4	7	

2015 GEM Ames, IA Breeding Cross Observations

Pedigree	EARHT	PLTHT	Pollen GDU	Silk GDU	Barren Count	Husk Length	Husk Tightness	Appearance Score	Comments
(GEMS-0219/(GEMS-0147/GEMS-0227))	145	320	1289	1345	0	6	3	7	Nice appearance
(GEMS-0219/(N28/KO679Y))	125	305	1305	1345	0	5	6.5	7	Nice appearance
(GEMS-0219/DKB844:S0251)	170	340	1345	1345	2	6	3	6.5	Nice appearance, but high ear
(GEMS-0226/(SX2788:S(794)(GEMS-0188)))	165	315	1460	1485	3	6	2	3.5	Big, high, green, smut
(GEMS-0227/(LH195/KO679Y))	110	290	1305	1318	0	6	4.5	7	Animal damage
(GEMS-0227/CUBA164:T26aS41-B-040-B)	110	310	1262	1263	0	5.5	4.5	7.5	Low ear, nice appearance
(GEMS-0227/DKB844:S0251)	120	300	1305	1345	4	5	5.5	7.5	Nice ears and ear height
(GEMS-0227/GEMS-0219)	160	320	1241	1263	0	4	5.5	8.5	Early, nice appearance
(LH185/(LH61/MSU_1))	135	305	1345	1345	0	5	5.5	5	Low ear
(LH185/(Oh7B/KO679Y))	160	310	1369	1345	2	5.5	5.5	4.5	NLF
(MBRC10:N1730-B-128-B/(GEMN-0140/GEMN-0097)-B-B-034-B)	120	305	1203	1222	1	5	7	5	Early, dry, animal damage
(MBRC10:N1730-B-128-B/3IIH6)	140	305	1180	1180	0	5	7	5	Very early, animal damage
(MBRC10:N1730-B-128-B/GEMN-0239)	130	290	1222	1245	1	6	4	5.5	Animal damage
(MBRC10:N1730-B-128-B/PHG29)	130	290	1180	1203	0	6	8	5	Animal damage
(MBRC10:N1730-B-128-B/PHP02)	140	300	1180	1180	1	4.5	7.5	5	Nice appearance, early
(PHG29/((NKS8326/CML373)/GEMN-0097)-SIB)	140	305	1263	1318	0	4	3.5	4	ECB, low ear
(PHG29/MBRC10:N1730-B-128-B)	115	285	1180	1203	0	5	6	4	PMD, Animal damage
(PHP02/(LH61/MSU_1))	140	310	1241	1241	0	5.5	6.5	6	Early, nice appearance
(PHP02/MBRC10:N1730-B-128-B)	130	290	1180	1203	0	5	4.5	6.5	Early, animal damage
(PHP38/(GEMS-0227/Ki 14))	165	315	1369	1393	2	6.5	4	7.5	Nice appearance, low ear
(PHP55/(LH61/MSU_1))	150	310	1263	1289	4	5	7	7	Early, nice appearance
(PHV78/(GEMN-0097/Ki 14))	170	330	1415	1435	1	5.5	5	5	Late, green, high nice ear
(SX2788:S(794)(GEMS-0188)/(GEMS-0219)	170	350	1318	1345	3	5	4.5	5	Variable
(SX2788:S(794)(GEMS-0188)/GEMS-0227)	120	310	1289	1289	0	5.5	3.5	7	Nice appearance, low ear
(Tuxpeno Comp.(M)C5xB126/(LH61/MSU_1))	110	270	1222	1263	1	6.5	3	6.5	Nice appearance, early
A619xA632	100	300	1203	1222	0	6	7.6	5	Nice appearance
B73/Mo17	160	310	1289	1369	0	6.5	6	3.5	
GEMN-0173/KO679Y	180	330	1595	1595	0	4.5	3	2.5	Stalk rot, ugly, late, green, high ear
KO679Y/GEMN-0173	150	310	1647	1645	0	5	3	3	Too high ear, stalks collapse
KO679Y/LH195	140	285	1416	1416	1	7	2.5	8	Nice appearance
KO679Y/N28	160	310	1369	1393	0	6	6.5	4	Stalks collapsed
KO679Y/Oh7B	160	325	1438	1513	0	4.5	3	4	Animal damage
LH195/KO679Y	130	280	1393	1416	1	6	5	8	Nice appearance
LH198/G39	135	305	1345	1369	0	6	6	5.5	Nice appearance
LH200xLH262	165	330	1393	1369	0	4.5	3	5	Low ear, PMD
MBS3520/MBS8814	120	310	1289	1289	0	6	4.5	6.5	Nice appearance
MBS9508/MBS2655	140	325	1289	1263	0	5.5	4	8	Excellent appearance
N28/KO679Y	145	320	1393	1435	1	6.5	5	6	Nice appearance
Oh7B/KO679Y	160	330	1416	1505	2	7	2	6	Nice appearance

Data is based on averages of two reps. 1-9 Scale, 9 is best

Planting Date: May 19th, 2015

PMD= Premature Death

2015 Dow Agrosciences York, NE Breeding Cross Observations

Pedigree	EARHT	PLTHT	Mid Pollen GDU	Mid Silk GDU	Ear Rating	Overall rating	Notes
((((NKS8326/CML373)/GEMN-0097)-SIB/3IIH6)	132	284	1286	1286	7	3	white kernels present; root lodging; stalk lodging
((((NKS8326/CML373)/GEMN-0097)-SIB/PHG29)	132	323	1369	1369	9	5	minor root lodging present; good tip fill; large germ
((B126xB84)/(GEMS-0147/GEMS-0227))	109	269	1286	1261	9	9	good grain quality; low ear height
((B97xPHR03)/BG002:T26aN(GEMN-0155))	160	310	1395	1417	9	7	decent grain quality; ear bounce
((GEMN-0140/GEMN-0097)-B-B-034-B/GEMN-0205)	91	269	1286	1314	7	7	poor grain quality
((GEMN-0140/GEMN-0097)-B-B-034-B/MBRC10:N1730-B-128-B)	86	274	1179	1179	7	7	low ear height
((GEMN-0173/KO679Y)/(GEMN-0140/GEMN-0097)-B-B-034-B)	127	295	1369	1369	9	9	good grain quality; 1 off type present
((GEMN-0173/KO679Y)/3IIH6)	127	315					
((GEMS-0147/GEMS-0227)/GEMS-0219)	97	295	1286	1286	9	9	shells easily; good grain quality; low ears
((GEMS-0147/GEMS-0227)/PHP38)	102	269	1286	1261	9	9	16 - 22k rows; low ear height; cob very hard to break but grain shells easily
((GEMS-0219)/(KO679Y/GEMS-0030))	112	269	1314	1339	7	7	variable; good grain quality
((GEMS-0219)/3IIH6)	112	269	1208	1179	7	9	shells easily
((GEMS-0227/Ki 14)/(B126xB84))	102	254	1314	1261	7	7	good grain quality; inconsistent ear size
((GEMS-0227/Ki 14)/(B126xPHP38))	122	290	1314	1369	9	7	good grain quality
((GEMS-0227/Ki 14)/GEMS-0115)	97	300	1395	1369	9	7	good grain quality; greensnap
((GEMS-0227/Ki 14)/PHP38)	112	290	1314	1369	7	7	good grain quality; exposed ear tips
((KO679Y/GEMS-0030)/4676A)	117	264	1339	1339	7	7	inconsistent ear quality
((KO679Y/GEMS-0030)/794)	127	284	1339	1339	5	7	large germ; 1 moldy ear; tight husk
((KO679Y/GEMS-0030)/GEMS-0219)	102	269	1339	1369	7	7	long narrow ear; great grain quality
((LH195/KO679Y)/(B126xB84))	102	234	1261	1314	7	7	1 moldy ear
((LH195/KO679Y)/794)	97	244	1314	1339	7	7	low ear height
((LH195/KO679Y)/GEMS-0227)	107	259	1314	1314	7	7	good grain quality
((LH61/(GEMN-0130/MP494))/BCC03)	122	279	1395	1417	7	5	minor stalk lodging
((LH61/(GEMN-0130/MP494))/PHN46)	132	295	1369	1369	7	7	kernel red streak; good grain quality
((LH61/MSU_1)/PHN82)	112	264	1286	1339	7	7	white kernels present; kernel red streak; long ears
((LH61/MSU_1)/PHP02)	117	254	1261	1286	7	7	long ears
((LH61/MSU_1)/PHP55)	107	269	1286	1314	7	5	white kernels present; ear mold; inconsistent ears; good grain quality
((N28/KO679Y)/(GEMS-0219))	112	295	1395	1417	7	5	kernel red streak; good grain quality
((N28/KO679Y)/4676A)	147	315	1369	1369	7	5	stalk lodging; good grain quality
((Oh7B/KO679Y)/3IIH6)	127	284	1314	1339	7	7	
((Oh7B/KO679Y)/GEMN-0205)	112	264	1339	1339	7	7	
((Oh7B/KO679Y)/LH185)	132	279	1369	1369	7	7	long ear; good grain quality
((SX2788:S(794)(GEMS-0188))/G39)	132	310	1369	1436	9	7	good grain quality
((SX2788:S(794)(GEMS-0188))/GEMS-0226)	137	305	1417	1417	9	7	good grain quality; 2 ears per plant
((Tuxpeno Comp.(M)C5xB126)/GEMS-0219)	107	269	1261	1261	9	9	good grain quality; good tip fill; kernel red streak
(3IIH6 /((NKS8326/CML373)/GEMN-0097)-SIB)	132	295	1286	1286	7	5	white kernels present; leaners
(3IIH6 /MBRC10:N1730-B-128-B)	112	259	1208	1152	7	7	
(794/(LH195/KO679Y))	97	224	1369	1369	7	7	
(BG002:T26aN(GEMN-0155)/(B97xPHR03))	127	290	1369	1369	9	7	good grain quality
(BG002:T26aN(GEMN-0155)/PHG29)	122	279	1314	1369	7	5	severe kernel red streak; ear bounce
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0178)	122	295	1395	1261	9	9	good grain quality
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0221)	117	284	1339	1339	7	5	ear mold; leaners
(CUBA164:T26aS41-B-040-B/GEMS-0115)	107	284	1339	1314	7	7	deep kernels
(DKB844:S0251/GEMS-0219)	117	305	1314	1339	9	5	white kernels present; good grain quality; greensnap
(DKB844:S0251/GEMS-0227)	91	279	1314	1236	7	7	low ear height
(G39/SX2788:S(794)(GEMS-0188))	122	284	1339	1369	7	7	
(GEMN-0205/(GEMN-0140/GEMN-0097)-B-B-034-B)	117	310	1339	1369	9	5	minor root lodging present; variable
(GEMN-0205/(Oh7B/KO679Y))	117	259	1369	1395	7	7	good grain quality; large germ
(GEMN-0221/BR105:N(GEMN-0174)(GEMN-0156)-101-001)	132	284	1339	1369	7	5	minor stalk lodging; good grain quality
(GEMN-0239/(GEMN-0097/Ki 14))	91	254	1261	1286	7	7	white kernels present; bouquet ears

2015 Dow Agrosciences York, NE Breeding Cross Observations

Pedigree	EARHT	PLTHT	Mid Pollen GDU	Mid Silk GDU	Ear Rating	Overall rating	Notes
(GEMS-0115/CUBA164:T26aS41-B-040-B)	86	244	1286	1314	7	9	long ears; low ear height
(GEMS-0219/(GEMS-0147/GEMS-0227))	117	269	1286	1286	9	9	shells easily; good grain quality;
(GEMS-0219/(N28/KO679Y))	112	259	1261	1339	7	7	
(GEMS-0219/DKB844:S0251)	137	320	1314	1369	9	5	good tip fill; white kernels present; greensnap; stalk lodging
(GEMS-0226/(SX2788:S(794)(GEMS-0188)))	117	259	1369	1339	7	7	deep kernels; greensnap
(GEMS-0227/(LH195/KO679Y))	97	295	1314	1314	9	9	good grain quality; large germ; low ear height
(GEMS-0227/CUBA164:T26aS41-B-040-B)	102	295	1314	1261	7	7	low ear height
(GEMS-0227/DKB844:S0251)	127	279	1339	1339	9	9	white kernels present; good grain quality; large germ
(GEMS-0227/GEMS-0219)	97	274	1261	1261	9	9	good grain quality; low ear height
(LH185/(LH61/MSU_1))	122	269	1314	1339	7	7	white kernels present
(LH185/(Oh7B/KO679Y))	112	249	1369	1369	7	7	long ear; good grain quality
(MBRC10:N1730-B-128-B/(GEMN-0140/GEMN-0097)-B-B-034-B)	76	239	1179	1179	7	7	leaners
(MBRC10:N1730-B-128-B/3IIH6)	86	254	1152	1152	7	7	low ear height
(MBRC10:N1730-B-128-B/GEMN-0239)	117	254	1261	1261	3	3	stalk lodging; leaners
(MBRC10:N1730-B-128-B/PHG29)	91	229	1152	1152	7	7	low ear height
(MBRC10:N1730-B-128-B/PHP02)	97	269	1152	1132	7	7	
(PHG29/((NKS8326/CML373)/GEMN-0097)-SIB)	102	269	1286	1369	7	5	white kernels present; leaners; uneven silk dates; corn borers present
(PHG29/MBRC10:N1730-B-128-B)	117	269	1261	1152	7	7	
(PHP02/(LH61/MSU_1))	122	274	1339	1339	9	7	long ears; smut; good grain quality
(PHP02/MBRC10:N1730-B-128-B)	117	269	1236	1152	7	7	
(PHP38/(GEMS-0227/Ki 14))	107	305	1314	1369	9	9	uneven silk dates
(PHP55/(LH61/MSU_1))	97	274	1314	1261	7	7	ear mold; low ears
(PHV78/(GEMN-0097/Ki 14))	173	310	1417	1436	9	5	good grain quality; good tip fill; root lodging; variable
(SX2788:S(794)(GEMS-0188)/(GEMS-0219)	142	274	1339	1314	9	5	root lodging; greensnap; good grain quality
(SX2788:S(794)(GEMS-0188)/GEMS-0227)	81	254	1395	1417	7	7	
(Tuxpeno Comp.(M)C5xB126/(LH61/MSU_1))	97	224	1261	1261	7	3	stalk lodging; root lodging; decent grain quality
A619xA632	97	279	1261	1236	7	5	long ears; smut; stalk lodging; low ear height
B73/Mo17	97	279	1339	1395	7	5	kernel pop; dropped ears
GEMN-0173/KO679Y	132	320	1512	1536	7	3	high eared; late; uneven silk date
KO679Y/GEMN-0173	163	325					
KO679Y/LH195	112	259	1417	1395	9	9	good grain quality
KO679Y/N28	122	290	1369	1369	9	9	stalk lodging; good grain quality
KO679Y/Oh7B	137	320	1436	1436	7	3	high eared; root lodging a little
LH195/KO679Y	107	254	1395	1395	9	9	good grain quality
LH198/G39	107	249	1339	1369	9	5	good grain quality; greensnap; smut
LH200xLH262	122	264	1369	1369	9	7	long ears; good grain quality
MBS3520/MBS8814	107	259	1314	1339	9	9	good grain quality
MBS9508/MBS2655	102	259	1286	1261	7	7	girthy ears; long ears; poor grain quality; low ear height
N28/KO679Y	122	284	1369	1395	9	9	good grain quality
Oh7B/KO679Y	107	284	1436	1458	7	3	

Ratings are on a 1-9 scale with 9 as best

Heights are converted to centimeters

Planting Date: May 1, 2015

2015 AgReliant Ft. Branch, IN Breeding Cross Observations

Pedigree	Mid Pollen GDU	Mid Silk GDU	Caps	Intact	Stay Green	Ear Height	Overall Rating	Harvest notes
((NKS8326/CML373)/GEMN-0097)-SIB/3IIH6)	1351	1351	5	6.5	3.5	3.5	5	
((NKS8326/CML373)/GEMN-0097)-SIB/G29)	1322	1378	5-7	3	1.5	4.5	3.5	
((B126xB84)/(GEMS-0147/GEMS-0227))	1351	1351	6	3	1	4.5	3	
((B97xPHR03)/BG002:T26aN(GEMN-0155))	1431	1444	4	6	3.5	3	4	
((GEMN-0140/GEMN-0097)-B-B-034-B/GEMN-0205)	1366	1378	5	5	1.5	4.5	4	
((GEMN-0140/GEMN-0097)-B-B-034-B/MBRC10:N1730-B-128-B)	1281	1266	5	3.5	1	5.5	3	
((GEMN-0173/KO679Y)/(GEMN-0140/GEMN-0097)-B-B-034-B)	1417	1417	5	6	5	4	6	
((GEMN-0173/KO679Y)/3IIH6)	1390	1390	5	6	2	4	4.5	
((GEMS-0147/GEMS-0227)/GEMS-0219)	1378	1378	7	4	1	4	4	
((GEMS-0147/GEMS-0227)/PHP38)	1390	1391	6	4.5	1	4.5	4	
((GEMS-0219)/(KO679Y/GEMS-0030))	1417	1415	8	7	4.5	3.5	6	
((GEMS-0219)/3IIH6)	1293	1254	6	5.5	1	4	4.5	
((GEMS-0227/Ki 14)/(B126xB84))	1378	1376	8	5	2.5	3	4.5	
((GEMS-0227/Ki 14)/(B126xPHP38))	1390	1431	7	6.5	6	4.5	6.5	
((GEMS-0227/Ki 14)/GEMS-0115)	1444	1444	6-8	6.5	6.5	3	6.5	
((GEMS-0227/Ki 14)/PHP38)	1390	1429	8	5.5	4.5	3.5	5.5	
((KO679Y/GEMS-0030)/4676A)	1378	1366	8	6.5	3.5	4.5	5	variable ear heights
((KO679Y/GEMS-0030)/794)	1390	1378	5	6	3	4	5	
((KO679Y/GEMS-0030)/GEMS-0219)	1417	1403	6-8	6.5	5	2.5	5	
((LH195/KO679Y)/(B126xB84))	1364	1378	6	4.5	2.5	3.5	4	
((LH195/KO679Y)/794)	1390	1366	5	4	1.5	6	3.5	
((LH195/KO679Y)/GEMS-0227)	1378	1378	5	5	3	4.5	5	
((LH61/(GEMN-0130/MP494))/BCC03)	1417	1443	5-8	5.5	3	5	5	
((LH61/(GEMN-0130/MP494))/PHN46)	1390	1417	6	6	1	3	4	
((LH61/MSU_1)/PHN82)	1366	1364	4	5	1	4.5	3.5	
((LH61/MSU_1)/PHP02)	1308	1322	5	4.5	1	4	3.5	
((LH61/MSU_1)/PHP55)	1322	1364	5	4.5	1	4.5	4	
((N28/KO679Y)/(GEMS-0219))	1378	1404	7	7.5	5.5	3	6.5	
((N28/KO679Y)/4676A)	1364	1351	5-7	6.5	4.5	5	5.5	
((Oh7B/KO679Y)/3IIH6)	1366	1366	5	6.5	1.5	3.5	4.5	
((Oh7B/KO679Y)/GEMN-0205)	1390	1457	5	6.5	6	3	6	
((Oh7B/KO679Y)/LH185)	1403	1391	6	6	3	3.5	5	
((SX2788:S(794)(GEMS-0188))/G39)	1390	1403	6	5	3	4.5	4.5	
((SX2788:S(794)(GEMS-0188))/GEMS-0226)	1487	1472	6-8	6.5	4.5	2	4.5	
((Tuxpeno Comp.(M)C5xB126)/GEMS-0219)	1243	1293	8	4.5	1	5.5	4.5	
(3IIH6 /((NKS8326/CML373)/GEMN-0097)-SIB)	1337	1337	5	5.5	3	3.5	4.5	
(3IIH6 /MBRC10:N1730-B-128-B)	1308	1266	6	3.5	1	5	3.5	
(794/(LH195/KO679Y))	1403	1403	7	4	1.5	5.5	4	
(BG002:T26aN(GEMN-0155)/(B97xPHR03))	1429	1429	5	7.5	2.5	3.5	4.5	
(BG002:T26aN(GEMN-0155)/G29)	1376	1417	5	5	2.5	4	4.5	
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0178)	1415	1429	6	6.5	4	3	5.5	
(BR105:N(GEMN-0174)(GEMN-0156)-101-001/GEMN-0221)	1419	1444	6-8	6.5	1.5	3	5	
(CUBA164:T26aS41-B-040-B/GEMS-0115)	1417	1390	6	7	7	3	6.5	
(DKB844:S0251/GEMS-0219)	1378	1390	8	7.5	4	3	6	
(DKB844:S0251/GEMS-0227)	1403	1429	6-8	6.5	3	4	5.5	
(G39/SX2788:S(794)(GEMS-0188))	1431	1472	7	5.5	6	3	5.5	
(GEMN-0205/(GEMN-0140/GEMN-0097)-B-B-034-B)	1366	1366	5	4.5	1	5	3.5	
(GEMN-0205/(Oh7B/KO679Y))	1415	1457	5	5.5	2	3	4	
(GEMN-0221/BR105:N(GEMN-0174)(GEMN-0156)-101-001)	1378	1429	7	6.5	3	2.5	4.5	
(GEMN-0239/(GEMN-0097/Ki 14))	1415	1429	5-8	8.5	6.5	1.5	6	

2015 AgReliant Ft. Branch, IN Breeding Cross Observations

Pedigree	Mid Pollen GDU	Mid Silk GDU	Caps	Intact	Stay Green	Ear Height	Overall Rating	Harvest notes
(GEMS-0115/CUBA164:T26aS41-B-040-B)	1403	1390	6	7	5.5	4	6	
(GEMS-0219/(GEMS-0147/GEMS-0227))	1390	1351	6	5.5	1	4	4	
(GEMS-0219/(N28/KO679Y))	1390	1415	7	6.5	4.5	3.5	5.5	
(GEMS-0219/DKB844:S0251)	1390	1403	7	7.5	2.5	3	5	
(GEMS-0226/(SX2788:S(794)(GEMS-0188)))	1487	1513	7	7.5	4.5	1.5	5	
(GEMS-0227/(LH195/KO679Y))	1390	1391	6	5.5	2.5	5.5	5	
(GEMS-0227/CUBA164:T26aS41-B-040-B)	1390	1366	8	6	4.5	5.5	6	
(GEMS-0227/DKB844:S0251)	1390	1376	5-7	7	4.5	4.5	6	
(GEMS-0227/GEMS-0219)	1366	1337	7	6.5	1.5	4.5	5	
(LH185/(LH61/MSU_1))	1403	1431	5-8	3	1	4.5	3.5	
(LH185/(Oh7B/KO679Y))	1403	1403	5	5.5	3	3	3.5	variable ear heights
(MBRC10:N1730-B-128-B/(GEMN-0140/GEMN-0097)-B-B-034-B)	1293	1308	5	2.5	1	6	3	
(MBRC10:N1730-B-128-B/3IIH6)	1230	1230	5	2.5	1	5.5	3	
(MBRC10:N1730-B-128-B/G29)	1218	1231	5	2.5	1	7	3	
(MBRC10:N1730-B-128-B/GEMN-0239)	1337	1322	7	3.5	1	4	4	
(MBRC10:N1730-B-128-B/PHP02)	1218	1218	5	3.5	1	5.5	3.5	
(PHG29/((NKS8326/CML373)/GEMN-0097)-SIB)	1322	1366	5-8	4	1	4.5	3.5	
(PHG29/MBRC10:N1730-B-128-B)	1279	1293	5-7	3	1	5	3.5	
(PHP02/(LH61/MSU_1))	1337	1391	4	3.5	1	5	3	
(PHP02/MBRC10:N1730-B-128-B)	1308	1308	5.5	3	1	5	3	
(PHP38/(GEMS-0227/Ki 14))	1417	1431	5-8	7	4.5	4.5	6	
(PHP55/(LH61/MSU_1))	1351	1378	5	3.5	1.5	5	3	
(PHV78/(GEMN-0097/Ki 14))	1403	1472	5-8	6.5	3.5	3	5.5	
(SX2788:S(794)(GEMS-0188)/(GEMS-0219)	1378	1391	6	5	1.5	3	4	
(SX2788:S(794)(GEMS-0188)/GEMS-0227)	1366	1337	5-8	4.5	3	4	4.5	
(Tuxpeno Comp.(M)C5xB126/(LH61/MSU_1))	1293	1310	5-8	2.5	1	5.5	3	
A619xA632	1308	1337	6	3	1	6.5	3.5	
B73/Mo17	1457	1472	6-7	2.5	1	4.5	3	
GEMN-0173/KO679Y	1555	1530	6	9	8	1.5	6.5	
KO679Y/GEMN-0173	1568	1581	6	9	8	1	6	
KO679Y/LH195	1487	1501	7	8.5	7.5	4.5	7.5	
KO679Y/N28	1487	1499	5	8.5	7	3	6.5	
KO679Y/Oh7B	1487	1555	5	9	8.5	2.5	7	
LH195/KO679Y	1443	1415	7	7.5	6	4	6.5	
LH198/G39	1403	1417	6	3	1.5	4.5	3	
LH200xLH262	1429	1403	7	6.5	4	2.5	5	
MBS3520/MBS8814	1351	1322	5	5.5	1	5	4	
MBS9508/MBS2655	1378	1364	4	6.5	4.5	4	5	
N28/KO679Y	1443	1429	6	8	7	3.5	7.5	variable ear heights
Oh7B/KO679Y	1487	1528	5	7.5	6.5	3	6	

Data is based on averages of two reps. 1-9 Scale, 9 is best
 Kernel Cap Score (1 = super soft, very recessed cap & 9 = flint type)
 Intactness, Stay Green and Overall rating at harvest.
 Ear Height; with the lower ratings as very high eared

Annual Reports

2015 Annual Report of the GEM Project, Ames, IA and Raleigh, NC

PERSONNEL:

Ames: *USDA-ARS Plant Introduction Research*

GEM Coordinator and Maize Geneticist, Vacant*
Michael Peters, GEM Technician, New, Feb 2014
Fred Engstrom, GEM Technician
Dr. Mack Shen, IT Specialist
Adam Vanous, Iowa State University, Ph.D. student
Dr. Candice Gardner, Research Leader

*Anticipate new Coordinator/Geneticist
Martha Willcox in January, 2016

Raleigh: *USDA-ARS Plant Science Res.*

Dr. Matt Krakowsky, Southeast GEM Coord.
Dale Dowden, Agricultural Research Technician
Dr. Peter Balint-Kurti, Research Geneticist
Dr. Jim Holland, Maize Research Geneticist
Dr. David Marshall, Research Leader

Raleigh: *North Carolina State University*

Dr. Major Goodman, William Neal
Reynolds Distinguished Professor

GEM- Ames 2015 Highlights (Dr. Candice Gardner)

Midwest Germplasm releases and development:

- Two hundred eighty six (286) GEM releases are now available to GEM Cooperators.
- Twelve GEM lines from the Ames program are proposed for release to GEM Cooperators for the 2015 planting year (Table 1). Yield data, and NIR results for protein, oil, and starch can be found online and in the handout for 2016 released lines. Ear and grain characteristics are presented in Table 2, topcross maturity and ear height in Table 3, and NIR information in Table 4.
- Seven of the twelve releases are second cycle GEM lines from GEMS-0026, -0231, -0115, -0176, and GEMN-0117. Their parent lines derive from races that were collected at one time from Argentina, the British Virgin Islands, Brazil, Chile, Cuba, Dominican Republic, Peru, and Uruguay, and one is derived from the South African line KO679Y. All new codes have a respectable level of ear mold resistance and good grain quality. It was a good year to select for northern leaf blight resistance. In addition, GEMS-0277, GEMS -0278, GEMN-0285, and GEMN-0286 were virtually free of common rust until maturity.
- Summary tables of testcross data are presented in the section of this book tabbed 'Released Lines.'
- Six other lines that have not been designated for release are recommended; they may be released yet this spring, pending return of winter nursery seed (Appendix 1).

Table 1. 2016 Ames-GEM Germplasm Releases (12)

GEM Code	Pedigree	Race	Country	Type	Het Gro up
GEMS-0275	((KO679Y/GEMS-0115)/GEMS-0162)-008-001	((25% KO679)(25% DKB844)) / (25% Cuba117)	South Africa, Brazil, Cuba	25% tropical exotic	SS
GEMS-0276	(53SS4/GEMS-0026)-SIB-B-003	(25% exotic donated by coop)/ (50% DK370A)	Brazil	37.5% tropical exotic	SS
GEMS-0277	(53SS4/GEMS-0031)-SIB-B-039	(25% exotic donated by coop)/ (50% DK370A)	Brazil	37.5% tropical exotic	SS
GEMS-0278	(GEMS-0115/S49w)-B-B-036	25% DKB844	Brazil	12.5% tropical exotic	SS
GEMS-0279	(GEMS-0176/S49w)-B-B-028	25% Cuba164, Criollo	Cuba	25% tropical exotic	SS
GEMS-0280	BR52051:S172641-B-018	PI 583917, Dente Amarelo	Brazil	25% tropical exotic	SS
GEMS-0281	BR52051:S172641-B-054	PI 583917, Dente Amarelo	Brazil	25% tropical exotic	SS
GEMS-0282	CHIS740:S(PHW17)(87916W)-126-001	PI583890, Tuxpeno/Olotillo	Chile	50% temperate exotic	SS
GEMS-0283	UR11002:S1409-068-001	PI 383923, Dente Branco Landrace	Uruguay	50% temperate exotic	SS
GEMS-0284	AR17056:S1217-B-025	50% PI 493039, Cristalino Colorado	Argentina	50% temperate exotic	SS
GEMN-0285	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-019	(25% PI 484028, Tuson/ Canilla Landrace from Dominican Republic)/(25% DKXL212)	Dominican Republic	25% tropical exotic	NS
GEMN-0286	MDI022:N(PHG35)(GEMN-0097)-072-001	(PI 571994, Cuban yellow population) / (25% PI 536622, FS8B(T))	Peru	18.3% exotic	NS

Table 2: Ear and Grain Traits of the 2016 GEM-Ames Released Lines

GEM Code	Poll GDU	Cob Color	Grain color	Grain Texture
GEMS-0275	1450	White	Orange/Yellow	Semi-Flint
GEMS-0276	1380	White	Yellow	Semi-Dent
GEMS-0277	1369	Red	Yellow	Dent, Semi-Dent
GEMS-0278	1488	Red	Orange/Yellow	Dent, Semi-Dent
GEMS-0279	1450	R&W	Yellow	Semi-Flint, Semi-Dent
GEMS-0280	1411	Red	Yellow	Dent
GEMS-0281	1411	Red	Yellow	Dent
GEMS-0282	1450	White	White & Yellow	Semi-Flint
GEMS-0283	1369	Red	Yellow	Semi-Flint
GEMS-0284	1380	Red	Yellow	Dent
GEMN-0285	1411	Red	Yellow	Dent
GEMN-0286	1510	White	Yellow	Dent

Table 3: Topcross Maturity of 2016 Ames-GEM Germplasm Releases

Top Cross RM & Ear Height Estimates			
GEM Code	Pedigree	Average	
		Estimated RM	Ear Height (cm)
GEMS-0275	((KO679Y/GEMS-0115)/GEMS-0162)-008-001	112	120
GEMS-0276	(53SS4/GEMS-0026)-SIB-B-003	112	150
GEMS-0277	(53SS4/GEMS-0026)-SIB-B-039	111	100
GEMS-0278	(GEMS-0115/S49w)-B-B-036	113	135
GEMS-0279	(GEMS-0176/S49w)-B-B-028	111	135
GEMS-0280	BR52051:S172641-B-018	117	135
GEMS-0281	BR52051:S172641-B-054	115	125
GEMS-0282	CHIS740:S(PHW17)(87916W)-126-001	119	175
GEMS-0283	UR11002:S1409-068-001	111	120
GEMS-0284	AR17056:S1217-B-025	117	155
GEMN-0285	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-019	110	150
GEMN-0286	MDI022:N(PHG35)(GEMN-0097)-072-001	111	155
	Hybrid Checks		
	MBS3644/MBS5411	109	110
	MBS9508XMBS2655	~107	
	34R65	~109	90
	33F85	~109	130
	31D58	~114	140

Whole grain composition analysis was generated using an NIR Infratech 1241 with sample transport module in Dr. Paul Scott's lab (USDA-ARS CICGRU). Samples were obtained from a bulk of at least 8 ears from self-pollinated rows, and are presented in Table 4.

Table 4. NIR Trait Data of 2016 GEM-Ames Line Releases

GEM Code	Pedigree	Protein	Oil	Starch	Density
GEMS-0275	((KO679Y/GEMS-0115)/GEMS-0162)-008-001	10.52	4.44	70.70	1.35
GEMS-0276	(53SS4/GEMS-0026)-SIB-B-003	12.48	3.74	69.64	1.35
GEMS-0277	(53SS4/GEMS-0031)-SIB-B-039	12.23	4.02	69.64	1.36
GEMS-0278	(GEMS-0115/S49w)-B-B-036	9.81	4.28	71.36	1.33
GEMS-0279	(GEMS-0176/S49w)-B-B-028	11.35	3.76	70.72	1.35
GEMS-0280	BR52051:S172641-B-018	10.93	4.95	69.55	1.34
GEMS-0281	BR52051:S172641-B-054	10.84	4.23	70.45	1.30
GEMS-0282	CHIS740:S(PHW17)(87916W)-126-001	10.74	4.22	70.76	1.34
GEMS-0283	UR11002:S1409-068-001	9.90	4.09	71.73	1.34
GEMS-0284	AR17056:S1217-B-025	12.37	3.85	69.57	1.35
GEMN-0285	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-019	10.89	4.36	70.18	1.33
GEMN-0286	MDI022:N(PHG35)(GEMN-0097)-072-001	10.22	3.61	71.77	1.28

2015 Research & Breeding Activities

- More than 100 new breeding crosses were generated in the Ames nursery by A. Vanous; these await processing, so a list is not yet provided. GEM Cooperators made 15 additional breeding crosses as part of their in-kind support.
- Fifteen new breeding cross populations were sent to six Cooperators for in-kind support and to Raleigh-GEM.
- Seventeen families of S₁ ears were advanced to S₂ in Ames, and six were advanced by Cooperators. These S₂s will be topcrossed in isos in 2016.
- Fourteen S₂ and S₃ families were advanced to S₃ or S₄; these families will comprise 2016 retests.
- Putative haploid seedling plants of nine BC₁ families were injected by the ISU Double Haploid Facility, transplanted to the GEM nursery, and potential doubled haploid plants pollinated.
- Twenty-two populations of BC₁'s were sibbed in Puerto Rico in January 2013 as a result of TSG member support. The BC₁-sib₁ generation was returned to Ames and random mated a second generation in 2013 to generate the BC₁-sib₂. Four family sets of the random mated populations (BC₁-sib₁ and BC₁-sib₂ and the original BC₁'s were induced in 2014 in Ames to generate haploids, as well as advanced conventionally. *Several thousand ears resulted from this effort, and haploid kernels were sorted during summer, 2015.* This study was designed to compare the frequency of exotic alleles in doubled haploid lines developed directly from the BC₁ vs. from BC₁'s random mated for one or two generations, and similarly from conventionally derived lines. M. Bohn and T. Lübberstedt are interested in seeking grant funding to pursue doubling and genomic analysis. Families induced in summer 2014 include Cuba 164, Amargo-ARZM 03 014, Tusón-CUB 67, and Tusón-BAI III, all with the PHB47 recurrent parent. Four other sib-families that were produced in January, 2013 could be induced at a later time.
- Ph.D. student Adam Vanous' research objectives are to utilize 1) selection mapping to dissect the genetic architecture of adaptation from the tropics to the U.S. Corn Belt (mass selected populations), and 2) association mapping to dissect the genetic architecture of flowering time and photoperiod response in exotic derived DH lines. Three tropical landraces, Tusón (Hallauer, 1999), Tuxpeño (Hallauer, 1994), and Suwan-1, are the sources of exotic germplasm that have undergone pre-breeding

and were adapted to the Midwest Corn Belt through recurrent mass selection on the basis of early female flowering. Two hundred-fifty-two BC₁F₁ derived doubled haploids (DH) lines represent the backcross method of introgression. *Genotyping was performed by the Cornell University Genomics Facility, and data returned in November, 2015.* Current and novel mapping techniques will be used to identify loci associated with early flowering time in maize.

Host Plant Resistance:

2015 disease data will be posted online at our website (<http://www.public.iastate.edu/~usda-gem/>) in January.

Pathology and entomology research collaborators from the U.S. private and public sectors screened BGEM doubled haploid lines, and GEM releases for Northern Leaf Blight (NLB), Southern Leaf Blight (SLB), Goss's Wilt, Gray Leafspot (GLS), Diplodia ear rot (DIPPER), Aspergillus (aflatoxin and other mycotoxins), and Corn ear worm (CEW), Fall Armyworm (FAW). (Ear mold and mycotoxin studies' data will be available later this winter.)

International collaborators evaluated GEM releases for Late Wilt, agronomic traits, ear mold, and virus resistance.

A wet spring delayed planting in some cases and excessive rain events made for a high incidence of foliar disease and Diplodia ear mold in the Midwestern U.S. Appreciation is extended for the in-kind support and extensive efforts by private and public GEM Cooperators:

- CAAS (Chinese Academy of Agricultural Science, Tianyu Wang) provided agronomic evaluations and disease ratings for various leaf blights including MRDV, Fusarium ear mold, and for common smut.
- Misr Hytech (Egypt, Mohamed Ali Nasr Mostafa) provided late wilt disease evaluation and agronomic trait data.
- DuPont/Pioneer Hi-Bred International (Bill Dolezal at Johnston, IA) collected NLB, plant and ear height and flowering data at Johnston.
- Professional Seed Research (Jim Dodd) for their efforts collecting data on Goss' Wilt, Eyespot, GLS, NLB, and SLB.
- 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
- USDA-ARS-PSRU in Raleigh, NC provided data for NLB SLB (Peter Balint-Kurti) and Fusarium ear rot (Jim Holland).
- USDA-ARS-CHPRRU, Mississippi State, MS (Paul Williams and Gary Windham) evaluated aflatoxin in grain.

Host plant resistance evaluation data will be posted to our website section for kernel trait and biotic stress data; http://www.public.iastate.edu/~usda-gem/GEM_Lab_Data/GEM_Laboratory.htm. Unfortunately, there has not been time to review 1st and 2nd year data together at the time of this report.

Ames 2015 Allelic Diversity (AD) and Double Haploids (DH):

- The Iowa State University Doubled Haploid Facility continues to partner with the GEM Project on development of DH lines. Approximately 204 lines (representing ~52 races) were jointly released by ISU and USDA-ARS in 2014 as part of the Allelic Diversity Project. Approximately 24 sets of these lines have been distributed to requestors, and numerous small subsets have been requested. They provide unique genetic resources for a wide variety of research applications.
- Another seed increase was made of the 204 DH lines this summer, and phenotypic information was collected in Ames.
- Approximately 240 new DH lines (DH₀) were advanced to DH₁ in 2015. One hundred forty DH₁ lines were increased, and 212 rows of previously released BGEM lines were increased.

- We did not advance any BC₁F₇ allelic diversity project germplasm in 2015. This effort has been tabled for now.
- Please see Raleigh-GEM's report on their AD efforts, as Raleigh generates the BC₁ lines that are transferred to Ames for induction.

Ames 2014 Yield Test, Nursery and Other Highlights:

- Cooperator in-kind support contributions are detailed in Table 5.
- Approximately 16,710 plots (3,140 entries) were managed or coordinated through Ames in 2015.

Trial Type	# Entries	# Plots - Ames GEM	# Plots - Private Coops	# Plots - Raleigh GEM	Total Plots
1st Year Trials	1436	6585	204	204	6993
Retest Trials	493	2306	1924		4230
BGEM TPX Trials	457	1980			1980
B73 or Oh43 DH TPX Trials	518	2112		450	2562
Collaborator Exps*	331	764			764
Totals	3235	13747	2128	654	16529

* Includes Raleigh-GEM experiments grown in Ames and exchange plots with cooperators.

- Of the core development program, 493 entries (25%) were in 2nd year trials and 1,436 (75%) were in 1st year trials. We lost one location due to herbicide application.
- Two hundred eighty one (281) top crosses out of 2,126 entries exceeded the mean yield of the check hybrids in Midwest trials in 2015. Of the 201 hybrids that exceeded the mean, 120 were from first year trials, and 81 from second year trials.
- The checks used in this year's trials include the followings: MBS3520/MBS8814, MBS9508/MBS2655, Pioneer 31D58, Pioneer 33F85, Pioneer 34R65, MBS2655xMBS9508, MBS3644/MBS5411, PHB47/MBS5411, B73/Oh43, PHZ51/MBS2655, and PHB47/PHZ51.
- As you review the yield trial information, keep in mind the nomenclature of the GEM trial naming system:
 - First two digits are the year, i.e. "15" for year 2015
 - Third digit is for homologous area (1=tropical, 5=temperate, 6=both, 7=other)
 - Fourth digit is the testing stage (1=1st year test, 2=2nd year test, 3=other)
 - Fifth and sixth digits are sequential numbers.
 - For example: "1552102" is a 1st year TPX trial grown in 2015, comprised of temperate 50% exotic crosses.
- Topcrosses of the 'BGEM' doubled haploid lines released in 2014 were tested in yield trials in 2015. This data will be published pending completion of Ph.D. students' work.
- About five years ago, M.S. student Adam Vanous developed nearly 1800 doubled haploid lines derived from either B73 or Oh43 as part of his research on doubling methods. Following observation of visual differences between these lines in 2012, a subset of these lines was selected for top crossing on MBS Genetics tester lines. In 2015, yield tests were conducted and data is being analyzed.

Nursery and isolation rows:

- Approximately 7,610 nursery rows were pollinated
 - 5,411 selection rows
 - 1,420 various types of increase rows
 - 561 crossing block rows
 - 218 collaborator nursery rows

- o 500⁺ observation rows
- o 3697 Ames isolation rows
- o 570 isolation rows were contributed by MBS Genetics
- o Not counted are the numerous nursery rows grown by cooperators for generating breeding crosses, S1 families, etc.
- Ninety new breeding crosses were observed and evaluated for breeding potential in Ames, IA, Ft. Branch, IN (AgReliant), York, NE (Dow AgriScience), and Memphis, TN (G&S Crop Services). Results are presented in the section labeled 'Breeding Crosses'

Quality Traits (including grain mold/mycotoxin):

- The newly released GEM lines were not noteworthy for protein, oil or starch traits.
- Mold and mycotoxin data will be posted as received.

New GEM Cooperators in 2015:

One new private U.S. Cooperator joined the GEM Project in 2015, Brownseed Genetics (Charles Brown) of Bay City, WI. New international cooperators include Illinois SA (Carlos Basso), of Argentina.

FIELD DAYS:

Raleigh, NC hosted the GEM Technical Steering Group, August 3-5, 2015. Matt Krakowsky and Major Goodman have an amazing program, and we breeders could have spent weeks looking at their breeding crosses, lines, and hybrids.

Ames, IA GEM Project (C. Gardner) GEM Project 2015 Field Day:

Approximately 80 visitors participated in the 2015 Ames GEM Field day on September 22nd; several group of students, breeders and the general public continued to visit through mid-October, including numerous international visitors.

Beijing, China, Chinese Academy of Agricultural Sciences (CAAS) 2015 Field Days:

We are aware that Dr. Tianyu Wang's work continues, and CAAS continues to work to build a GEM-China network. Information will be posted as received.

Table 5. Private In-Kind Support – Summer 2015

Collaborator	Breeding & Nursery Support	Made Top Cross	Yield Trials	Breeding Cross Obs	Disease Screening & Quality Traits
3rd Millenium Genetics	Armyworm Screening				
AgReliant Genetics LLC	Made S ₁ 's from seven breeding populations; Made breeding crosses to SS and NSS lines, DH breeding		√	√	
Beck's			√		
Brownseed Genetics	Made S ₁ 's GEMS-0162/PHP38				
CAAS	Obtained seed of releases, BGEMs, x-PVPs, and advanced lines				Disease screening for MRDV, stalk rot, head smut, drought, low nitrogen tolerance etc. in multiple ecological areas.
CRD Advisors LLC	Made S ₁ 's		√		
Dow Agrisciences	Made breeding crosses to SS and NSS lines, DH breeding			√	
DKD Genetics	Made S ₁ s from GEMS-0227/GEMS-0189		√		
DuPont Pioneer	Made breeding crosses to SS and NSS lines				Diplodia and NLB in Johnston, IA
G&S Crop Services				√	
Genetic Enterprises International	Made breeding crosses to NSS line				
Illinois Foundation Seeds, Inc.	Made S ₁ 's with PHN46/(GEMN-0130/MP494) and with PHP38/MSU_2		√		
JFS & Associates		S ₂ 's			
MayAgro	Made S ₁ 's of BR51721:S20(GEMS-0219)				NLB screening
MBS Genetics	Provided tester seed for isolations and checks for yield trials	S ₂ 's			
Misr Hytech	Obtained S ₁ bulks for selection in Egypt				Screening of GEM releases for Late Wilt
Monsanto	Made breeding crosses to SS and NSS lines. Made S ₁ 's with TZAR104/LH123//ANTIG03:N1242-B-007-B and BR51039/PHJ40//GEMS-0147.		√		
Professional Seed Research					Screening for Goss' wilt, NLB, Eyespot, GLS
Semillas Fito	Made breeding crosses to SS and NSS lines				Screen for late wilt, MRDV, and head smut
Summit Genetics (KMR)			√		
Terrell Seed Research	Made S ₁ 's of GEMN-0097/TF-2-0-T3-P74-G121				
Trimble Genetics					Disease and agronomic evaluation
Wyffel's Hybrids	Make S ₁ 's of ((GEMS-0162/PHP38)/GEMS-0227)		√		

2015 Annual Report of the GEM Project

GEM-Raleigh Highlights

Germplasm releases:

- Five GEM lines from the Raleigh program are recommended for release to GEM Cooperators for 2016. Yield data can be found in this book or on the GEM website (after January 1) and additional agronomic data can be found in the table at the end of this report. Releases include one line derived from Criollo, one from a Suwan Composite, and four from recycling of GEM-Raleigh and GEM-Ames releases. The four GEM x GEM releases resulted from work by Jill Lennon, a former graduate student at NCSU.

GEM code	Pedigree	Race	Country	Type	Heterotic pattern
GEMN-0270	Antig01:N16-050-002	Criollo	Antigua	50% Tropical	NSSS
GEMN-0271	BR105:N16-043-001	Composite (Suwan)	Brazil	50% Tropical	NSSS
GEMN-0272	(GEMN-0043xGEMN-0097)-B-001	GEM x GEM	USA	35% Tropical	NSSS
GEMS-0273	(GEMS-0032xGEMS-0050)-B-007	GEM x GEM	USA	35% Tropical	SSS
GEMS-0274	(GEMS-0032xGEMS-0113)-B-004	GEM x GEM	USA	35% Tropical	SSS
GEMN-0287	(GEMN-0108xGEMN-0178)-B-004	GEM x GEM	USA	35% Tropical	NSSS

Germplasm development:

- Approximately 2800 GEM nursery plots and 1000 GEM isolation plots were grown in Clayton, NC.
- S₁ families were developed from fifteen breeding crosses: ANTIG01:S02, BR51039:N15, BR51039:S15, GEMN-0104/GEMN-0048, GEMN-0043/GEMN-0124, GEMN-0135/GEMN-0104, GEMN-0124/GEMN-0095, GEMN-0124/GEMN-0097, GEMS-0027/GEMS-0113, GEMS-0220/GEMS-0032, GEMS-0050/CL-G1501:S17b-B-020-B, GEMS-0200/GEMS-0027, GEMN-0097/CML375, GEMN-0124/GEMN-0048 and CA00370/GEMN-0048.
- Families from eight GEM breeding crosses were advanced from S₁ to S₂: BR51675:D27S21, BVIR155:S20, GEMN-0104/GEMN-0097, NS1:(GEMN-0097), NS1:(GEMS-0115), 89291:N(LH51), and 89291:N(LH59).
- Sixty-eight new GEM x GEM combinations (Raleigh x Raleigh and Raleigh x Ames releases) were produced based on yield trial data.
- Approximately 110 new breeding crosses were developed between tropical inbreds from CIMMYT and Kasetsart University (Thailand) and GEM-Ames releases and ex-PVPs. Both groups were selected based on yield trial performance.

Germplasm Evaluations in 2015:

- Overall, 12,800 yield plots were coordinated from Raleigh, with 8500 planted at five locations in NC and the rest planted by six cooperators at thirteen locations throughout the Southeast and Midwest.
- Fourteen experimental entries were evaluated at eighteen locations in third-year trials (EX02 and EX03; see Yield Trials section and above releases)
- Fifty-eight experimental entries were evaluated in second-year trials (EX07 and EX34), approximately twenty of which will be evaluated in third-year trials in 2016.

- Almost 300 entries were evaluated in first-year trials, thirty-four of which will be evaluated in second-year trials in 2016.
- Evaluations of GEM releases from Raleigh and Ames were conducted in two experiments (EXK2 and EXK3) to identify lines with the best potential for use in GEM x GEM crosses; entries included GEM releases that have performed well in previous trials as well as newer entries that had not yet been evaluated in head-to-head experiments. Both trials were planted throughout the Midwest and southeast. Summary tables are presented in the Yield Trials section of this booklet, and complete results will be available on the GEM website after January 1. Some of the best entries in EXK2 were GEMS-0032, GEMN-0104, GEMN-0207, GEMN-0232, GEMS-0243 and GEMS-0244 (GEMN-0232 also had the highest value for Y/M), while some of the best entries from EXK3 were GEMN-0178, GEMS-0200, GEMS-0227, GEMS-0253 and GEMS-0255 (GEMS-0227 also had the highest value for Y/M). Efforts are already underway to recycle the best performing GEM releases from EXK2 and EXK3 and recycling efforts in 2016 will emphasize Stiff Stalk GEM releases, as recycling of non-Stiff Stalk releases was emphasized in the 2015 nursery.
- Ex-PVP inbreds were evaluated by Major Goodman at three locations in North Carolina in 2015 and five locations in 2014; complete results for EX60 will be available on the GEM website while a summarized version is presented in this booklet in Yield Trials section. Some of the most promising ex-PVPs based on the trial data are LH211, LH218, PHHB4, PHK46 and PHMK0.

Allelic Diversity:

- There were over 800 summer nursery rows dedicated to the development of F₁s and BC₁s for the Allelic Diversity project, and 230 rows were planted in Homestead, FL for the 2015 winter nursery. Much of the effort in the winter nursery is focused on late maturing accessions.
- Ninety-six BC₁ families and sixteen F₁s were completed this summer in Raleigh; three BC₁ families and fifty-three F₁s were also completed in the 2014 winter nursery.

Other GEM-Raleigh recommendations:

- Based on 2015 nursery observations, some of the most promising new breeding crosses include ATL100/PHP38, GEMS-0220/CML312, GEMN-0048/CML343, GEMS-0220/La Posta Sequia_C7_F71-1-1-1-2-B-B-B, KO679Y/GEMS-0227, FL_4BT7/DK_MM402A, GEMS-0220/GEMS-0027, CL-G1501:S17b-B-20-B/GEMS-0032, (DTPY C9/G18)-60-1-1-1-1-#/LH195, Pool 33-128-1-1-#/DK_HBA1, LH195/CML277, NS701/CML277, PHP38/CML494, La Posta Sequia_C7_F71-1-1-1-2-B-B-B/LH195, NS701/La Posta Sequia_C7_F71-1-1-1-2-B*3, La Posta Sequia_C7_F71-1-1-1-2-B-B-B/PHP38, and KO679Y/LH195.

Request from GEM-Raleigh

We currently are using three 1970's era K2 Gleaners for harvesting yield trials. Two of the machines have weigh buckets developed by Pioneer in the early 80's. Both of these have hold hoppers and work with air rather than the electric actuators. The third machine uses a weigh system developed here at NCSU and does not have a hold hopper. The bucket works by an electric actuator. All three machines have the HarvestMaster HM401 weigh system and use an obsolete Pro 4000 computer. The HM401 system is probably obsolete as well. **We would really like to upgrade the computer systems if possible before they fail on us with "newer" systems that are still supported, and we can also use another 3-row 30" corn head for a K-2 Gleaner if anyone has one.**

Summary of the five GEM-Raleigh Recommended Lines for 2016

GEM code	Pedigree	Days to ANT	GDU to ANT	Days to Silk	GDU to Silk	Grain color	Grain type
GEMN-0270	Antig01:N16-050-002	66	1716	66	1716	Y	D/SD
GEMN-0271	BR105:N16-043-001	65	1687	66	1716	Y	D
GEMN-0272	(GEMN-0043xGEMN-0097)-B-001	63	1630	62	1602	Y	D
GEMS-0273	(GEMS-0032xGEMS-0050)-B-007	63	1630	66	1716	Y	SF/F
GEMS-0274	(GEMS-0032xGEMS-0113)-B-004	66	1716	69	1805	Y	SD/SF
GEMN-0287	(GEMN-0108xGEMN-0178)-B-004	63	1630	64	1657	Y	D
Check	B73	57	1499	58	1529	Y	D

GEM TSG Meeting, August 3-5, Raleigh, NC - Highlights:

The GEM Technical Steering Group (TSG) meeting focused on the results of the Development Committee's work, named 'GEM Going Forward'. Please see the documents (next section) that represent eight months of concerted effort to analyze GEM capacities at Ames and Raleigh; develop strategies to utilize newer breeding methodologies and traditional germplasm development while reducing cycle time and improving the quality of germplasm entering the program and the released lines; prioritize needs for in-kind support such as isolation and yield trial resources, and coordinated disease screening efforts.

The group had the pleasure of viewing Matt Krakowsky's and Major Goodman's nurseries, breeding crosses, and topcrosses. Raleigh has an amazing program and we could have spent weeks studying their material.

GEM Development Team Proposals for “GEM Going Forward”

GEM Development Team:- Candice Gardner, Matt Krakowsky, Martin Bohn, Goran Srnic, David Butruille, David Uhr; Freeman Whitehead and Walter Trevisan (Team Lead)

1-Name of the GEM new strategies

The GEM TSG approved the name for the new strategy: “**GEM GOING FORWARD**” as the best option to describe the efforts combined in this document.

Synonyms for “going forward”: advancement ; breakthrough; evolution; advancement; amelioration; betterment; boost; breakthrough ; development; furtherance; growth; headway; improvement; promotion; evolvment ; forward march ; getting ahead; giant strides; step forward

2- Reduction of GEM breeding cycle time:-New Methodologies and new cooperation!

One of the main goals of the Development Team at start of this task was to reduce cycle time to allow quicker release of inbreds using new introgressed germplasm and also allow quicker recycling of GEM germplasm (GEM x GEM approach). The team has reviewed the introgression breeding methodologies that have been used by Ames and Raleigh and proposed several changes in order to achieve the reduction in cycle time. Here are the proposed new methodologies for GEM Ames and GEM Raleigh breeding programs.

2.1- GEM Ames: In the first tab of the spreadsheet attached we are including Candy’s final proposal for Ames GEM conventional methodology. The team has discussed and agreed that this is the best that could be done considering the normal late return of the yield data in the fall that hampers turn over for adequate winter nursery plantings and winter nursery allocation/costs limitations. The new approaches for conventional GEM and DH allow reduction of 2 years (sometimes 3 years) in the Ames GEM breeding cycle.

2.2- GEM Raleigh: In the second tab of the spreadsheet attached we are including Matt’s final proposal for Raleigh conventional methodology. Raleigh also has the same limitations as Ames has besides the need to plant as early as possible the Florida winter nursery to allow better development of the crop before the cooler January season. The winter nurseries must be planted no later than late September. The new approaches for Raleigh conventional GEM and DH allow reduction of 5-8 years compared with the methodologies been used presently.

2.3- Special additional contributions from cooperators to the “cycle time reduction” efforts:

1-Monsanto has agreed to contribute every year (for the foreseeable future which might be 2-3 years!) effort with 2 to 4 F1s to do the induction; doubling; and the use their own proprietary testers and trials network for the first year of screening trials. GEM breeders and GEM cooperators would do the 2nd year testing (retest) and increases necessary for releases. Monsanto also is making F1’s (100 GEM elite x GEM elite crosses) to feed the GEM x GEM recycling efforts in the new conventional GEM and the new DH methodologies.

2-AgReliant also has agreed to do DH’s (induction and doubling) of at least one population per year (for the foreseeable future). The production of the test cross seeds and the planting of trials for two years of testing would be done by GEM and GEM cooperators.

3-Dow and AgReliant offered some additional winter nursery rows to make up test crosses for GEM trials.

4-Pioneer will create two GEM NSS Germplasm x Pioneer Temperate NSS Inbred, and two GEM SSS Germplasm x Pioneer Temperate SSS Inbred, population crosses (without prior Pioneer Germplasm background); selfing F1s to F2s and generating about 50 F2:3 derived lines per cross for 1st year topcross testing. This topcross hybrid testing will be done in Pioneer locations with Pioneer elite testers. GEM breeders and cooperators will conduct 2nd year re-test trials and increase seed for releases.

3- Better Germplasm for GEM introgression efforts

The second most important item to help GEM towards a more aggressive and successful path is the use of better quality temperate germplasm to adapt exotics, and the use of better exotic germplasm. The temperate adapted germplasm used as “recurrent germplasm” comprises 50-75% of the end product released by GEM. So, it plays a very important role in the quality of the adaptation of the exotics and the final yield performance of the GEM releases. One of the main criticisms of GEM methodology is perceived to be low quality of the temperate germplasm used, since the cooperators contribution has been a “black box” system: no one is really sure of the level of quality of the private temperate donor inbred that have been used for GEM introgressions. The critics say they are probably already Ex-PVP or very close to be Ex-PVP. The other side of the “equation” is important also: improved tropical and subtropical germplasm contributes fewer adaptation problems and increase the chance of being used by cooperators than does the use of germplasm bank accessions. By working a smart balance of modern exotics plus germplasm bank accessions, GEM can develop products that can satisfy different type of cooperators need. How to improve both sides of the exotic introgression “equation”, i.e, the quality of the temperate donors and the quality of exotic germplasm?

3.1-Better Temperate germplasm for adapting exotics. The development team has discussed this item exhaustively and the team’s recommendation is to work closely with the cooperators and try to convince them of the need to use “mid-life” germplasm (10-12 years from the PVP application). This would give GEM a great advantage compared with the use of Ex-PVPs. If GEM cooperators cannot agree to this, the suggestion is to use either Ex-PVP or Elite GEM for the purpose of adapting exotic germplasm. By doing so, GEM breeders would have a better sense of the heterotic pattern they are using; could easily identify the best inbreds to be used in breeding/introgression work; and be able to determine the best testers for each project. Most of the cooperators at the Development Team believe they could convince their breeding teams to stay closer to this rule. Is this something we could sell to every Cooperator?

3.2- Better Tropical and Subtropical germplasm: there is no doubt that the most successful GEM germplasm released so far (by number and performance) came from a group of tropical hybrids donated by Dekalb in the early 1990’s. Since the mid 90’s many new GEM inbreds were developed out of these sources. Recently some BR105, BR106, Thailand Suwan and some South African germplasm that are improved tropical or subtropical germplasm have yielded some very interesting and successful releases. Although GEM’s main long term objective should be always to work with Germplasm Bank accessions to unlock attributes not yet utilized, particularly in North America, the development team agrees that the use of modern tropical and subtropical germplasm presents the best opportunity for GEM to have an impact on the US corn industry in short/medium term. To allow better exotic germplasm to be used by GEM, the Development team suggests that the GEM Cooperators could offer to contribute tropical and subtropical germplasm instead of temperate germplasm if they prefer, or if they could not offer the targeted 10-12 years old inbreds (from PVP application). Some cooperators on the Development team have already decided to contribute more of this type of germplasm. Dow has agreed to cross some Brazilian Cateto parental single crosses to GEM Elite or Ex-PVP inbreds; Monsanto has agreed to cross some tropical proprietary inbreds to GEM Elite or Ex-PVP; AgReliant could potentially do so after the agreements with their counterparts in Brazil are finalized. Other Cooperators could adopt this type of donation near future.

4-Better testers for GEM breeding efforts

The third bottleneck for GEM success has been the availability of new, reliable testers for new starts. For a long time Holdens provided these testers but these testers have not been changed in almost 10 years and are now completely obsolete. They have been somewhat successful in the Ames breeding program, but have been a recurrent problem for Raleigh’s program because of lack of adaptation and poor pollen production in isolation fields. No inbreds have served as good tester for GEM in Raleigh; breeders have used parental single crosses to produce enough seeds for testing. Recently MBS Genetics testers have been used in the GEM Ames program with good success, but they are not adapted to the South and cannot be used by the Raleigh breeding program.

4.1-Better Testers for GEM Ames Breeding: The Development Team has discussed this issue and three options were suggested. First, stay with MBS testers; Second, use the cooperators' testers as much as possible; Third use some well-known, recent Ex-PVP lines. The use of Cooperators' testers has several limitations: the number of ICB (isolation fields) rows provided by cooperators are not sufficient to accommodate all the segregating families needed for testing; the variability of testers used by different cooperators that sometimes are very specific combiners; and the inability of GEM to dictate/control what kind of testers should be used. The use of Ex-PVP germplasm has a big limitation of being too old and not necessarily well adapted to modern plant densities. So, it seems that the best option for the Ames program is to stay with the testers provided by MBS. They are more modern, belong to known heterotic patterns, are available in the seed amounts needed, and cover the maturities needed for Ames Breeding RM 105 to 113 day target maturities.

4.2-Better testers for GEM Raleigh breeding: this one is more difficult to resolve. Considering that Ex-PVP are too old and generally don't adapt very well to North Carolina, there are two possible options: First, use NC inbred or NC x NC single crosses as testers. They are generally late and tall (since most of them have some exotics too). Or second, use Cooperators' testers with all the limitations already described for the Ames breeding. Pioneer has provided some ICB rows in the past for Raleigh GEM to produce test cross seeds but that option is limited. Recently, Dow and AgReliant have been very cooperative on this issue. Both are providing some ICB rows for test crosses seed production, but mostly in the summer (no winter nursery contribution for this). So, the suggestion from the Development team is for the GEM coordinators and TSG members to try to convince Cooperators to contribute more summer ICB rows for GEM. Not an easy task due to the recent industry budget struggles. But we should try it!

Another idea is to try some of the new "homozygous" GEM inbreds derived from some of the most elite GEM coded lines already released (normally coded and distributed at S3 or S4 level). There are several ready to be coded, following testing with the released line counterparts, according to Candy. Preferably we should use an early one (RM105 or earlier).

5. How much effort should GEM put in its different activities?

The TSG has been very instrumental over the years in bringing new ideas and new activities to GEM. Some were incorporated, others not. We have tried to reduce some of them to open room for the new activities that we are bringing now with these new strategies. One question that came out very frequently during the meetings was about the best balance of activities so as to not deviate from the main focus of GEM, which is "develop better unique germplasm derived from the introgression of exotics, with yield potential at least at 90% level of the yield of present commercial checks". The suggestions below are a summary of what the TSG has recommended:

- a- Cooperator's Tropical Elite x GEM elite- 20% of the projects;
- b- Conventional GEM Elite x GEM Elite- 15% of the projects
- c- **DH** GEM Elite x GEM Elite- Monsanto (4) and AgReliant (1) cooperation (induction and doubling will be done by these companies; testing will be done by GEM network)- 25% of the projects
- c- Traditional GEM (Germplasm Bank accessions using Cooperators temperate as adaptation donors) - 25% of the projects
- d- AD still will be part of GEM for 3-4 years- 15%
- e- In summary:-
 - Traditional GEM- 45% (25% Germplasm Bank + 20% Cooperators Tropical Elite)
 - Recycling of Elite GEM Elite Codes- 40% (15% conventional +25% DH)
 - AD GEM- 15%

6- Other suggestions from the Development Team:-

6.1- Slow down the Allelic Diversity projects; The suggestion of this team is to finish the projects already started and don't initiate any new projects till we have better feedback of the utilization of these DH inbreds already released/to be released. In summary: This means that all haploids already induced will be doubled; the BC1s made that were scheduled for this year will be induced; the make-up of the (few) remaining crosses already planned by Matt for this summer will be finished, induced, and doubled; and, finally, no selfing will be done for the 'conventionally derived' side of the AD Project. Stop making any new F1 or new BC's.

Pioneer will continue to evaluate these DH lines in summer nurseries per-se and will make data and comments available to the GEM cooperators. In the following year these lines will be evaluated in topcross testing with one proprietary tester for each heterotic group.

6.2- Mies experiment: The development team has suggested that these activities should be better done by a PhD student in the universities since this project aims to answer questions that the overall scientific community has about the most efficient ways to produce DH lines with significant exotic introgressions. Martin Bohn, University of Illinois, is interested in pursuing research grants to support these efforts, in partnership with Thomas Lübberstedt and Candy Gardner.

6.3- Disease evaluation network: one item that was discussed by the Development Team is the need to increase the disease evaluation network using US and international Cooperators. Recently GEM has sent GEM coded germplasm to be evaluated for MLN, a disease that has ruined the maize crop in East Africa. This effort, and the recent good news about the work done by our cooperators in Egypt who found several GEM germplasm lines to be resistant to Late Wilt, are great examples of the unique opportunities that GEM has to establish a more comprehensive disease evaluation network and provide disease resistance information for diseases (or races of existing diseases) that have not yet been introduced in the US. We suggest that the new coordinator, with the help of the TSG, develop a plan to organize this network to regularly obtain germplasm evaluation information on present and possible future diseases. Some effort should also be made to develop a more comprehensive database for Cooperators to access the information.

Pioneer will continue to provide about 500 rows for various disease screening in Iowa, and about 50 rows for disease screening World- Wide.

6.4- Specialty traits: although the Development team did not discuss this topic in depth, it is evident that the grain quality assessment done regularly by GEM should be kept.

7-Conclusion

The GEM Project has completed 22 years since its inception. It has been recognized as one of the most successful pre-breeding PPP (Public Private Partnership) around the world. Although some modern practices have been introduced to the traditional conventional GEM, like Allelic Diversity and DH Technology, there is a need to speed up the cycle time and improve the quality of GEM releases to allow GEM to reach its goal of providing more diversity at least at 90% yield level of the commercial products used as checks (recent industry releases). The Development Team and the TSG reviewed in detail all aspects of the GEM Project, made the suggestions that are described in this summary, and offer this for discussions/further recommendations during the 2015 GEM Cooperators meeting at ASTA in Chicago.

Proposed Changes to Ames-GEM Program

Proposed Changes to Ames-GEM Program												
Current Ames GEM Program				Proposed Ames GEM Program			For GEM x GEM conventional			For GEM x GEM DH		
Year	Season	Operation	Gen/Stage	Season	Operation	Gen/Stage	Season	Stage	Gen/Stag	Season	Stage	Gen/Stage
1	W1, S1	derive 25% exotic F1 breeding cross	"BC1"F1	S1	Coops make exotic x temperate F1s	F1	w0	Make F1	F1	S1	Make F1	F1
				W1a, 1b	Coops generate 25% F2 if tropical donor	"BC1"F1	s1	Make F2	F2	w2	Induce	F1 x Inducer
					Coops generate 50% F2 if temperate donor	F2	w2	Generate F3	S1			
					Store these as ie's							
2	S2	breeding cross obs by GEM & Coops	"BC1"F1 Obs	S2	Observe F2; intermate or self earliest plants (grow as ie's)	"BC1" F1 and F2 Obs	S2	Observe F3 ;	Obs	S2	Doubling	H to DH
								make test crosses in ICB for 2 years of testing	Test Cross seeds			
	W2	best breedings crosses (bulks) advanced to S1 (fast track)	"BC1"F1 to S1									
3	S3	advance S1's to S2	S1 to S2	S3			S3	Trials 1st year	Trials 1st year	S3	Increase DH	Inbred
					Make crosses with two testers			Advance lines to S2	S1 to S2		Cross to testers	testcrosses
	(W3)	recovery pollinations										
4	S4	S2 TPXs made in isos	Test Crosses	S4	1st year S2 TPX trials - one tester		S4	Trials 2nd year	Trials 2nd year	S4	Trials 1st year	Trials 1st year
								Selected S2 advanced to S3			Make seeds for test crosses (2 testers)	
							W4	Increase inbreds to release				
5	S5	S2 TPX 1st year trials	Trials 1	S5	2nd year TPX trials - two testers Advance S2s to S3; obs nursery for winning S2's for preliminary characterization		S5	Characterize lines, disease obs		S5	Trials 2nd year	Retest
										W5	Increase seed of lines to be release	
				W5	Increase seed of lines to be release Release lines							
6	(W5)	Remake S2 TPX seed if inventory low		S6	Characterize lines, disease obs		S6			S6	Characterize lines, disease obs	
7	S6	Retest same S2 TPX as in 1st year Make additional TPX in iso and advance winning S2s to S3	Retest Trials S2 to S3									
8	S7	3rd Yr test - 2 Testers Characterize S3 lines	3rd year S3 lines									
	W7	Release coded GEM lines										

Proposed Raleigh-GEM Program Changes									
				Lighter color shading are exotic evaluation phases					
				Darker color shading are line development phases					
	Old GEM Protocol			Proposed New Raleigh Protocol			New Recycling Protocol		
Year	Season	Operation	Gen/Stage	Season	Operation	Gen/Stage		GEM and Monsanto Cooperation	
1	W1, S1	Exotic Germplasm x Temperate Tester	F1	W1 or S1	Exotic x Temperate Tester	F1	S1	Cross GEM-Raleigh releases x GEM-Raleigh and GEM-Ames releases Run yield trials for head to head comparisons of GEM releases	F1
							W1	Send best 4-6 combinations to Monsanto for DH production	Induction
2	S2	Evaluations in North carolina	Obs (trials?)	S2	Evaluation of the testcrosses	Trials	S2	Monsanto - Doubling process Raleigh - Self new combinations in disease nursery	DH S1
							W2	Monsanto - Increase DH's Make test crosses against one Monsanto tester	DH1 Test cross seeds
3	S3	Evaluations at Coopertor locations	Obs (trials?)	S3	Selected Exotics x Adapted Inbreds (Cooperators,GEM, Ex-PVP, NC inbreds)	F1 make up	S3	Monsanto/Raleigh - Send DH inbreds to cooperators for testcrossing with cooperators testers Monsanto - Run first test crosses in their trials network Raleigh - Self S1's from previous summer in disease nursery, plant DH's in isolation for testcrossing	Test Crosses make up Disease evaluation Monsanto Trials (SC Y1) S2 and Test cross seed
							W3	Raleigh - Select best DHs based on Monsanto trial data	
4	S4	Cross best exotics x Adapted	Test Crosses make up	S4	Plant 250K of the breeding crosses with inbreds (500K with F1 with exotic pops). Self all decent plants Select best ears at harvest	S1	S4	Raleigh - Evaluate selected DH topcrosses at all cooperator and NC locations and select the best entries to release/recycle Increase DH for release Test cross S2 families in isolation	Screening Trials Y2 Test cross seed
5	S5	Make Test Crosses in ICB Exotics evaluated for disease and agronomics	ICB Obs	S5	Plant S1 in ETR; self best entries Select best ears of the best entries	S2	S5	Raleigh - Characterization and release of GEM Raleigh inbreds First year evaluations of S2 families in yield trials	Release Yield trials
6	S6	Trials 1st Year in North Carolina Disease evaluations	1st year trials	S6	Plant the S2 in ICB and make up test crosses	S2 Test crosses		Raleigh - Second year evaluations of S2 families in yield trials Increase of best S2 families	
7	S7 W7	Wide area trials (cooperators) Disease evaluations select best Exotics	Restest Trials (2nd year)	S7	Evaluate S2 test crosses at 5 locations in North Carolina Select the best 25-33% of entries	S2 Screening Y1 Trials		Raleigh - Characterization and release of GEM Raleigh S2 families	
8	S1	Random-mate breeding crosses at least one generation	Sibbing	S8	Evaluate S2 test crosses at all cooperators and NC locations	S2 Screening Y2 Trials			
9	S2	Plant bulk of breeding cross Self 250 plants; select best 50-100 ears	S1	S9	Recommendation of best entries for use by GEM cooperators	Increase S2 and release			
10	S3	Plant S1 in ETR Self 400-800 plants	S2						
11	S4	S2 in ETR in ICB to make test crosses	S2						
12	S5	Evaluate S2 test crosses at 5 locations in North Carolina Select 25-33% of entries	S2 Screening Trials Y1						
13	S6	Evaluate selected testcrosses at 12 locations (cooperators) Select 25-33% of the entries Evaluations for different diseases at cooperator's locations	s2 Screening Trials Y2						
14	S7	recommendation of best entries for use by GEM cooperators	S2						

PUBLIC COOPERATOR REPORTS (Specific Cooperative Agreements, or SCAs):

The GEM Project funded two SCA's in 2015, Dr. Jay-lin Jane, Iowa State University, and Dr. Mark Campbell, Truman State University; Dr. Jane's report is attached. Dr. Campbell's will be posted when available.

Final Progress Report Dr. Jay-lin Jane, Iowa State University

This report serves to document research conducted under a cooperative agreement between USDA-ARS and Iowa State University. Specific objectives of this research project were to (1) Develop and characterize hybrids using normal and waxy GEM lines to produce hybrids with improved yield and starch-ethanol conversion efficiency to increase ethanol yield; and (2) Develop healthy foods and healthy food ingredients using GEM lines.

For objective 1, normal/waxy hybrids were developed by self- and inter-crossing the isogenic normal and waxy inbred corn. Starch physicochemical properties were characterized to understand the dosage effects of waxy gene on starch structures and properties. Two sets of isogenic normal and waxy corn were used as parental lines in this study to eliminate interference from differences in the genetic background. Intercrossing between the isogenic normal and waxy corn was conducted to produce corn lines with various dosages of waxy gene in the endosperm: 0 (normal inbred), 1 (normal × waxy), 2 (waxy × normal), and 3 (waxy inbred). Amylose contents of the starch (1.6-27.9% for set 1 and 0.0-26.6% for set 2, respectively) negatively correlated with the waxy gene dosage. The branch-chain length distribution of amylopectin showed that the percentages of A (DP<12) and B3 (DP>37) chains increased with the increase in waxy gene dosage, whereas the percentage of B1 (DP 13-24) and B2 (DP 25-36) and extra-long branch chains (DP>100) decreased with the increase in waxy gene dosage. The molecular sizes of amylopectin ($9.5-11.8 \times 10^8$ for set 1 and $10.5-12.4 \times 10^8$ g/mol for set 2, respectively) and amylose (DP 630-651 for set 1 and DP 638-646 for set 2, respectively) were not affected by the waxy gene dosage. The conclusion gelatinization-temperature, gelatinization temperature-range, and gelatinization enthalpy-change were positively correlated with the waxy gene dosage and inversely proportional to the amylose content. Peak viscosities of the starches were not correlated with the waxy gene dosage, although the waxy corn starch showed substantially higher viscosity than the isogenic normal and hybrid corn. The setback viscosities, however, were negatively correlated with the waxy gene dosage. These results indicated that the waxy gene in the endosperm had dosage effects on the amylose content and amylopectin branch-chain length distribution, which in turn affected the thermal and pasting properties of the starch. The findings contributed to the fundamental understanding of the role of the waxy gene in biosynthesis of both the amylose and the amylopectin.

For objective 2, a high-amylose popcorn (GEM-07048) was produced by crossing a normal popcorn (Sg1533) with a high-amylose corn (GEMS-0067). The corn kernels of GEM-07048 were separated visually to two groups, normal popcorn with an amylose content of 36.3% and high-amylose popcorn with an amylose content of 61.4%. The high-amylose popcorn displayed a small expansion volume (11.8 cm/g). The popped kernels of high-amylose popcorn showed a large resistant-starch content (46.3%) and slowly-digestible starch content (19.3%), indicating its potential as a healthy snack food.

Summary of progress made between 2014 and 2015

During the period of study, GEM corn lines were developed and characterized to understand the dosage effects of waxy gene on starch structures and properties and to produce resistant starch for human health. The results showed that waxy gene had dosage effects on amylose

content and amylopectin branch-chain length distribution of the starch, which in turn affected starch properties. The knowledge could be used to improve the ethanol production from corn. The high-amylose popcorn showed high resistant-starch and slowly-digestible starch contents, although the kernels had a low popping value.

Other GEM lines of potential interest:

In the 'Released Lines' section, please find images and information on 2016 GEM Ames released lines, as well as information on six lines we will potentially release later this spring, pending seed return from winter nursery.

GEM Releases

Summary of the 6 GEM Raleigh Release Lines for 2016

GEM code	Pedigree	Race	Country	Type	Heterotic pattern
GEMN-0270	Antig01:N16-050-002	Criollo	Antigua	50% Tropical	NSSS
GEMN-0271	BR105:N16-043-001	Composite (Suwan)	Brazil	50% Tropical	NSSS
GEMN-0272	(GEMN-0043xGEMN-0097)-B-001	GEM x GEM	USA	35% Tropical	NSSS
GEMS-0273	(GEMS-0032xGEMS-0050)-B-007	GEM x GEM	USA	35% Tropical	SSS
GEMS-0274	(GEMS-0032xGEMS-0113)-B-004	GEM x GEM	USA	35% Tropical	SSS
GEMN-0287	(GEMN-0108xGEMN-0178)-B-004	GEM x GEM	USA	35% Tropical	NSSS

Lines *per se* Data

GEM code	Pedigree	Days to ANT	GDU to ANT	Days to Silk	GDU to Silk	Grain color	Grain type
GEMN-0270	Antig01:N16-050-002	66	1716	66	1716	Y	D/SD
GEMN-0271	BR105:N16-043-001	65	1687	66	1716	Y	D
GEMN-0272	(GEMN-0043xGEMN-0097)-B-001	63	1630	62	1602	Y	D
GEMS-0273	(GEMS-0032xGEMS-0050)-B-007	63	1630	66	1716	Y	SF/F
GEMS-0274	(GEMS-0032xGEMS-0113)-B-004	66	1716	69	1805	Y	SD/SF
GEMN-0287	(GEMN-0108xGEMN-0178)-B-004	63	1630	64	1657	Y	D
Check	B73	57	1499	58	1529	Y	D

GEM Raleigh Yield Trial Data are on pages 1 - 2 in the Yield Trial section of this booklet (Exps 02 and 03)

Summary of the 12 GEM-Ames Released Lines for 2016

GEM Code	Pedigree	Race	Country	Type	Het Group	Poll GDU	Grain Texture	Grain color	Cob Color
GEMS-0275	((KO679Y/GEMS-0115)/GEMS-0162)-008-001	((25% KO679)(25% DKB844)) / (25% Cuba117)	South Africa, Brazil, Cuba	25% tropical exotic	SS	1450	Semi-Flint	Orange/ Yellow	White
GEMS-0276	(53SS4/GEMS-0026)-SIB-B-003	(25% exotic donated by coop) / (50% DK370A)	Brazil	37.5% tropical exotic	SS	1380	Semi-Dent	Yellow	White
GEMS-0277	(53SS4/GEMS-0031)-SIB-B-039	(25% exotic donated by coop)/ (50% DK370A)	Brazil	37.5% tropical exotic	SS	1369	Dent, Semi-Dent	Yellow	Red
GEMS-0278	(GEMS-0115/S49w)-B-B-036	25% DKB844	Brazil	12.5% tropical exotic	SS	1488	Dent, Semi-Dent	Orange/ Yellow	Red
GEMS-0279	(GEMS-0176/S49w)-B-B-028	25% Cuba164, Criollo	Cuba	25% tropical exotic	SS	1450	Semi-Flint, Semi-Dent	Yellow	R&W
GEMS-0280	BR52051:S172641-B-018	PI 583917, Dente Amarelo	Brazil	25% tropical exotic	SS	1411	Dent	Yellow	Red
GEMS-0281	BR52051:S172641-B-054	PI 583917, Dente Amarelo	Brazil	25% tropical exotic	SS	1411	Dent	Yellow	Red
GEMS-0282	CHIS740:S(PHW17)(87916W)-126-001	PI583890,Tuxpeno/Olotillo	Chile	50% temperate exotic	SS	1450	Semi-Flint	White & Yellow	White
GEMS-0283	UR11002:S1409-068-001	PI 383923, Dente Branco Landrace	Uruguay	50% temperate exotic	SS	1369	Semi-Flint	Yellow	Red
GEMS-0284	AR17056:S1217-B-025	50% PI 493039, Cristalino Colorado	Argentina	50% temperate exotic	SS	1380	Dent	Yellow	Red
GEMN-0285	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-019	(25% PI 484028, Tuson/Canilla Landrace from Dominican Republic)/(25% DKXL212)	Dominican Republic	25% tropical exotic	NS	1411	Dent	Yellow	Red
GEMN-0286	MDI022:N(PHG35)(GEMN-0097)-072-001	(PI 571994, Cuban yellow population) / (25% PI 536622, FS8B(T))	Peru	18.3% tropical exotic	NS	1510	Dent	Yellow	White

Top Cross Relative Maturity Estimated				Lines <i>per se</i> Data (2016)				
GEM Code	Pedigree	Estimated RM	Ear Height (cm)	GEM Code	Protein	Oil	Starch	Density
GEMS-0275	((KO679Y/GEMS-0115)/GEMS-0162)-008-001	112	120	GEMS-0275	10.52	4.44	70.7	1.35
GEMS-0276	(53SS4/GEMS-0026)-SIB-B-003	112	150	GEMS-0276	12.48	3.74	69.64	1.35
GEMS-0277	(53SS4/GEMS-0031)-SIB-B-039	111	100	GEMS-0277	12.23	4.02	69.64	1.36
GEMS-0278	(GEMS-0115/S49w)-B-B-036	113	135	GEMS-0278	9.81	4.28	71.36	1.33
GEMS-0279	(GEMS-0176/S49w)-B-B-028	111	135	GEMS-0279	11.35	3.76	70.72	1.35
GEMS-0280	BR52051:S172641-B-018	117	135	GEMS-0280	10.93	4.95	69.55	1.34
GEMS-0281	BR52051:S172641-B-054	115	125	GEMS-0281	10.84	4.23	70.45	1.3
GEMS-0282	CHIS740:S(PHW17)(87916W)-126-001	119	175	GEMS-0282	10.74	4.22	70.76	1.34
GEMS-0283	UR11002:S1409-068-001	111	120	GEMS-0283	9.9	4.09	71.73	1.34
GEMS-0284	AR17056:S1217-B-025	117	155	GEMS-0284	12.37	3.85	69.57	1.35
GEMN-0285	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-019	110	150	GEMN-0285	10.89	4.36	70.18	1.33
GEMN-0286	MDI022:N(PHG35)(GEMN-0097)-072-001	111	155	GEMN-0286	10.22	3.61	71.77	1.28
Hybrid Checks	MBS3644/MBS5411	109	110					
	MBS9508/MBS2655	~107						
	34R65	~109	90					
	33F85	~109	130					
	31D58	~114	140					

2016 Ames Released Lines Yield Trial Data with *per se* Line Images

GEMS-0275: ((KO679Y/GEMS-0115)/GEMS-0162)-008-001

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141407	((KO679Y/GEMS-0115)/GEMS-0162)-008-001/LH287	101.5	182.9	548	22.4	8.2	54.6			99.4	1.4	12.0
1564204	((KO679Y/GEMS-0115)/GEMS-0162)-008-001/LH287	98.5	195.5	812	19.6	10.0	53.8	270.0	120.0	97.9	5.2	10.3

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
((KO679Y/GEMS-0115)/GEMS-0162)-008-001	((25% KO679)(25% DKB844))/((25% Cuba117); 25% exotic	NLF-free in 2015 nursery; good ears, grain quality, stalks; semi-flint K	1438



GEMS-0276: (53SS4/GEMS-0026)-SIB-B-003

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141401	(53SS4/GEMS-0026)-SIB-B-003/LH287	93.2	186.0	310	21.4	8.8	53.0			99.7	1.3	8.3
1564202	(53SS4/GEMS-0026)-SIB-B-003/LH287	99.7	198.2	438	21.1	9.6	54.4	290.0	150.0	91.2	3.5	25.4

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
(53SS4/GEMS-0026)-SIB-B-003	(25% exotic donated by coop)/(50% DK370A); 37.5% exotic	good late NLF; small ear, good grain quality, stalks; semi-dent K	1349



GEMS-0277: (53SS4/GEMS-0031)-SIB-B-039

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141402	(53SS4/GEMS-0031)-SIB-B-039/LH287	93.4	175.5	428	19.1	9.2	53.8			101.1	1.1	19.5
1564202	(53SS4/GEMS-0031)-SIB-B-039/LH287	97.6	194.2	800	20.9	9.5	54.2	280.0	100.0	93.3	1.8	3.2

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
(53SS4/GEMS-0031)-SIB-B-039	(25% exotic donated by coop)/(50% DK380, Brazil); 37.5% exotic	no rust; good late NLF; late, green; good ears, grain quality, stalks; dent/semi-dent K	1381


GEMS-0278: (GEMS-0115/S49w)-B-B-036

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141404	(GEMS-0115/S49w)-B-B-036/LH287	89.7	183.2	288	20.8	8.8	53.3			101.9	0.0	2.2
1564203	(GEMS-0115/S49w)-B-B-036/LH287	100.5	190.4	854	19.9	9.7	55.4	285.0	135.0	97.8	4.0	3.6

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
(GEMS-0115/S49w)-B-B-036	(25% DKB844)/temperate; 12.5% exotic	NLF below avg in nursery; short, good stay green, ears; ok husk cover; semi-flint K;	1481



GEMS-0279: (GEMS-0176/S49w)-B-B-028

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141403	(GEMS-0176/S49w)-B-B-028/LH287	92.0	179.2	88	21.2	8.6	54.0			90.8	1.8	2.8
1564203	(GEMS-0176/S49w)-B-B-028/LH287	101.9	192.9	833	19.3	10.2	56.5	275.0	135.0	99.6	0.8	0.0

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
(GEMS-0176/S49w)-B-B-028	25% Cuba164/temperate; 25% exotic	NLF below avg in nursery; good ears, stalks; semi-flint K	1437


GEMS-0280: BR52051:S172641-B-018

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141406	BR52051:S172641-B-018/LH287	96.9	182.1	602	23.2	8.0	52.7			100.8	0.6	27.5
1514203	BR52051:S172641-B-018/LH287	103.3	204.9	132	21.8	9.6	55.1	280.0	135.0	97.7	1.2	3.2

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
BR52051:S172641-B-018	(PI 583917, Brazilian Dente Amarelo)/temperate; 25% exotic	excellent late health; dense, leafy habit; early flowering; large ears, average grain quality; dent K;	1431



GEMS-0281: BR52051:S172641-B-054

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141406	BR52051:S172641-B-054/LH287	92.2	173.4	942	21.7	8.2	52.7			100.3	0.3	11.8
1514203	BR52051:S172641-B-054/LH287	99.9	198.1	1196	20.9	9.7	55.4	290.0	125.0	100.4	1.2	0.3

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
BR52051:S172641-B-054	(PI 583917, Brazilian Dente Amarelo)/temperate; 25% exotic	good stay green, but lot of common rust; good ears, grain quality; ok husk cover; dent K;	1411


GEMS-0282: CHIS740:S(PHW17)(87916W)-126-001

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141312	CHIS740:S(PHW17)(87916W)-126-001/WT993	87.9	163.7	152	25.4	6.5	52.1			90.6	3.1	19.0
1564201	CHIS740:S(PHW17)(87916W)-126-001/WT993	99.8	191.6	1318	23.9	8.0	55.1	290.0	275.0	97.7	19.4	10.8

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
CHIS740:S(PHW17)(87916W)-126-001	(PI583890, Chilean Tuxpeno/Olotillo Landrace)/temperate; 100% temperate	tall, late, green; below avg stalks; seg W/Y grain; W cob; semi-flint; there are two sister lines that have pure white K, more variable yield record;	1450



GEMS-0283: UR11002:S1409-068-001

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
145301	UR11002:S1409-068-001/LH287	92.5	188.6	106	20.4	9.3	55.1			96.5	2.9	11.9
1564201	UR11002:S1409-068-001/LH287	98.0	188.3	330	20.5	9.2	57.1	290.0	120.0	96.9	2.2	1.5

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
UR11002:S1409-068-001	(PI 383923, Dente Branco Landrace, Uruguay)/temperate; 100% temperate	health average; short, low ear ht; moderate ear size, good grnql; semi-flint K;	1369



GEMS-0284: AR17056:S1217-B-025

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
145404	AR17056:S1217-B-025/MBS8814	106.8	209.6	576	24.8	8.4	52.0	250.0	140.0	96.8	1.9	20.2
1564204	AR17056:S1217-B-025/MBS8814	105.1	208.6	577	22.4	9.5	51.9	280.0	155.0	96.1	3.3	2.9

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
AR17056:S1217-B-025	50% PI 493039, Cristalino Colorado; 100% temperate line	tall, high-eared; ECB, tops out; big ears, good grain quality; average stalks; dent K;	1380



GEMN-0285: (GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-019

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
145403	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-019/MBS3520	93.7	169.6	985	19.4	8.8	53.9	190.0	105.0	104.6	1.8	11.0
1564204	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B-B)-B-B-019/MBS3520	97.0	192.1	214	17.7	11.0	54.1	300.0	150.0	100.0	1.7	2.5

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
(GEMN-0117/DKXL212:N11a139-001-001-B-B-B-B-B-B)-B-B019	(25% PI 484028, Tuson/Canilla Landrace from Dominican Republic)/(25% DKXL212); 25% exotic	NLF-free in 2015 nursery; hypersensitive rust rxn; slender ear, 12 Kernel rows; early flowering; good ears, grnql, stalks; soft dent K;	1407


GEMN-0286: MDI022:N(PHG35)(GEMN-0097)-072-001

Test	Pedigree	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141306	MDI022:N(PHG35)(GEMN-0097)-072-001/HC33	93.9	156.4	934	19.9	8.0	54.9			101.1	3.1	1.7
141310	MDI022:N(PHG35)(GEMN-0097)-072-001/HC33	98.0	207.8	110	20.4	10.3	57.2	108.0	46.0	100.0	2.5	3.1
1564201	MDI022:N(PHG35)(GEMN-0097)-072-001/HC33	105.4	202.5	461	20.4	9.9	57.2	330.0	155.0	94.6	3.3	5.8

Pedigree	Pedigree Background	Nursery Observations	GDU Pol.
MDI022:N(PHG35)(GEMN-0097)-072-001	(PI 571994, Cuban yellow population)/(PHG35)(25% PI 536622, FS8B(T)); 18.37% exotic	excellent late health, NLF-free in nursery; low ear height; long ear, good grain quality, large dent K;	1526



MORE LINES THAT MAY BE RELEASED PENDING SEED RETURN FROM WINTER 2015 NURSERY

Test	Pedigree (shown with tester)	% Check	Yield	Variance	Moist	Yield/ Moist	TWT	Plant Height	Ear Height	Final Stand	Stalk Lodging	Root Lodging
141413	BR105:S1643-122-001/MBS8814	103.8	193.2	2585	24.5	7.8	51.4	262.5	127.5	100.5	2.2	10.2
1514203	BR105:S1643-122-001/MBS8814	113.4	225.0	267	24.0	9.5	52.9	305.0	170.0	99.1	2.5	11.4
141304	CML341:S(GEMS-0115)(GEMS-0162)-B-016/LH287	106.5	185.3	340	22.4	8.4	54.4			100.0	2.8	7.3
1514205	CML341:S(GEMS-0115)(GEMS-0162)-B-016/LH287	102.5	189.6	809	18.9	10.3	55.8	310.0	150.0	96.0	2.4	5.1
141313	Ki21:S(DJ7)(GEMS-0115)-B-008/SGI079	106.3	182.5	1559	21.4	8.7	52.7			93.9	8.5	0.6
1514201	Ki21:S(DJ7)(GEMS-0115)-B-008/SGI079	102.4	192.9	1093.4	18.6	10.6	55.1	310.0	175.0	95.2	10.8	4.2
141313	Ki21:S(DJ7)(GEMS-0115)-B-030/SGI079	114.6	196.7	247	21.8	9.1	52.9			92.8	4.0	0.3
1514201	Ki21:S(DJ7)(GEMS-0115)-B-030/SGI079	102.3	192.7	1153.7	18.1	10.9	55.3	280.0	160.0	93.8	21.3	0.0
141313	Ki21:S(DJ7)(GEMS-0115)-B-051/SGI079	108.9	186.9	2588	21.8	8.7	52.9			90.8	5.1	0.0
1514201	Ki21:S(DJ7)(GEMS-0115)-B-051/SGI079	94.5	178.1	1655.9	19.2	9.5	55.1	280.0	160.0	97.6	13.3	5.6
141408	NS1:S0852-B-068/LH287	101.7	202.2	238	21.9	9.5	53.6			101.6	0.8	6.3
1514205	NS1:S0852-B-068/LH287	102.9	190.4	441	17.7	10.9	54.9	290.0	130.0	100.5	1.7	3.9



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	Goss's
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	Mixed (Creole)	Cuba	Ames	2003																	
49	CUBA164:S2008a-326-1-B	GEMS-0052	Mixed (Creole)	Cuba	Ames	2003																	
50	CUBA164:S15-192-2-B	GEMS-0053	Mixed (Creole)	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											✓						
60	CUBA164:S1511b-325-001	GEMS-0063	Mixed (Creole)	Cuba	Ames	2003	✓																
61	CUBA164:S1511b-249-1-B-B	GEMS-0064	Mixed (Creole)	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)-4-2-1	GEMS-0067	Tusón	Guatemala	Truman St	2007																	
65	AR16026:S1704-153-001	GEMS-0068	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	Goss's
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	Mixed (Creole)	Cuba	Ames	2003															✓		
72	CUBA164:S1517-241-002	GEMS-0075	Mixed (Creole)	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	Mixed (Creole)	Cuba	Ames	2004							✓		✓		✓						
90	CUBA164:S2012-966-001	GEMS-0093	Mixed (Creole)	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						✓	✓										
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	✓		✓					✓									

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	Goss's
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	Inbred-tropical	Thailand	Ames	2006	✓															✓	
144	NEI9004:S2818-025-001	GEMS-0147	Inbred-tropical	Thailand	Ames	2006	✓																
145	NEI9004:S2818-376-001	GEMS-0148	Inbred-tropical	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-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	Corn 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	Mixed (Creole)	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	Mixed (Creole)	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																✓	
182	CUBA164:S2012-966-001-B wx	GEMS-0185	Mixed (Creole)	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	Mixed (Creole)	Cuba	Ames	2010																	
201	FS8A(T):N1804-006-001	GEMN-0204	Mixed	USA	Ames	2010								✓									

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	Goss's
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	CML tropical inbred	Mexico	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	Inbred-tropical	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	GEM x GEM derived	USA	Ames	2011	✓							✓									
215	(CUBA164:S2012-459-001-B/GEMS-0002)-B-B-031	GEMS-0219	GEM x GEM derived	USA	Ames	2011	✓							✓							✓	✓	
216	(GEMS-0113/GEMS-0091)-B-058-001	GEMS-0220	GEM x GEM derived	USA	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	Mixed (Creole)	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	NE19004:S2809-B-022	GEMS-0227	Inbred-tropical	Thailand	Ames	2012																	
224	NE19004:S2809-B-025	GEMS-0228	Inbred-tropical	Thailand	Ames	2012																	
225	SANM126:N1299b-B-033	GEMN-0229	Cuban yellow	Peru	Ames	2012																	
226	CML413:N18-001-036-002	GEMN-0230	CML tropical inbred	Mexico	NC	2012																	
227	CUBA164:D27-B-017-001	GEMN-0231	Mixed (Creole)	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	CML tropical inbred	Mexico	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	NE19004:N0803-B-027	GEMN-0238	Inbred-tropical	Thailand	Ames	2013																	
235	NE19004:N0803-B-053	GEMN-0239	Inbred-tropical	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	CML tropical inbred	Mexico	NC	2013																	
240	CML287:S15-027-001-B	GEMS-0244	CML tropical inbred	Mexico	NC	2013																	
241	DK888:S11b-037-018-008-B	GEMS-0245	Hybrid-tropical	Thailand	NC	2013																	
242	AR01150:N0402-B-026	GEMN-0246	Dentado Blanco Rugoso	Argentina	Ames	2014																	
243	AR03056:N0902-064-001-B-B	GEMN-0247	Dentado Blanco	Argentina	Ames	2014																	
244	AR16042:S2028-B-012-B-B	GEMS-0248	Cristalino Colorado	Argentina	Ames	2014																	
245	BR105:N1643-B-020-B-B	GEMN-0249	Composite (Suwan)	Brazil	Ames	2014																	
246	CL-G1703:S17c43-B-023-B-B	GEMS-0250	Tropical Line	CIMMYT	Ames	2014																	
247	CL-G1703:S17c43-B-026-B-B	GEMS-0251	Tropical Line	CIMMYT	Ames	2014																	
248	DKB844:N11b18-241-001-B-B	GEMN-0252	Hybrid-tropical	Mexico	Ames	2014																	
249	DK212T:S0640-034-002	GEMS-0253	Hybrid-tropical	Thailand	NC	2015																	
250	FS8B(T):N11a-225-002	GEMN-0254	Mixed	USA	NC	2015																	
251	FS8B(S):S03-133-002	GEMS-0255	Mixed	USA	NC	2015																	
252	NS1:S0834-006-002	GEMS-0256	Suwan	Thailand	NC	2015																	
253	CHIS462:N08d-013-001	GEMN-0257	Tuxpeño	Mexico	NC	2015																	
254	DKB830:S19-009-004	GEMS-0258	Hybrid-tropical	Mexico	NC	2015																	
255	SCR01:N11c-015-002	GEMN-0259	St. Croix	St. Croix	NC	2015																	
256	(GEMN-0140/GEMN-0097)-B-B-026-B-B	GEMN-0260	GEM x GEM derived	USA	Ames	2015																	
257	(GEMN-0140/GEMN-0097)-B-B-027-B-B	GEMN-0261	GEM x GEM derived	USA	Ames	2015																	
258	(GEMS-0147/GEMS-0180)-B-104-001-B-B	GEMS-0262	GEM x GEM derived	USA	Ames	2015																	
259	BR105:S1626(GEMS-0175)-B-049-B-B	GEMS-0263	Composite Suwan/Tusón	Brazil/BVIR	Ames	2015						✓	✓	✓								✓	
260	BR105:S1643-078-001-B-B	GEMS-0264	Composite Suwan	Brazil	Ames	2015						✓	✓	✓			✓						
261	DKXL212:S0950-B-083-B-B	GEMS-0265	Hybrid Tropical	Brazil	Ames	2015						✓	✓	✓									

Racial Background of 301 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)	10	1	0	11
Composite (Tuxpeño)	1	0	0	1
Corn Belt Dent	1	0	0	1
Criollo	1	1	0	2
Criollo/Argentino (CUBA164)	15	1	2	18
Criollo/Tuson (CUBA173)	1	0	0	1
Cristalino Colorado	16	0	2	18
Cuban yellow	7	2	0	9
Dent. Blanco Rugoso	3	0	3	6
Dentado Blanco	5	0	0	5
Dente Amarelo	7	3	1	11
Dente Branco	5	0	0	5
Early Caribbean	1	0	0	1
Hybrid Blanco	0	0	0	0
Hybrid-tropical	24	73	4	101
Mixed	12	2	4	18
GEM Derived*	6	4	0	10
Multiple Borer Composite	1	0	0	1
Semidentado Riograndense	2	0	0	2
Southern Dent	0	0	0	0
St. Croix	1	1	1	3
Suwan	11	2	0	13
Tropical Line	2	5	0	7
Tusón	10	2	1	13
Tusón/Canilla	1	0	0	1
Tuxpeño	3	7	0	10
Tuxpeño/Olotillo	2	0	0	2
Unclassified	1	0	0	1
Totals	167	115	19	301

*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

*GEMN-0260: (GEMN-0140/GEMN-0097)-B-B-026-B-B

*GEMN-0261: (GEMN-0140/GEMN-0097)-B-B-027-B-B

*GEMS-0262: (GEMS-0147/GEMS-0180)-B-104-001-B-B

*GEMN-0272: (GEMN-0043xGEMN-0097)-B-001

*GEMS-0273: (GEMS-0032xGEMS-0050)-B-007

*GEMS-0274: (GEMS-0032xGEMS-0113)-B-004

*GEMN-0287: (GEMN-0108xGEMN-0178)-B-004

Yield Trials

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 02

Tester: Various

		<i>All location Means</i>										
<i>Entry</i>	<i>Pedigree</i>	<i>Yield</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>Moist</i>	<i>Yield/ Moist</i>	<i>Test Weight</i>	<i>Plant Height</i>	<i>Ear Height</i>	<i>Stalk Lodging</i>	<i>Root Lodging</i>	<i>Erect Plants</i>
12	Pioneer 2088R	211	1.07	2897	20.3	10.5	57.3	291	96	0	8	94
15	Pioneer 1745R	208	1.06	3050	19.1	11.0	56.7	286	104	1	0	99
17	Pioneer 31P41	202	1.02	2703	19.5	10.4	57.9	282	101	0	4	97
16	Pioneer 31D58	200	1.02	2526	19.8	10.3	59.1	285	97	0	2	98
18	DeKalb 697	185	0.94	1601	19.8	9.5	57.4	284	105	0	0	100
19	DeKalb 68-04	182	0.92	2180	20.1	9.2	55.8	266	91	1	0	99
7	BR52051(SE32):N11c-B-012 x LH132.FR1064	177	0.90	1836	18.9	9.5	59.9	289	110	1	4	97
1	Antig01:N16-050-002 x LH132.FR1064	176	0.90	1652	19.5	9.2	57.6	297	115	1	5	95
14	LH310 x LH283.LH287	175	0.89	1831	19.1	9.3	56.7	280	98	1	2	97
4	BR105:N16-043-001 x LH132.FR1064	173	0.88	2016	18.6	9.5	59.6	301	116	1	4	96
2	DREP150:N20-064-003 x LH132.FR1064	172	0.87	1680	19.0	9.1	58.4	303	124	2	7	93
9	LH287 x LH132.FR1064	169	0.86	1277	18.8	9.3	56.6	265	77	0	2	99
6	BR52051(SE32):N11c-B-010 x LH132.FR1064	167	0.85	1990	19.5	8.7	58.4	286	107	2	7	94
5	NEI9008:N08-001-002 x LH132.FR1064	167	0.85	1500	19.7	8.6	58.8	289	114	0	5	96
11	DKXL370:S08b-B26-001 x LH283.LH287	165	0.84	1835	19.6	8.6	57.7	285	110	2	7	93
3	DREP150:N20-080-002 x LH132.FR1064	165	0.84	1907	20.2	8.3	57.5	298	117	1	13	90
8	LH51 x LH132.FR1064	164	0.83	1476	18.3	9.2	59.4	283	106	1	5	95
13	LH195 x LH283.LH287	164	0.83	1688	19.3	8.6	57.5	272	94	1	6	95
10	LH354 x LH132.FR1064	159	0.81	1593	17.8	9.3	58.6	285	97	1	7	95
20	HC33 x TR7322	150	0.76	1681	16.7	9.1	57.5	281	97	1	1	99
Replications		31			31	31	15	9	9	20	20	31
Test Entry Means		170			19.4	8.9	58.5	293	114.2	1	7	94
Check Means		197			19.7	10.2	57.4	282	101.2	0	2	99
Overall Means		178			19.3	9.4	57.9	285	104.4	1	5	96
Range		150-211			16.7-20.3	8.3-11.0	55.8-59.9	265-303	77-124	0-2	0-13	90-100
CV		9.6			4.9	10.7	2.1	3.7	8.7	184	237	10
LSD (p=0.05)		9			0.5	0.5	0.6	5.3	4.6	1	6	5

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 03

Tester: Various

		All location Means										
		Yield	% Yield /CHK	Variance	Moist	Yield/ Moist	Test Weight	Plant Height	Ear Height	Stalk Lodging	Root Lodging	Erect Plants
Entry	Pedigree											
23	Pioneer 1745R	205	1.06	3020	19.1	10.9	56.5	294	102	1	5	96
30	Pioneer 31G98	200	1.03	2211	18.8	11.0	58.0	302	112	1	7	94
24	Pioneer 2088R	200	1.03	3572	20.3	10.0	57.5	290	93	0	4	97
25	Pioneer 31D58	197	1.02	2603	20.0	10.0	58.8	289	93	0	1	99
26	Pioneer 31P41	196	1.01	2740	19.5	10.2	57.9	286	95	1	4	96
28	DeKalb 68-04	188	0.97	2412	20.2	9.5	56.1	271	89	1	1	99
8	(GEMN-0108xGEMN-0178)-B-001/LH132.FR1064	188	0.97	2523	20.4	9.3	57.6	316	117	2	5	95
27	DeKalb 697	184	0.95	1777	20.2	9.3	57.6	291	107	1	3	98
9	(GEMN-0108xGEMN-0178)-B-004/LH132.FR1064	183	0.94	2040	19.9	9.3	57.1	299	110	1	3	96
7	(GEMN-0103xGEMN-0095)-B-003/LH132.FR1064	181	0.93	2512	19.4	9.6	58.4	299	116	2	11	92
11	GEMN-0103/LH132.FR1064	181	0.93	1841	22.0	8.3	56.6	300	107	1	6	95
12	GEMN-0108/LH132.FR1064	180	0.93	1974	21.3	8.5	57.0	301	110	0	4	97
2	(GEMS-0032xGEMS-0113)-B-004/LH283.LH287	179	0.92	1509	19.5	9.3	56.4	294	107	2	6	94
6	(GEMN-0043xGEMN-0097)-B-001/LH132.FR1064	178	0.92	2328	18.5	9.8	56.8	302	112	2	4	96
3	GEMS-0032/LH283.LH287	178	0.92	842	20.4	8.9	55.5	289	101	1	2	99
15	GEMN-0178/LH132.FR1064	174	0.90	1559	19.4	9.1	57.8	298	99	1	0	100
1	(GEMS-0032xGEMS-0050)-B-007/LH283.LH287	172	0.89	1584	18.7	9.3	56.9	294	110	1	7	94
4	GEMS-0050/LH283.LH287	171	0.88	2018	19.8	8.8	55.7	278	100	2	5	95
10	GEMN-0043/LH132.FR1064	171	0.88	1538	18.8	9.3	56.9	295	110	1	4	97
16	B73/LH283.LH287	169	0.87	2172	18.3	9.4	57.1	287	103	3	5	94
Replications		30			30	30	14	9	9	20	20	28
Test Entry Means		180			19.4	9.5	57.2	301	112	2	6	94
Check Means		194			19.9	9.9	57.4	283	96	1	3	97
Overall Means		177			19.3	9.3	57.4	286	101	1	4	96
Range		154-205			16.8-22.0	8.2-11.0	55.5-59.3	262-316	81-117	0-3	0-11	92-100
CV		9.9			5.1	10.9	1.9	3.4	8.5	166	229	8.2
LSD (p=0.05)		8.8			0.5	0.5	0.5	4.9	4.3	1	4	4

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 07

Tester: LH132.PHG39

		All location Means								
Entry	Pedigree	Yield	% Yield /CHK	Variance	Moist	Yield/Moist	Test Weight	Stalk Lodging	Root Lodging	Erect Plants
24	Pioneer 2088R	248	1.10	617	20.9	12.1	59.6	0	17	83
23	Pioneer 1745R	236	1.05	652	19.9	12.3	59.2	0	13	87
25	Pioneer 31D58	230	1.02	667	20.1	11.8	61.0	0	7	93
26	Pioneer 31P41	226	1.00	2002	20.2	11.6	59.9	0	17	83
30	Pioneer 31G98	224	0.99	422	18.6	12.6	60.1	0	17	83
28	DeKalb 68-04	212	0.94	444	20.5	10.6	59.0	0	0	100
27	DeKalb 697	207	0.92	130	20.7	10.4	58.8	0	3	97
12	(GEMN-0097/GEMN-0136)-B-008	199	0.88	249	18.6	11.1	60.0	0	0	100
7	BR105:N16a16b-055-001	199	0.88	425	19.1	10.7	60.2	0	17	83
5	FS8A(T):N18-021-002	196	0.87	401	22.3	9.0	60.1	0	10	90
18	GEMN-0124	195	0.86	344	20.5	9.7	59.4	0	17	83
11	(GEMN-0097/GEMN-0136)-B-004	194	0.86	436	18.9	10.8	61.0	1	23	76
3	FS8A(T):N18-001-001	192	0.85	396	20.5	9.7	61.0	0	13	87
13	(GEMN-0124/GEMN-0135)-B-007	191	0.84	457	19.5	10.1	60.6	0	17	83
19	GEMN-0135	190	0.84	155	19.4	10.0	60.4	0	20	80
6	BR105:N16a16b-041-001	188	0.83	342	19.7	9.9	59.7	0	17	83
14	(TrophyxOh43E)/(NC258xNC296F2S 3)-001-001-002	187	0.83	662	20.2	9.6	59.7	0	13	87
8	CL-00331:N1834-038-001	184	0.81	1227	19.3	9.8	60.7	0	3	97
20	LH287	183	0.81	484	18.9	10.0	58.7	0	10	90
16	GEMN-0048	183	0.81	549	19.1	9.9	59.9	0	7	93
Replications		8			8	8	2	6	6	6
Test Entry Means		185			19.9	9.7	60.5	0	12	88
Check Means		226			20.4	11.5	59.6	0	9	91
Overall Means		194			19.6	10.3	60.1	0	11	89
Range		169-248			16.8-22.3	8.8-12.6	58.5-61.5	0-1	0-27	73-100
CV		9.4			5.7	11.5	1.4	653.7	144.0	17.9
LSD (p=0.05)		16.1			1.0	1.0	0.8	0.2	14.1	14.1

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 34

Tester: LH283.LH287

		All location Means								
Entry	Pedigree	Yield	% Yield /CHK	Variance	Moist	Yield/ Moist	Test Weight	Stalk Lodging	Root Lodging	Erect Plants
61	Pioneer 1745R	237	1.06	629	19.7	12.2	57.9	0	17	83
62	Pioneer 2088R	236	1.05	1610	20.9	11.4	59.8	0	17	83
25	CML343:S42-001-009	220	0.98	716	22.8	9.8	58.0	0	20	80
27	CML343:S42-001-012	219	0.98	343	22.5	10.1	57.5	1	20	79
54	GEMS-0244	217	0.97	733	21.5	10.4	59.0	1	20	80
53	GEMS-0243	215	0.96	1021	21.9	9.9	59.0	0	20	80
34	CML343:S42-003-012	207	0.92	526	21.9	9.7	58.5	2	10	89
45	DKB844:S16-005-022-012	206	0.92	1114	20.2	10.6	58.6	0	27	73
20	CML287:S15-SIB-009-002	206	0.92	336	21.1	10.1	58.8	0	27	73
26	CML343:S42-001-010	205	0.91	423	21.7	9.8	57.4	0	20	80
5	BR106:LH132-B02-001	204	0.91	477	21.1	10.1	59.5	0	27	73
58	LH310	204	0.91	607	20.5	10.4	58.1	1	33	66
42	CML373:S42-002-008	203	0.91	436	22.3	9.5	58.9	0	33	67
3	BR106:G39-B13-001	203	0.91	796	21.6	9.7	57.8	0	31	69
13	BR106:T33a(LH132)-B23-001	203	0.91	506	20.6	10.3	59.0	0	13	87
35	CML343:S42-003-013	203	0.91	832	22.0	9.5	58.0	0	13	87
60	Pioneer 1498	203	0.91	277	19.3	10.8	59.0	0	20	80
4	BR106:G39-B29-001	203	0.91	256	21.4	9.8	60.8	1	30	70
46	((B104xNC300_F2S4)/NC346)-001-011-001-001	202	0.90	845	22.0	9.6	58.8	0	23	77
15	CML287:S15-SIB-001-001	202	0.90	155	21.1	9.8	58.6	0	17	83
Replications		8			8	8	3	6	6.0	6
Test Entry Means		198			21.2	9.6	58.6	0	23	77
Check Means		224			20.6	11.1	58.8	0	11	89
Overall Means		198			20.9	9.7	58.7	0	21	79
Range		168-237			17.3-22.8	8.7-12.2	56.6-60.8	0-2	0-42	58-100
CV		8.8			5.3	12.9	1.6	446	75	20
LSD (p=0.05)		15.3			1.0	1.1	0.8	0.7	13.9	13.9

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 39

Tester: Various

		All location Means								
Entry	Pedigree	Yield	% Yield /CHK	Variance	Moist	Yield/ Moist	Test Weight	Stalk Lodging	Root Lodging	Erect Plants
44	Pioneer 1745R	239	1.08	1067	20.0	12.4	58	0	17	83
45	Pioneer 2088R	233	1.05	1005	21.3	11.2	59	0	27	73
46	Pioneer 31P41	224	1.01	683	19.7	11.7	60	0	10	90
4	CA00370.GEMN-0097/LH132.PHG39	205	0.92	514	20.0	10.6	60	0	3	97
41	CML343.GEMS-0091/LH283.LH287	202	0.91	354	20.5	10.1	58	1	32	67
25	GEMN-0108.GEMN-0178/LH132.PHG39	202	0.91	657	21.2	9.9	59	0	13	87
34	GEMS-0113.CA00370/LH283.LH287	201	0.90	507	19.6	10.5	60	0	27	73
12	GEMN-0104.GEMN-0158/LH132.PHG39	197	0.89	325	19.8	10.2	60	0	7	93
17	GEMN-0124.GEMN-0158/LH132.PHG39	196	0.88	346	19.8	10.3	62	0	7	93
14	GEMN-0124.GEMN-0048/LH132.PHG39	195	0.88	375	20.4	9.8	59	0	0	100
11	GEMN-0104.GEMN-0097/LH132.PHG39	194	0.88	636	19.2	10.4	59	1	27	73
47	DeKalb 68-04	194	0.88	1022	20.2	9.9	60	0	13	87
26	GEMS-0091.ATL100/LH283.LH287	194	0.87	1393	20.8	9.6	60	0	20	80
15	GEMN-0124.GEMN-0095/LH132.PHG39	192	0.87	642	20.7	9.6	61	0	0	100
30	CML375.GEMS-0091/LH283.LH287	192	0.87	711	20.9	9.5	57	0	10	90
29	GEMS-0091.CA00370/LH283.LH287	192	0.86	260	20.2	9.8	59	2	30	68
42	(La_Posta_SeqC7_F71-1-1-1-2-B*4 x GEMS-0091)/LH283.LH287	192	0.86	831	19.8	10.1	59	1	26	73
5	GEMN-0097.CML375/LH132.PHG39	191	0.86	302	20.1	9.8	59	0	7	93
43	(BR105:S16-(373-7)-008-011-B x GEMS-0091)/LH283.LH287	191	0.86	874	18.6	10.6	60	0	20	80
20	GEMN-0043.GEMN-0103/LH132.PHG39	189	0.85	813	20.4	9.6	60	0	10	90
Replications		8			8	8	3	6	6	6
Test Entry Means		187			20.0	9.7	59	0	17	82
Check Means		222			20.3	11.3	59	0	17	83
Overall Means		190			20.0	9.9	59	0	17	83
Range		167-239			16.8-21.9	8.2-12.4	56.8-61.6	0.0-1.4	0-40	60-100
CV		9.9			4.6	10.5	1.4	536	117	23
LSD (p=0.05)		16.6			0.8	0.9	0.7	0.8	17.1	17.0

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2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 42

Tester: Pioneer 33M54

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>Moist</i>	<i>Yield/ Moist</i>	<i>Plant Height (cm)</i>	<i>Ear Height (cm)</i>	<i>Stalk Lodging</i>	<i>Root Lodging</i>	<i>Erect Plants</i>
44	Pioneer 31D58	147.6	1.09	972.2	20.2	7.3	295	108	1	0	99
38	CML449	145.1	1.07	860.0	23.4	6.3	313	127	3	0	97
43	Pioneer 2088R	143.0	1.05	714.3	21.2	6.8	297	107	1	0	98
42	Pioneer 1745R	139.9	1.03	1263.4	19.3	7.3	300	109	2	0	98
30	CLP-07306	139.2	1.02	752.0	23.5	6.0	343	156	4	2	95
45	Pioneer 31P41	137.2	1.01	622.8	20.4	6.8	295	104	0	0	100
40	CML343	136.8	1.01	466.0	22.2	6.2	304	117	2	1	97
16	CML215	136.0	1.00	448.5	22.7	6.1	332	142	4	1	96
5	CML42	132.7	0.98	604.9	22.3	6.0	333	147	2	1	98
41	CML373	132.3	0.97	427.5	22.6	5.9	296	107	1	1	98
46	DeKalb 697	132.2	0.97	380.5	20.5	6.5	294	112	2	0	98
2	89343	132.1	0.97	900.9	20.5	6.5	322	135	3	0	97
37	Q6199	131.9	0.97	626.2	23.1	5.9	339	153	1	2	97
11	CML178	131.5	0.97	518.3	21.0	6.3	310	135	3	0	97
9	CML163	129.9	0.96	667.4	22.6	5.8	318	135	1	1	99
49	Pioneer 33M54	129.6	0.95	674.2	20.0	6.5	290	98	1	0	99
21	CML287	127.5	0.94	593.7	23.1	5.6	328	148	2	1	98
32	DTPWC8_F31-1-3-1-B*4-1-1-F	125.9	0.93	719.2	22.3	5.7	305	120	3	0	97
36	Mp715	125.8	0.92	648.3	22.6	5.6	337	157	3	2	96
25	CML395	125.5	0.92	661.5	22.2	5.7	333	146	2	0	98
Replications		10			10	10	9	9	9	9	9
Test Entry Means		122			22.3	5.5	317	132	2	1	97
Check Means		136			20.3	6.7	292	105	1	0	99
Overall Means		123			21.9	5.7	312	127	2	1	97
Range		95-148			18.1-24.2	4.0-7.3	272-343	96-157	0.3-6.0	0.0-2.4	94-100
CV		10.4			0.8	10.8	3.6	7.9	149	260	4
LSD (p=0.05)		10.8			4.4	0.5	9.4	8.5	2.9	1.2	3.0

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment 60

Tester: Various

		<i>All location Means</i>								
<i>Entry</i>	<i>Pedigree</i>	<i>Yield</i>	<i>% Yield /CHK</i>	<i>Moist</i>	<i>Yield/ Moist</i>	<i>Plant Height</i>	<i>Ear Height</i>	<i>Stalk Lodging</i>	<i>Root Lodging</i>	<i>Erect Plants</i>
63	Pioneer 31G66	163	1.04	18.9	8.6	297	104	1	0	99
59	Pioneer 31D58	160	1.03	19.3	8.3	286	94	1	0	99
60	DeKalb 697	156	1.00	19.6	8.0	289	108	3	0	97
56	NC368 x LH283.LH287	147	0.94	18.6	7.9	280	97	2	0	97
64	Pioneer 33M54	145	0.93	18.9	7.7	288	92	1	0	99
33	PHK46 x LH132.FR1064	144	0.92	18.8	7.7	294	104	2	0	98
13	LH211 x LH132.FR1064	142	0.91	17.9	7.9	299	111	3	0	98
34	PHK46 x LH283.LH287	141	0.90	17.9	7.9	290	100	4	0	96
15	LH218 x LH132.FR1064	138	0.88	17.8	7.8	297	111	1	0	99
31	PHHB4 x LH283.LH287	138	0.88	17.6	7.8	290	92	2	0	98
24	PHEG9 x LH283.LH287	136	0.87	18.7	7.3	270	89	2	0	98
41	PHMK0 x LH283.LH287	136	0.87	17.4	7.8	285	98	2	0	98
7	LH159 x LH283.LH287	134	0.86	19.7	6.8	282	93	2	0	98
62	Mo17 x LH132.FR1064	133	0.85	17.2	7.7	284	99	3	0	97
61	B73 x LH283.LH287	132	0.85	17.7	7.5	285	105	1	0	99
5	DKFBLL x LH283.LH287	130	0.83	17.3	7.5	278	96	2	0	98
17	LH284 x LH132.FR1064	130	0.83	17.0	7.6	275	95	2	0	98
42	PHN18 x LH283.LH287	130	0.83	18.4	7.1	264	90	2	1	98
50	PHT11 x LH283.LH287	130	0.83	17.5	7.4	283	94	1	1	98
57	LH132 x LH51	130	0.83	17.9	7.3	279	98	1	0	99
Replications		8		8	8	8	8	8	8	8
Test Entry Means		107		17	6.3	260	85	2	0	98
Check Means		156		19	8.1	290	100	2	0	99
Overall Means		112		17	6.5	264	87	2	0	98
Range		56-163		15.5-20.5	3.6-8.6	213-299	59-111	0-4	0-1	96-100
CV		15		5		4	10	166	474	3
LSD (p=0.05)		17		1		11	8	3	0	3

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment K2

Tester: Various

		All location Means										
Entry	Pedigree	Yield	% Yield /CHK	Variance	Moist	Yield/ Moist	Test Weight	Plant Height	Ear Height	Stalk Lodging	Root Lodging	Erect Plants
31	Pioneer 2088R	198	1.07	3643	19.4	10.6	59.9	277	90	1	0	99
30	Pioneer 1745R	192	1.03	3506	18.4	10.7	58.1	273	87	0	2	97
33	Pioneer 31P41	186	1.00	2814	19.2	10.1	59.8	275	89	0	4	95
32	Pioneer 31D58	186	1.00	3133	19.5	9.9	61.5	275	87	0	2	98
34	DeKalb 697	174	0.94	2063	19.6	9.0	60.3	277	107	0	2	98
16	GEMN-0232_SCR_Gp3:N14/LH132.PHG39	172	0.93	1113	18.7	9.4	60.9	294	126	0	7	93
35	DeKalb 68-04	172	0.92	2113	19.4	9.1	60.5	251	89	0	0	100
18	GEMS-0243_CML287:S15/LH283.LH287	171	0.92	2374	19.9	8.8	59.8	289	99	1	11	88
7	GEMN-0104_DK888:N11/LH132.PHG39	171	0.92	1796	20.1	8.7	60.3	272	92	0	0	100
19	GEMS-0244_CML287:S15/LH283.LH287	168	0.91	1988	19.9	8.6	59.2	289	119	1	13	85
12	GEMN-0207_BR51403:N16/LH132.PHG39	167	0.90	2133	18.7	9.3	60.3	299	130	0	4	96
5	GEMS-0032_DKXL380:S11/LH283.LH287	164	0.88	1963	19.4	8.7	59.3	278	101	1	4	94
15	GEMN-0231_CUBA164:D27/LH132.PHG39	163	0.87	2110	20.6	8.0	60.9	292	111	1	3	96
24	LH310/LH283.LH287	162	0.87	1937	18.9	8.9	58.8	268	95	1	7	92
11	GEMN-0137_SCRGp3:N14/LH132.PHG39	162	0.87	1824	19.2	8.6	60.2	280	105	1	9	91
23	LH195/LH283.LH287	162	0.87	2017	18.9	8.9	60.0	255	83	1	11	88
13	GEMS-0215_NS1:S08/LH283.LH287	161	0.86	2108	18.8	8.8	58.5	274	104	1	11	88
20	GEMS-0245_DK888:S11b/LH283.LH287	161	0.86	1691	19.3	8.6	61.1	280	106	1	2	97
21	GEMS-0258_DKB830:S19/LH283.LH287	159	0.86	1566	18.3	9.0	58.8	276	112	1	4	95
6	GEMN-0043_BR51403:N16/LH132.PHG39	157	0.84	2028	18.1	8.9	59.0	273	105	0	7	93
Replications		11			11	11	2	4	4	9	9	9
Test Entry Means		158			19.0	8.5	60.2	282	106	1	7	92
Check Means		186			19.3	10.0	60.0	271	91	0	2	98
Overall Means		161			18.8	8.8	60.0	275	99	0	6	94
Range		128-198			16.6-20.6	7.9-10.7	58.1-61.8	251-299	77-130	0-1	0-17	81-100
CV		11			4.3	12.3	1.1	3.7	10.1	217	231	14
LSD (p=0.05)		12.8			0.6	0.8	0.5	7.5	7.3	0.8	9.8	9.8

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2015 GEM Raleigh Yield Trial Data (Top 20 Entries Ranked)

Experiment K3

Tester: Various

		All location Means										
Entry	Pedigree	Yield	% Yield /CHK	Variance	Moist	Yield/ Moist	Test Weight	Plant Height	Ear Height	Stalk Lodging	Root Lodging	Erect Plants
50	Pioneer 1745R	214	1.05	2741	19.5	11.2	56.0	280	99	5	5	90
53	Pioneer 31P41	214	1.05	2901	19.8	11.1	57.3	273	85	1	4	95
51	Pioneer 2088R	211	1.04	2716	20.8	10.4	56.7	275	85	1	9	91
52	Pioneer 31D58	204	1.00	2032	20.1	10.4	58.3	283	96	1	0	99
54	DeKalb 697	189	0.93	1641	20.3	9.6	57.1	278	99	2	6	92
55	DeKalb 68-04	185	0.91	1717	20.3	9.3	54.8	255	88	1	2	98
40	GEMN-0255_FS8B(S):S03/LH287.LH283	185	0.91	2751	19.3	9.8	56.6	279	94	1	9	91
10	GEMN-0178_DK888:N11a08a/LH132.PHG39	180	0.89	1590	20.1	9.2	56.4	294	103	1	3	96
12	GEMS-0200_BR105:S1612/LH283.LH287	180	0.89	1450	19.4	9.5	56.2	288	102	3	5	91
44	LH310/LH283.LH287	177	0.87	1697	19.7	9.2	55.5	283	91	3	5	92
45	LH383/LH283.LH287	177	0.87	1655	20.2	9.0	55.9	268	85	2	11	87
39	GEMN-0253_DK212T:S0640/LH283.LH287	176	0.87	1354	19.4	9.3	56.6	296	100	2	10	89
20	GEMS-0227_NEI9004:S2809/LH283.LH287	176	0.87	2647	17.5	10.4	56.6	275	85	1	4	96
2	GEMS-0050_DKB844:S1601/LH283.LH287	175	0.86	1640	20.2	8.8	55.2	275	101	2	12	86
28	GEMN-0238_NEI9004:N0803/LH132.PHG39	174	0.86	1751	18.8	9.5	57.8	291	101	1	4	95
19	GEMS-0226_BR106:S99a99e/LH283.LH287	173	0.85	1842	20.0	8.9	58.1	283	103	1	5	94
27	GEMS-0237_DKXL370:S08c17c/LH283.LH287	173	0.85	1625	17.4	10.2	55.8	269	100	2	13	86
25	GEMS-0235_CUBA173:S0446/LH283.LH287	173	0.85	1413	19.1	9.3	57.4	270	104	1	11	88
13	GEMS-0201_BR105:S1612/LH283.LH287	173	0.85	1338	19.5	9.1	56.0	290	101	2	12	86
7	GEMS-0113_CHS775:S1911b/LH283.LH287	172	0.85	1657	18.7	9.5	57.4	273	89	2	6	91
Replications		14			14	14	5	4	4	12	12	12
Test Entry Means		167			19.1	9.0	56.9	280	98	2	7	91
Check Means		203			20.1	10.3	56.7	274	92	2	4	94
Overall Means		170			19.1	9.1	56.9	279	96	2	7	91
Range		145-214			17.1-20.8	7.9-11.2	54.5-59.4	255-298	82-112	0-5	0-18	79-99
CV		9.7			4.2	10.4	1.6	3.1	7.9	198	199	15.9
LSD (p=0.05)		11.1			0.5	0.6	0.6	5.8	5.1	2.4	9.5	9.7

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

2015 GEM Ames Yield Trial Summary

Expt #	Material	Tester	Total	Reps	Source	Entry Yield Avg.	Check Yield Avg.	Overall Yield Avg.	CV (%)	LSD (p=0.05)
1512101	PUER5:S(4676A)	MBS8814	48	5	GEM	174.3	192.9	176.3	9.4	35
1513101	BR105:N1612	MBS3520	72	5	GEM	159.2	181.1	160.8	9.1	20.8
1514101	BR51501:N11a08bT47(GEMN-0155)	MBS3520	60	5	GEM	147.8	170.5	149.7	14.4	30.9
1514102	BR51501:N11a08bT47(LH61)	MBS3520	72	5	GEM	134.4	179.4	137.6	13.3	26.1
1514103	PASCO14:S2126h03	YSS100	75	5	JFS	175.7	221.8	178.3	11.8	29.9
1514104	NEI9008:S17a26h40	MBS8814	72	5	GEM	189.8	204.8	191.1	8.2	32.6
1514105	(NEI9004:S2809-B-061-B-B/GEMS-0003)	MBS8814	60	5	GEM	209.1	220.8	210.1	6.7	29.4
1514106	CUBA164:S2008dT47(PHJ40)	MBS8814	60	5	GEM	179.3	206.9	181.6	7.9	28.8
1514107	TZi 9:S21z(GEMS-0163)	MBS8814	84	5	GEM	186.3	189.7	186.5	8	30.6
1514108	CML341:S(GEMS-0115)(794)	MBS8814	60	5	GEM	187.1	174.7	185.8	8.3	31.7
1514109	LH61/(26e/GEMN-0124)	AGR-SS	75	4	AGR	179.4	208	184	10.6	32.4
1514110	CML373:S(GEMS-0115)(PHJ40)	MON-nSS	84	6	MON	152.4	174.6	154.8	10.6	23.2
1514111	CML341:S(GEMS-0016)(LH220HT)	MON-nSS	84	6	MON	172	188.1	173.8	8.4	23.9
1514201	Retest 1 - Ki21:N(LH52)(GEMN-0097); Ki21 with GEMS-0115 and private lines	NA	48	8	GEM	171.1	188.4	172.9	13.4	25
1514202	Retest 2 - BR105 combined with NS recycled GEMs, x-PVPs,	NA	27	8	GEM	177.3	186	178.9	16.5	29.8
1514203	Retest 3 - BR105 with SS recycled GEMS, private lines	NA	63	8	GEM	180.5	198.4	182	13.1	26
1514204	Retest 4 - recycled SS GEMs; CMLs, PASCO or DKXL212 with x-PVPs;	NA	54	8	GEM	164.9	172.7	165.8	14.1	25
1514205	Retest 5 - recycled SS GEMS with CMLs	NA	28	8	GEM	172.2	185	174.5	12.5	23.4
1514206	Retest 6 - 53NS2/NS GEMs	NA	40	8	GEM	147.9	174.8	152	18.2	29.6
1552101	AR268:N(LH82)	MBS3520	74	5	GEM	160	192.8	162.2	10.6	24.9
1553101	AR17056:S1912	MBS8814	60	5	GEM	205.3	222.3	206.8	6.2	25.8
1554101	FS8A(S):S0926i03	YSS100	75	5	JFS	148.3	202.3	151.9	13.1	29.8
1554102	B109<2>/B110)-B-58-01-01-02-01-B-B-B/2/B109/B104)	MBS5411	76	5	GEM	162.9	182.2	164.9	13.3	31.2
1554103	B109<2>/N196(S)C7)-226)-B-078-01-01-02-02-B-B-B/2/B109/B104)	MBS5411	84	5	GEM	156.4	172.9	158	14.7	32.9
1564101	(LH82/KO679Y)/GEMN-0205	MBS3520	72	5	GEM	172.5	206.1	174.9	9.2	23.1
1564102	GEMN-0192/GEMN-0152	MBS3520	72	5	GEM	145.5	183.1	148.2	17.2	37
1564103	GEMN-0193/GEMN-0179	MBS3520	75	5	GEM	159.4	204.3	162.4	11.2	25.8
1564104	LH61/(26e/GEMN-0124)	MBS3520	75	5	GEM	154.3	194.9	157.1	13.7	31.2
1564201	Retest 7 - temperates from Chile and Argentina; across HPs	NA	60	8	GEM	169.7	192.1	172	16	33.6
1564202	Retest 8 - 53SS4/SS GEM; Antigua NS DH lines	NA	45	8	GEM	181.4	198.9	183.3	13.2	25.1
1564203	Retest 9 - recycled SS GEMs	NA	65	8	GEM	180.5	189.3	181.4	10.9	21.1
1564204	Retest 10 - New SS DH lines from Argentinian and tropical hybrid sources; KO679Y x GEMs non-DH	NA	53	6	GEM	192.2	198.4	192.9	9.5	23.7
1564205	Retest 11 - recycled NS GEMs; SS NEI0994 & Uruguay derivatives non-DH	NA	34	8	GEM	183.1	197.4	184.8	11.2	22.1
1564206	GEMxGEM SX head to head	NA	40	5	GEM	189.8	213	191.6	9	25.1
1554104	B73 DH test	MBS8814	276	4	GEM	217.9	199.8	217.3	8.3	30.2
1554105	Oh43 DH test	MBS3520	252	4	GEM	161.8	184.9	162.4	10.8	29.2
1564105	BGEM-N test	MBS2655	109	5	GEM	145.6	176.1	147.9	12.1	25.6
1564106	BGEM-S test	MBS5411	152	5	GEM	156.4	198.8	158.9	13.9	31.4
1564107	BGEM-N test	MBS2655	93	5	GEM	134.5	146.6	135.3	12.9	22.5
1564108	BGEM-S test	MBS5411	132	5	GEM	135.5	156.1	136.4	15.8	27.7
Total: 40					Averages:	169.4	190.8	171.2	11.7	27.8

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1512101

Tester: MBS8814

		All Location Means									
Entry	Pedigree									Plant	
		Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Height	Ear Height
46	Pioneer 31D58	214.6	111.2	285.6	23.5	9.1	53.9	3.6	0.0		
44	MBS3520/MBS8814	204.5	106.0	861.1	21.0	9.7	50.6	3.4	0.0		
25	PUER5:S(4676A)-B-043/MBS8814	198.9	103.1	312.5	26.0	7.7	51.4	2.2	0.7		
33	PUER5:S(4676A)-B-054/MBS8814	197.8	102.6		23.9	8.3	54.5	0.0	0.0		
43	PUER5:S(4676A)-B-068/MBS8814	197.7	102.5	28.9	25.0	7.9	52.1	7.0	1.5		
9	PUER5:S(4676A)-B-013/MBS8814	196.8	102.0	56.2	21.7	9.1	53.7	1.7	1.7		
28	PUER5:S(4676A)-B-046/MBS8814	196.0	101.6	214.2	26.6	7.4	52.7	1.7	10.7		
47	Pioneer 33F85	192.2	99.7	633.7	21.6	8.9	53.9	4.4	0.0		
3	PUER5:S(4676A)-B-006/MBS8814	186.9	96.9	12.0	24.2	7.7	53.1	0.0	12.8		
48	Pioneer 34R65	186.6	96.8	69.6	18.6	10.1	56.4	2.1	0.0		
11	PUER5:S(4676A)-B-015/MBS8814	186.0	96.4	0.3	23.3	8.0	53.5	1.4	0.7		
41	PUER5:S(4676A)-B-065/MBS8814	183.6	95.2	447.0	27.6	6.7	52.4	4.9	0.0		
42	PUER5:S(4676A)-B-066/MBS8814	180.8	93.7	972.4	23.9	7.6	52.9	2.9	5.0		
10	PUER5:S(4676A)-B-014/MBS8814	180.5	93.6	9.7	23.8	7.6	53.1	0.0	8.6		
22	PUER5:S(4676A)-B-037/MBS8814	179.9	93.3	0.0	23.3	7.7	52.3	3.6	1.4		
37	PUER5:S(4676A)-B-060/MBS8814	179.7	93.2	15.7	22.5	8.0	54.3	0.7	5.4		
17	PUER5:S(4676A)-B-030/MBS8814	179.6	93.1	70.8	24.2	7.4	52.9	0.0	13.5		
30	PUER5:S(4676A)-B-049/MBS8814	179.3	93.0		21.8	8.2	54.7	2.9	0.0		
36	PUER5:S(4676A)-B-058/MBS8814	178.8	92.7	1.8	26.1	6.8	52.0	0.0	0.0		
5	PUER5:S(4676A)-B-008/MBS8814	178.5	92.5	80.6	22.9	7.8	53.6	2.1	4.2		
Test Entry Means		174.3			24.3	7.2	52.8	2.8	4.3		
Check Means		192.9			21.0	9.2	53.8	2.8	0.3		
Overall Means		176.3			23.9	7.4	52.9	2.8	3.9		
Yield Range		143.3 - 214.6									
CV		9.4			4.0						
LSD (p=0.05)		35.0			2.0						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1513101

Tester: MBS3520

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
70	Pioneer 33F85	192.1	106.1	3109.0	21.1	9.1	55.0	4.3	0.0	230	70
71	Pioneer 34R65	189.7	104.8	42.9	19.9	9.5	57.2	2.9	0.0		
69	PUER5:S(4676A)-B-043/MBS8814	187.3	103.4	2611.4	23.1	8.1	56.0	1.5	0.4	235	75
55	BR105:N1612-B-055/MBS3520	181.7	100.4	293.5	20.6	8.8	55.2	0.0	0.0		
38	BR105:N1612-B-038/MBS3520	180.6	99.7	1531.3	20.6	8.8	53.8	1.8	0.0	240	90
33	BR105:N1612-B-033/MBS3520	178.8	98.8	4029.1	20.7	8.6	54.9	3.4	0.4	240	70
67	MBS3520/MBS8814	176.2	97.3	2864.1	22.1	8.0	50.1	0.8	2.7	225	75
66	BR105:N1612-B-066/MBS3520	175.6	97.0	2969.0	19.8	8.9	54.6	0.0	0.0	235	75
42	BR105:N1612-B-042/MBS3520	174.5	96.4	2194.8	20.1	8.7	55.2	4.5	0.4	235	75
47	BR105:N1612-B-047/MBS3520	173.5	95.8	2806.7	19.9	8.7	54.8	6.4	1.7	255	75
29	BR105:N1612-B-029/MBS3520	173.0	95.5	2856.6	22.1	7.8	53.0	0.4	5.6	240	85
4	BR105:N1612-B-004/MBS3520	173.0	95.5	3191.8	21.1	8.2	55.2	0.8	1.2	230	70
37	BR105:N1612-B-037/MBS3520	171.8	94.9	2009.2	20.0	8.6	55.0	5.5	8.5	235	80
27	BR105:N1612-B-027/MBS3520	171.4	94.7	3680.1	20.6	8.3	53.8	0.5	8.3	230	75
56	BR105:N1612-B-056/MBS3520	171.2	94.6	1804.4	20.2	8.5	54.6	0.4	0.0	225	65
40	BR105:N1612-B-040/MBS3520	169.2	93.4	1768.3	20.2	8.4	53.3	12.8	11.9	240	85
14	BR105:N1612-B-014/MBS3520	168.9	93.3	2554.8	21.1	8.0	54.9	2.4	0.0	220	75
50	BR105:N1612-B-050/MBS3520	168.8	93.2	3342.3	21.1	8.0	55.4	1.5	1.9	230	60
7	BR105:N1612-B-007/MBS3520	168.7	93.2	2409.2	20.6	8.2	53.7	1.0	0.0	235	75
12	BR105:N1612-B-012/MBS3520	168.4	93.0	2124.6	20.6	8.2	54.3	2.9	0.0	220	75
Test Entry Means		159.2			20.5	7.8	54.1	2.0	2.4	228	71
Check Means		181.1			21.2	8.5	54.7	2.1	0.6	234	75
Overall Means		160.8			20.6	7.8	54.1	2.0	2.3	228	71
Yield Range		124.3 - 192.1									
CV		9.1			4.8						
LSD (p=0.05)		20.8			1.4						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Lewiston, NC.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514101

Tester: MBS3520

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
58	Pioneer 31D58	205.0	120.2	1644.0	20.9	9.8	55.7	2.5	0.0	260	85
56	MBS3520/MBS8814	191.7	112.4	3006.8	21.2	9.1	51.9	2.4	0.4	240	85
59	Pioneer 33F85	176.7	103.6	1893.0	20.4	8.7	56.2	3.6	0.0	230	80
40	BR51501:N11a08bT47(GEMN-0155)-B-051/MBS3520	172.5	101.2	3354.4	21.9	7.9	53.0	2.9	0.0	260	100
45	BR51501:N11a08bT47(GEMN-0155)-B-057/MBS3520	171.4	100.5	3592.2	21.8	7.9	54.6	7.7	0.0	265	90
31	BR51501:N11a08bT47(GEMN-0155)-B-041/MBS3520	169.2	99.2	3049.0	20.8	8.2	53.9	5.1	8.2	265	90
5	BR51501:N11a08bT47(GEMN-0155)-B-007/MBS3520	168.8	99.0	2685.1	22.9	7.4	51.7	10.3	2.6	270	100
10	BR51501:N11a08bT47(GEMN-0155)-B-013/MBS3520	165.6	97.1	2010.0	22.2	7.5	51.6	10.0	0.0	280	85
42	BR51501:N11a08bT47(GEMN-0155)-B-054/MBS3520	163.4	95.8	2565.1	22.3	7.3	54.3	1.6	0.0	255	95
14	BR51501:N11a08bT47(GEMN-0155)-B-018/MBS3520	160.1	93.9	1944.2	19.5	8.2	54.9	0.0	0.0	250	90
15	BR51501:N11a08bT47(GEMN-0155)-B-020/MBS3520	159.8	93.7	1406.3	21.9	7.3	53.3	8.0	1.6	275	105
25	BR51501:N11a08bT47(GEMN-0155)-B-034/MBS3520	159.8	93.7	1316.9	22.3	7.2	53.4	1.9	0.4	275	90
29	BR51501:N11a08bT47(GEMN-0155)-B-039/MBS3520	158.8	93.1	1736.2	22.2	7.2	54.4	7.4	0.0	265	90
47	BR51501:N11a08bT47(GEMN-0155)-B-060/MBS3520	158.1	92.7	2770.2	21.1	7.5	55.0	4.7	16.8	255	70
46	BR51501:N11a08bT47(GEMN-0155)-B-059/MBS3520	157.0	92.0	2307.0	20.3	7.7	56.7	6.4	0.0	275	100
1	BR51501:N11a08bT47(GEMN-0155)-B-001/MBS3520	156.7	91.9	2962.0	21.6	7.2	54.6	2.3	6.7	265	100
43	BR51501:N11a08bT47(GEMN-0155)-B-055/MBS3520	156.0	91.5	1724.3	20.5	7.6	53.3	1.1	0.0	270	100
16	BR51501:N11a08bT47(GEMN-0155)-B-021/MBS3520	155.6	91.2	4748.9	23.5	6.6	50.8	9.0	1.1	290	100
52	BR51501:N11a08bT47(GEMN-0155)-B-065/MBS3520	154.4	90.5	2258.5	21.9	7.1	53.2	5.7	0.0	260	85
35	BR51501:N11a08bT47(GEMN-0155)-B-046/MBS3520	154.0	90.3	2444.2	19.4	7.9	53.1	4.5	0.0	245	80
Test Entry Means		147.8			21.3	6.9	53.7	5.5	1.7	260	91
Check Means		170.5			19.9	8.6	55.5	3.2	0.2	242	82
Overall Means		149.7			21.2	7.1	53.9	5.3	1.6	258	90
Yield Range		117.3 - 205.0									
CV		14.4			5.5						
LSD (p=0.05)		30.9			1.7						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Lewiston, NC.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514102

Tester: MBS3520

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
68	MBS3520/MBS8814	203.5	113.4	3396.8	22.2	9.2	50.7	2.3	1.8	245	80
70	Pioneer 31D58	189.8	105.8	4037.0	23.1	8.2	55.2	3.0	0.8	230	70
71	Pioneer 33F85	185.4	103.3	3781.1	21.0	8.8	55.0	5.4	0.0	210	70
72	Pioneer 34R65	172.2	96.0	4408.5	19.4	8.9	57.1	0.0	18.4	220	60
65	BR51501:N11a08bT47(LH61)-B-068/MBS3520	167.5	93.3	2795.5	20.4	8.2	53.5	0.8	22.7	210	70
25	BR51501:N11a08bT47(LH61)-B-025/MBS3520	162.3	90.4	1362.1	20.4	7.9	53.5	0.7	21.6	230	80
42	BR51501:N11a08bT47(LH61)-B-044/MBS3520	160.6	89.5	3037.4	22.1	7.3	53.8	2.6	13.6	225	80
18	BR51501:N11a08bT47(LH61)-B-018/MBS3520	158.5	88.3	1808.6	20.8	7.6	54.7	0.0	16.1	200	60
48	BR51501:N11a08bT47(LH61)-B-051/MBS3520	158.2	88.1	3091.1	21.3	7.4	52.3	3.9	25.4	215	70
26	BR51501:N11a08bT47(LH61)-B-026/MBS3520	155.9	86.9	2073.9	19.6	8.0	54.2	2.9	17.7	250	85
1	BR51501:N11a08bT47(LH61)-B-001/MBS3520	153.8	85.7	1694.4	21.2	7.3	53.3	4.7	1.1	230	75
15	BR51501:N11a08bT47(LH61)-B-015/MBS3520	153.8	85.7	2155.8	21.4	7.2	52.8	8.5	22.7	230	70
33	BR51501:N11a08bT47(LH61)-B-034/MBS3520	151.5	84.4	3210.0	20.2	7.5	53.9	2.9	2.9	210	65
27	BR51501:N11a08bT47(LH61)-B-028/MBS3520	151.3	84.3	1053.2	22.5	6.7	53.0	5.9	0.4	215	80
31	BR51501:N11a08bT47(LH61)-B-032/MBS3520	150.0	83.6	2890.3	21.3	7.0	54.3	0.4	12.1	220	65
64	BR51501:N11a08bT47(LH61)-B-067/MBS3520	149.8	83.5	1158.4	19.5	7.7	55.2	2.3	16.8	240	75
14	BR51501:N11a08bT47(LH61)-B-014/MBS3520	149.8	83.5	896.5	20.7	7.2	54.5	0.8	22.7	220	80
34	BR51501:N11a08bT47(LH61)-B-035/MBS3520	147.8	82.3	933.1	21.2	7.0	54.0	0.4	26.1	225	70
32	BR51501:N11a08bT47(LH61)-B-033/MBS3520	147.7	82.3	1270.6	21.4	6.9	53.3	0.7	30.8	240	75
13	BR51501:N11a08bT47(LH61)-B-013/MBS3520	146.4	81.6	1744.7	19.6	7.5	54.5	0.4	25.5	240	75
Test Entry Means		134.4			20.5	6.6	54.3	2.5	14.6	225	73
Check Means		179.4			21.2	8.5	54.7	2.4	5.9	228	72
Overall Means		137.6			20.5	6.7	54.3	2.5	14.0	225	73
Yield Range		96.4 - 203.5									
CV		13.3			4.3						
LSD (p=0.05)		26.1			1.2						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Lewiston, NC.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514103

Tester: YSS100

		All Location Means									
		% Yield			Yield/				Plant		Ear
Entry	Pedigree	Yield B/A	/CHK	Variance	% Moist	Moist	TWT	% S.L.	% R.L.	Height	Height
73	Pioneer 33F85	246.1	111.0	386.8	21.5	11.5	55.3	7.0	7.7		
72	Pioneer 31D58	244.9	110.4	297.2	23.7	10.3	55.4	0.4	2.2		
18	PASCO14:S2126h03-B-018/YSS100	208.5	94.0	504.1	23.9	8.7	52.8	2.3	20.6		
53	PASCO14:S2126h03-B-053/YSS100	206.4	93.1	104.0	23.4	8.8	52.0	6.0	17.7		
63	PASCO14:S2126h03-B-063/YSS100	206.4	93.1	548.5	22.7	9.1	51.9	5.0	7.5		
74	Pioneer 34R65	204.9	92.4	29.3	19.4	10.5	57.4	0.0	6.9		
70	MBS3520/MBS8814	201.2	90.7	3895.8	21.6	9.3	50.7	8.1	0.0		
66	PASCO14:S2126h03-B-066/YSS100	200.9	90.6	251.2	21.2	9.5	54.5	7.1	24.9		
26	PASCO14:S2126h03-B-026/YSS100	197.9	89.2	138.7	23.3	8.5	54.1	3.5	12.5		
11	PASCO14:S2126h03-B-011/YSS100	197.9	89.2	214.9	24.6	8.0	52.1	1.5	2.8		
17	PASCO14:S2126h03-B-017/YSS100	195.7	88.2	135.2	23.3	8.4	54.1	4.0	23.5		
20	PASCO14:S2126h03-B-020/YSS100	194.1	87.5	48.6	24.3	8.0	50.5	2.1	0.4		
47	PASCO14:S2126h03-B-047/YSS100	194.0	87.5	608.7	24.0	8.1	52.4	4.4	0.4		
71	MBS9508/MBS2655	191.2	86.2	339.1	19.9	9.6	55.7	0.0	0.0		
40	PASCO14:S2126h03-B-040/YSS100	190.6	85.9	201.7	21.4	8.9	54.5	4.0	3.6		
39	PASCO14:S2126h03-B-039/YSS100	189.5	85.4	433.9	21.6	8.8	53.2	1.5	18.4		
50	PASCO14:S2126h03-B-050/YSS100	189.2	85.3	664.4	22.3	8.5	53.3	12.4	1.2		
38	PASCO14:S2126h03-B-038/YSS100	189.0	85.2	43.8	22.8	8.3	52.2	6.6	0.4		
1	PASCO14:S2126h03-B-001/YSS100	188.9	85.2	128.0	21.1	8.9	54.9	4.5	3.6		
16	PASCO14:S2126h03-B-016/YSS100	188.8	85.1	271.6	24.6	7.7	52.5	6.1	6.6		
Test Entry Means		175.7			22.2	7.9	53.4	4.5	5.3		
Check Means		221.8			21.1	10.5	56.0	1.8	4.2		
Overall Means		178.3			22.2	8.0	53.5	4.4	5.2		
Yield Range		123.5 - 246.1									
CV		11.8			4.1						
LSD (p=0.05)		29.9			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514104

Tester: MBS8814

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
68	MBS3520/MBS8814	232.6	113.5	11.0	22.7	10.2	49.9	2.0	0.0		
70	Pioneer 31D58	222.0	108.4	40.5	25.3	8.8	54.5	0.7	0.0		
71	Pioneer 33F85	219.0	106.9	28.9	22.2	9.9	53.9	0.7	0.0		
12	NEI9008:S17a26h40-B-012/MBS8814	212.5	103.7	248.6	25.2	8.4	49.8	2.4	0.0		
49	NEI9008:S17a26h40-B-053/MBS8814	210.1	102.6	317.5	29.2	7.2	51.6	0.8	0.8		
13	NEI9008:S17a26h40-B-013/MBS8814	208.6	101.9	81.9	28.5	7.3	50.7	0.7	0.0		
21	NEI9008:S17a26h40-B-023/MBS8814	208.1	101.6	153.1	26.9	7.7	51.7	0.7	6.8		
36	NEI9008:S17a26h40-B-040/MBS8814	207.0	101.0	2.6	25.1	8.3	51.3	0.8	1.4		
47	NEI9008:S17a26h40-B-051/MBS8814	206.6	100.9	63.8	27.4	7.5	51.6	0.8	0.0		
31	NEI9008:S17a26h40-B-035/MBS8814	205.1	100.1	120.1	28.1	7.3	48.5	1.6	0.0		
3	NEI9008:S17a26h40-B-003/MBS8814	205.0	100.1	80.6	25.4	8.1	48.9	3.2	1.6		
61	NEI9008:S17a26h40-B-065/MBS8814	203.9	99.5	574.6	27.2	7.5	51.4	0.7	0.0		
22	NEI9008:S17a26h40-B-024/MBS8814	203.6	99.4	50.0	26.6	7.7	49.4	0.0	11.4		
27	NEI9008:S17a26h40-B-031/MBS8814	203.2	99.2	43.2	26.2	7.8	49.0	6.8	0.0		
29	NEI9008:S17a26h40-B-033/MBS8814	203.1	99.2	531.4	26.3	7.7	50.3	0.7	7.4		
5	NEI9008:S17a26h40-B-005/MBS8814	202.7	99.0	0.1	28.9	7.0	49.8	1.5	0.8		
16	NEI9008:S17a26h40-B-016/MBS8814	202.5	98.9	338.0	26.9	7.5	49.6	0.0	2.8		
43	NEI9008:S17a26h40-B-047/MBS8814	202.4	98.8	13.5	25.1	8.1	48.9	0.0	0.0		
24	NEI9008:S17a26h40-B-028/MBS8814	202.3	98.8	10.6	27.1	7.5	49.8	0.0	0.8		
62	NEI9008:S17a26h40-B-066/MBS8814	201.9	98.6	264.5	29.6	6.8	50.9	0.0	0.0		
Test Entry Means		189.8			27.1	7.0	50.4	1.9	1.3		
Check Means		204.8			22.4	9.1	53.4	1.3	1.3		
Overall Means		191.1			26.7	7.2	50.7	1.8	1.3		
Yield Range		151.1 - 232.6									
CV		8.2			3.9						
LSD (p=0.05)		32.6			2.1						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514105

Tester: MBS8814

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
56	MBS3520/MBS8814	246.9	111.8	496.1	24.1	10.2	49.5	1.3	0.0		
42	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-055/MBS8814	243.7	110.4		26.5	9.2	49.9	0.0	1.5		
20	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-026/MBS8814	233.8	105.9	180.5	28.0	8.4	50.6	0.7	1.4		
58	Pioneer 31D58	230.3	104.3	51.0	26.6	8.7	53.4	0.0	0.0		
46	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-059/MBS8814	229.6	104.0	0.5	25.6	9.0	51.0	0.8	4.4		
39	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-052/MBS8814	226.8	102.7	38.7	26.3	8.6	51.9	2.1	0.0		
21	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-028/MBS8814	223.7	101.3	91.1	26.8	8.3	50.7	3.7	0.0		
2	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-002/MBS8814	223.6	101.3	25.2	26.6	8.4	50.6	3.4	0.7		
59	Pioneer 33F85	222.8	100.9	283.2	22.6	9.9	54.1	1.5	0.0		
49	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-062/MBS8814	222.7	100.9		28.1	7.9	51.2	4.7	0.0		
26	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-037/MBS8814	221.6	100.4	699.4	28.1	7.9	50.8	1.4	5.6		
29	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-040/MBS8814	221.6	100.3	0.0	25.0	8.9	51.4	4.6	1.6		
28	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-039/MBS8814	220.3	99.8	920.2	27.8	7.9	50.2	2.3	0.8		
8	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-011/MBS8814	220.2	99.7	3.1	26.1	8.5	50.8	0.8	0.0		
53	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-067/MBS8814	220.0	99.6	1095.1	24.8	8.9	52.6	0.0	1.5		
6	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-007/MBS8814	219.5	99.4	380.9	25.2	8.7	48.9	1.4	1.5		
18	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-023/MBS8814	219.4	99.4	5.8	26.5	8.3	50.2	0.0	10.3		
9	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-012/MBS8814	218.6	99.0	44.2	24.2	9.1	50.8	1.5	0.7		
11	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-014/MBS8814	218.6	99.0	292.8	25.3	8.6	49.1	0.0	0.0		
47	(NEI9004:S2809-B-061-B-B/GEMS-0003)-B-B-060/MBS8814	218.2	98.8	67.3	28.5	7.7	50.3	2.9	0.8		
Test Entry Means		209.1			26.2	8.0	50.6	1.9	2.0		
Check Means		220.8			23.0	9.6	53.4	0.7	0.2		
Overall Means		210.1			25.9	8.1	50.9	1.8	1.8		
Yield Range		181.6 - 246.9									
CV		6.7			3.0						
LSD (p=0.05)		29.4			1.6						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514106

Tester: MBS8814

		All Location Means									
		% Yield			% Yield/			Plant Ear			
Entry	Pedigree	Yield B/A	/CHK	Variance	Moist	Moist	TWT	% S.L.	% R.L.	Height	Height
56	MBS3520/MBS8814	226.1	109.3	162.0	22.2	10.2	50.6	2.1	0.0		
11	CUBA164:S2008dT47(PHJ40)-B-011/MBS8814	226.0	109.2	96.6	24.7	9.1	53.9	0.7	0.7		
58	Pioneer 31D58	222.6	107.6	257.6	25.5	8.7	54.2	0.0	0.0		
40	CUBA164:S2008dT47(PHJ40)-B-053/MBS8814	215.6	104.2	4.8	23.8	9.1	53.8	0.0	4.9		
36	CUBA164:S2008dT47(PHJ40)-B-049/MBS8814	215.4	104.1	60.5	26.4	8.2	53.7	0.0	0.7		
60	Pioneer 34R65	201.6	97.4	25.9	19.5	10.4	57.2	0.0	0.0		
35	CUBA164:S2008dT47(PHJ40)-B-048/MBS8814	201.2	97.2	68.4	23.6	8.5	53.4	0.0	0.8		
23	CUBA164:S2008dT47(PHJ40)-B-030/MBS8814	199.6	96.5	0.4	25.4	7.9	52.7	0.0	0.0		
7	CUBA164:S2008dT47(PHJ40)-B-007/MBS8814	198.4	95.9	171.1	22.6	8.8	53.8	5.2	6.9		
26	CUBA164:S2008dT47(PHJ40)-B-034/MBS8814	198.1	95.7	136.1	23.6	8.4	53.2	0.0	5.9		
4	CUBA164:S2008dT47(PHJ40)-B-004/MBS8814	197.4	95.4	121.7	26.3	7.5	53.4	0.0	0.0		
49	CUBA164:S2008dT47(PHJ40)-B-063/MBS8814	196.9	95.2	73.2	24.1	8.2	53.8	2.2	6.2		
59	Pioneer 33F85	196.6	95.0	1378.1	21.3	9.2	54.9	1.4	0.0		
17	CUBA164:S2008dT47(PHJ40)-B-022/MBS8814	195.4	94.4	2.6	22.5	8.7	52.0	4.6	0.8		
14	CUBA164:S2008dT47(PHJ40)-B-019/MBS8814	193.4	93.5	14.6	22.6	8.6	54.1	0.9	2.4		
45	CUBA164:S2008dT47(PHJ40)-B-059/MBS8814	191.8	92.7	295.2	22.6	8.5	53.3	0.8	4.6		
15	CUBA164:S2008dT47(PHJ40)-B-020/MBS8814	190.0	91.8	25.9	24.3	7.8	54.2	0.0	0.0		
48	CUBA164:S2008dT47(PHJ40)-B-062/MBS8814	189.9	91.8	59.4	26.2	7.2	53.3	1.6	7.3		
25	CUBA164:S2008dT47(PHJ40)-B-033/MBS8814	188.8	91.2	0.4	22.2	8.5	54.6	0.0	1.6		
9	CUBA164:S2008dT47(PHJ40)-B-009/MBS8814	188.0	90.8	10.1	23.5	8.0	53.6	0.7	1.6		
Test Entry Means		179.3			23.3	7.7	53.6	1.1	3.1		
Check Means		206.9			21.9	9.5	54.3	0.9	0.0		
Overall Means		181.6			23.2	7.8	53.7	1.1	2.9		
Yield Range		147.8 - 226.1									
CV		7.9			2.7						
LSD (p=0.05)		28.8			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514107

Tester: MBS8814

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
72	TZi 9:S21z(GEMS-0163)-B-074/MBS8814	213.5	112.5	25.2	23.7	9.0	51.0	4.2	0.0		
41	TZi 9:S21z(GEMS-0163)-B-041/MBS8814	212.6	112.0	174.8	27.5	7.7	50.8	0.8	0.8		
82	Pioneer 31D58	209.6	110.5	2.6	25.1	8.4	54.3	0.0	0.0		
27	TZi 9:S21z(GEMS-0163)-B-027/MBS8814	207.8	109.5	420.5	27.2	7.6	51.6	0.0	0.0		
31	TZi 9:S21z(GEMS-0163)-B-031/MBS8814	207.7	109.5	30.4	26.4	7.9	49.7	1.5	5.6		
4	TZi 9:S21z(GEMS-0163)-B-004/MBS8814	203.1	107.0	206.0	29.6	6.9	50.2	11.4	6.3		
45	TZi 9:S21z(GEMS-0163)-B-046/MBS8814	200.5	105.7	3.6	22.9	8.8	51.7	3.8	0.9		
62	TZi 9:S21z(GEMS-0163)-B-063/MBS8814	200.1	105.5	115.5	27.6	7.3	49.1	0.0	0.8		
69	TZi 9:S21z(GEMS-0163)-B-070/MBS8814	200.0	105.4	220.5	27.0	7.4	50.8	2.8	3.4		
20	TZi 9:S21z(GEMS-0163)-B-020/MBS8814	199.6	105.2	0.0	25.7	7.8	51.2	0.7	0.0		
34	TZi 9:S21z(GEMS-0163)-B-034/MBS8814	199.5	105.2	1021.5	21.7	9.2	52.4	1.4	7.2		
24	TZi 9:S21z(GEMS-0163)-B-024/MBS8814	197.1	103.9	35.3	22.3	8.8	52.6	0.8	0.9		
37	TZi 9:S21z(GEMS-0163)-B-037/MBS8814	195.7	103.2	2.9	24.2	8.1	50.8	0.8	0.0		
79	TZi 9:S21z(GEMS-0163)-B-081/MBS8814	195.7	103.2	9.7	23.5	8.3	50.7	2.1	1.4		
74	TZi 9:S21z(GEMS-0163)-B-076/MBS8814	194.7	102.6	2.2	27.9	7.0	51.5	0.8	0.0		
66	TZi 9:S21z(GEMS-0163)-B-067/MBS8814	194.3	102.4	23.8	26.8	7.2	51.7	4.9	0.0		
26	TZi 9:S21z(GEMS-0163)-B-026/MBS8814	194.0	102.2	2443.0	26.2	7.4	49.8	11.3	9.9		
28	TZi 9:S21z(GEMS-0163)-B-028/MBS8814	193.8	102.1	31.2	27.0	7.2	51.6	2.2	6.8		
77	TZi 9:S21z(GEMS-0163)-B-079/MBS8814	193.4	101.9	126.4	27.6	7.0	50.7	0.0	1.5		
2	TZi 9:S21z(GEMS-0163)-B-002/MBS8814	193.3	101.9	235.4	24.8	7.8	51.1	0.0	0.0		
Test Entry Means		186.3			24.8	7.5	50.9	3.2	2.1		
Check Means		189.7			21.8	8.7	53.5	1.9	0.0		
Overall Means		186.5			24.6	7.6	51.1	3.1	2.0		
Yield Range		155.3 - 213.5									
CV		8.0			4.2						
LSD (p=0.05)		30.6			2.1						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514108

Tester: MBS8814

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
31	CML341:S(GEMS-0115)(794)-B-040/MBS8814	212.0	121.4	22.4	22.6	9.4	49.0	0.0	0.0		
28	CML341:S(GEMS-0115)(794)-B-036/MBS8814	211.6	121.1	37.8	22.9	9.3	50.2	0.0	0.0		
51	CML341:S(GEMS-0115)(794)-B-064/MBS8814	209.1	119.7	32.0	25.5	8.2	49.9	0.0	0.0		
19	CML341:S(GEMS-0115)(794)-B-023/MBS8814	206.9	118.4	0.8	22.4	9.2	49.4	0.0	11.1		
46	CML341:S(GEMS-0115)(794)-B-058/MBS8814	206.5	118.2		25.1	8.2	49.8	0.0	0.0		
2	CML341:S(GEMS-0115)(794)-B-002/MBS8814	206.1	118.0	10.6	27.8	7.4	49.6	0.8	0.8		
29	CML341:S(GEMS-0115)(794)-B-037/MBS8814	203.3	116.4	120.1	25.1	8.1	50.9	5.1	0.0		
35	CML341:S(GEMS-0115)(794)-B-047/MBS8814	202.6	116.0	3.6	23.6	8.6	49.2	4.9	0.0		
7	CML341:S(GEMS-0115)(794)-B-008/MBS8814	201.6	115.4	348.5	23.2	8.7	51.1	3.0	1.5		
48	CML341:S(GEMS-0115)(794)-B-061/MBS8814	199.9	114.4	22.4	25.2	7.9	49.2	0.8	2.3		
44	CML341:S(GEMS-0115)(794)-B-056/MBS8814	199.8	114.4	91.1	23.4	8.6	50.3	0.7	0.0		
18	CML341:S(GEMS-0115)(794)-B-022/MBS8814	199.4	114.2	131.2	25.4	7.9	50.0	0.8	1.5		
20	CML341:S(GEMS-0115)(794)-B-024/MBS8814	199.4	114.1	725.8	24.9	8.0	49.2	0.7	0.0		
26	CML341:S(GEMS-0115)(794)-B-033/MBS8814	196.7	112.6	123.2	25.3	7.8	49.7	0.8	0.0		
9	CML341:S(GEMS-0115)(794)-B-010/MBS8814	196.3	112.4	356.4	23.0	8.5	49.4	2.8	0.7		
15	CML341:S(GEMS-0115)(794)-B-016/MBS8814	196.1	112.3	25.2	25.1	7.8	49.9	1.9	3.0		
5	CML341:S(GEMS-0115)(794)-B-006/MBS8814	193.8	111.0	1067.2	24.7	7.8	50.9	0.9	0.0		
22	CML341:S(GEMS-0115)(794)-B-027/MBS8814	192.8	110.4	67.3	23.5	8.2	49.5	3.0	0.0		
39	CML341:S(GEMS-0115)(794)-B-051/MBS8814	191.3	109.5	310.0	22.3	8.6	50.3	1.4	1.5		
58	Pioneer 33F85	190.7	109.2	37.8	21.9	8.7	53.9	0.7	0.0		
Test Entry Means		187.1			23.6	7.9	50.2	1.5	1.0		
Check Means		174.7			23.0	7.6	52.5	0.9	0.6		
Overall Means		185.8			23.5	7.9	50.4	1.5	0.9		
Yield Range		157.1 - 212.0									
CV		8.3			7.2						
LSD (p=0.05)		31.7			3.5						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514109

Tester: AGR-SS

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
75	A7196GJLHZxT6053LFWMZ	230.0	110.6	689.6	18.9	12.2	57.0	0.0	0.0		
68	Pioneer 31D58	224.2	107.8	2503.4	19.9	11.3	57.6	0.0	0.0		
65	MBS3520/MBS8814	223.8	107.6	1.3	19.2	11.7	52.5	3.0	3.5		
69	Pioneer 31D58	219.9	105.7	604.8	19.4	11.3	58.0	0.0	0.0		
71	Pioneer 33F85	217.7	104.7	974.5	17.9	12.2	56.7	0.0	0.0		
64	MBS3520/MBS8814	210.4	101.1	37.7	17.8	11.8	53.1	0.0	0.0		
60	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-048/AGR-SS	210.0	101.0	2177.6	21.4	9.8	55.2	0.0	0.0		
28	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-043/AGR-SS	209.7	100.8	773.7	19.2	10.9	56.4	0.5	0.0		
25	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-035/AGR-SS	207.1	99.5	1452.6	15.2	13.6	58.9	0.0	0.0		
24	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-034/AGR-SS	205.1	98.6	253.1	18.0	11.4	57.9	0.5	0.0		
66	MBS2655xMBS9508	204.7	98.4	35.7	17.0	12.0	57.1	1.0	0.0		
70	Pioneer 33F85	204.1	98.1	1444.3	17.7	11.6	56.8	0.0	0.0		
47	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-070/AGR-SS	203.1	97.7	513.7	20.9	9.7	54.8	0.0	0.0		
19	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-029/AGR-SS	202.3	97.3	69.2	19.9	10.1	56.3	0.0	0.0		
42	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-061/AGR-SS	201.3	96.8	119.6	19.2	10.5	54.9	0.0	0.0		
74	A7196GJLHZxT6053LFWMZ	201.2	96.8	2060.6	17.9	11.2	57.4	0.0	0.0		
59	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-045/AGR-SS	199.9	96.1	409.1	20.7	9.7	55.8	0.0	0.0		
72	Pioneer 34R65	195.9	94.2	111.1	16.7	11.7	58.7	0.0	0.0		
3	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-004/AGR-SS	195.3	93.9	477.4	20.2	9.7	55.2	0.0	0.0		
38	(LH82/(26e/GEMN-0124))-SIB-SIB-SIB-B-056/AGR-SS	193.8	93.2	38.9	18.9	10.3	56.5	0.5	0.0		
Test Entry Means		179.4			20.0	9.0	56.3	0.2	1.1		
Check Means		208.0			18.1	11.5	56.8	0.3	0.3		
Overall Means		184.0			19.7	9.3	56.4	0.2	1.0		
Yield Range		157.0 - 230.0									
CV		10.6			5.0						
LSD (p=0.05)		32.4			1.6						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Keystone, IA; Ft. Branch, IN; and Charleston, MO.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514110

Tester: MON-nSS

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
4	Check-4	191.5	109.7	181.6	17.2	11.1	58.3	0.0	9.3	96	40
1	Check-1	186.7	106.9	2169.5	18.2	10.2	57.0	0.0	0.0	110	48
40	CML373:S(GEMS-0115)(PHJ40)-B-057/MON-nSS	176.6	101.1	1424.3	17.6	10.0	57.9	0.0	0.0	96	46
2	Check-2	176.2	100.9	1260.4	19.1	9.2	54.9	0.0	0.0	100	46
82	Check-7	175.2	100.3	353.0	17.3	10.2	56.2	0.0	0.0	98	46
84	Check-9	172.5	98.8	1389.3	19.2	9.0	57.6	0.0	1.3	100	44
83	Check-8	171.6	98.3	1346.5	22.1	7.8	57.2	0.0	0.0	96	40
63	CML373:S(GEMS-0115)(PHJ40)-B-106/MON-nSS	171.4	98.2	798.8	17.6	9.7	56.3	0.0	0.0	104	48
19	CML373:S(GEMS-0115)(PHJ40)-B-021/MON-nSS	171.3	98.1	247.8	17.2	10.0	57.9	2.7	0.0	96	44
17	CML373:S(GEMS-0115)(PHJ40)-B-017/MON-nSS	170.6	97.7	1306.5	19.0	9.0	57.2	9.3	0.0	100	50
80	Check-5	170.4	97.6	2305.3	18.0	9.5	56.5	0.0	0.0	98	52
3	Check-3	169.1	96.8	1467.2	16.9	10.0	56.8	0.0	0.0	92	40
10	CML373:S(GEMS-0115)(PHJ40)-B-009/MON-nSS	167.1	95.7	1881.2	17.7	9.4	57.0	9.3	0.0	102	48
61	CML373:S(GEMS-0115)(PHJ40)-B-104/MON-nSS	166.2	95.2	668.5	18.8	8.9	58.0	12.0	0.0	94	40
8	CML373:S(GEMS-0115)(PHJ40)-B-006/MON-nSS	165.8	94.9	399.5	17.8	9.3	59.6	5.3	0.0	92	44
5	CML373:S(GEMS-0115)(PHJ40)-B-003/MON-nSS	165.5	94.8	2439.6	18.3	9.1	57.8	0.0	0.0	90	42
49	CML373:S(GEMS-0115)(PHJ40)-B-077/MON-nSS	162.0	92.8	722.3	17.1	9.5	59.5	0.0	0.0	96	54
71	CML373:S(GEMS-0115)(PHJ40)-B-129/MON-nSS	161.8	92.6	1967.5	15.8	10.3	58.4	0.0	0.0	102	48
30	CML373:S(GEMS-0115)(PHJ40)-B-042/MON-nSS	160.8	92.1	1042.5	17.5	9.2	57.8	0.0	0.0	92	48
48	CML373:S(GEMS-0115)(PHJ40)-B-075/MON-nSS	160.5	91.9	1337.8	17.4	9.2	56.8	0.0	0.0	96	44
Test Entry Means		152.4			16.9	9.0	58.1	3.0	0.0	95	46
Check Means		174.6			18.3	9.6	56.8	0.0	1.2	98	44
Overall Means		154.8			17.1	9.1	57.9	2.6	0.1	96	46
Yield Range		129.8 - 191.5									
CV		10.6			5.7						
LSD (p=0.05)		23.2			1.4						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Brimfield, IL; Adair, IL; Davenport, IA; and Shelbyville, IN.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514111

Tester: MON-nSS

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
2	Check-2	209.7	111.5	117.0	19.9	10.5	54.6	0.0	0.0	102	46
80	Check-5	199.3	105.9	1478.0	19.7	10.1	55.5	1.4	0.0	100	52
83	Check-8	194.6	103.5	1021.3	22.4	8.7	56.9	0.7	0.0	102	48
3	Check-3	193.3	102.7	778.5	17.0	11.4	55.8	2.7	0.0	100	52
74	CML341:S(GEMS-0016)(LH220HT)-B-134/MON-nSS	190.9	101.5	1333.5	17.3	11.0	55.1	0.0	0.0	100	48
67	CML341:S(GEMS-0016)(LH220HT)-B-124/MON-nSS	189.1	100.5	2249.3	19.1	9.9	56.4	9.3	0.0	104	50
81	Check-6	188.1	100.0	1029.2	17.1	11.0	55.6	2.7	0.0	102	46
65	CML341:S(GEMS-0016)(LH220HT)-B-121/MON-nSS	187.9	99.9	4173.3	18.2	10.3	57.0	12.7	0.0	96	52
48	CML341:S(GEMS-0016)(LH220HT)-B-089/MON-nSS	186.6	99.2	1156.6	17.2	10.9	57.2	6.0	0.0	104	46
4	Check-4	185.8	98.8	1680.8	16.8	11.0	56.5	5.4	0.0	94	46
57	CML341:S(GEMS-0016)(LH220HT)-B-109/MON-nSS	184.9	98.3	1437.7	18.4	10.1	56.9	3.4	0.0	96	56
35	CML341:S(GEMS-0016)(LH220HT)-B-065/MON-nSS	184.3	98.0	2844.1	19.2	9.6	55.5	2.0	0.0	100	52
5	CML341:S(GEMS-0016)(LH220HT)-B-004/MON-nSS	184.0	97.8	414.3	18.5	10.0	55.8	4.7	0.0	104	58
20	CML341:S(GEMS-0016)(LH220HT)-B-036/MON-nSS	183.8	97.7	1299.9	18.7	9.8	56.5	0.0	0.0	98	46
1	Check-1	183.6	97.6	1545.8	18.9	9.7	55.8	2.0	0.0	110	50
44	CML341:S(GEMS-0016)(LH220HT)-B-081/MON-nSS	183.6	97.6	1293.6	19.3	9.5	55.3	5.4	0.0	104	52
34	CML341:S(GEMS-0016)(LH220HT)-B-064/MON-nSS	183.5	97.6	1633.1	19.3	9.5	57.3	2.0	0.0	94	46
63	CML341:S(GEMS-0016)(LH220HT)-B-119/MON-nSS	183.1	97.3	1477.6	18.1	10.1	56.9	5.4	0.0	92	50
40	CML341:S(GEMS-0016)(LH220HT)-B-070/MON-nSS	181.4	96.4	1115.2	18.0	10.1	56.1	4.7	0.0	100	50
12	CML341:S(GEMS-0016)(LH220HT)-B-001/MON-nSS	180.4	95.9	740.2	18.2	9.9	56.1	3.4	0.0	96	50
Test Entry Means		172.0			18.2	9.5	56.6	5.8	0.0	99	50
Check Means		188.1			19.0	9.9	56.0	2.3	0.0	101	48
Overall Means		173.8			18.3	9.5	56.5	5.4	0.0	99	50
Yield Range		151.0 - 209.7									
CV		8.4			4.3						
LSD (p=0.05)		23.9			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Brimfield, IL; Augusta, IL; and Davenport, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514201

Tester: Varied

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
46	Pioneer 31D58	204.4	108.5	2058.2	19.3	10.6	55.0	8.5	2.3	300	160
47	Pioneer 33F85	202.7	107.6	657.0	18.9	10.7	54.8	14.2	4.5	290	140
37	Ki21:S(DJ7)(GEMS-0115)-B-013/SGI079	200.8	106.6	794.0	19.8	10.2	55.1	14.6	1.0	315	170
36	Ki21:S(DJ7)(GEMS-0115)-B-008/SGI079	192.9	102.4	1093.4	18.6	10.4	55.1	10.8	4.2	310	175
44	MBS3520/MBS8814	192.9	102.4	966.5	19.2	10.0	53.9	7.1	0.6	300	140
39	Ki21:S(DJ7)(GEMS-0115)-B-030/SGI079	192.7	102.3	1153.7	18.1	10.7	55.3	21.3	0.0	280	160
29	Ki21:N(LH52)(GEMN-0097)-B-036/MBS3520	186.3	98.9	451.9	20.2	9.2	54.5	9.4	0.0	310	170
31	Ki21:N(LH52)(GEMN-0097)-B-040/MBS3520	185.0	98.2	1181.5	18.2	10.2	54.9	13.9	4.5	300	160
19	Ki21:N(LH52)(GEMN-0097)-B-027/MBS3520	184.3	97.8	1156.9	18.4	10.0	55.9	8.5	1.5	285	130
11	Ki21:N(LH52)(GEMN-0097)-B-015/MBS3520	183.4	97.4	961.9	17.8	10.3	54.9	6.6	0.0	290	160
17	Ki21:N(LH52)(GEMN-0097)-B-024/MBS3520	183.2	97.2	747.0	16.8	10.9	54.4	11.6	6.5	290	140
13	Ki21:N(LH52)(GEMN-0097)-B-016/MBS3520	182.4	96.8	900.2	16.5	11.0	56.1	5.5	0.0	300	140
5	Ki21:N(LH52)(GEMN-0097)-B-004/MBS2655	179.9	95.5	1702.5	18.1	10.0	55.0	10.4	2.5	330	170
14	Ki21:N(LH52)(GEMN-0097)-B-020/MBS2655	178.6	94.8	1017.0	17.9	10.0	54.2	15.4	0.2	300	160
41	Ki21:S(DJ7)(GEMS-0115)-B-051/SGI079	178.1	94.5	1655.9	19.2	9.3	55.1	13.3	5.6	280	160
1	Ki21:N(LH52)(GEMN-0097)-B-001/MBS2655	176.8	93.9	1182.5	17.4	10.1	55.4	6.9	4.5	290	150
16	Ki21:N(LH52)(GEMN-0097)-B-021/MBS3520	176.0	93.4	752.9	16.4	10.7	55.0	15.6	11.0	305	140
35	Ki21:S(DJ7)(GEMS-0115)-B-003/SGI079	175.3	93.1	545.3	20.3	8.6	53.5	10.8	0.3	285	180
12	Ki21:N(LH52)(GEMN-0097)-B-016/MBS2655	175.3	93.0	1267.5	16.7	10.5	56.8	5.6	0.6	320	170
10	Ki21:N(LH52)(GEMN-0097)-B-015/MBS2655	173.5	92.1	549.1	19.2	9.0	54.8	15.6	8.0	290	160
Test Entry Means		171.1			17.8	9.6	55.1	10.8	3.5	297	155
Check Means		188.4			18.7	10.1	55.6	10.9	2.7	290	146
Overall Means		172.9			17.9	9.6	55.2	10.8	3.4	296	154
Yield Range		148.0 - 204.4									
CV		13.4			10.2						
LSD (p=0.05)		25.0			2.0						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Sturgis, KY; Keota, IA; New Haven, IN; and Tekamah, NE.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514202

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
15	BR105:N1652-B-006/MBS3520	220.3	118.5	2595.5	20.5	10.7	55.7	10.4	7.1	310	180
1	BR105:N(GEMN-0174)(GEMN-0156)-020-001/MBS2655	198.5	106.7	2109.3	20.6	9.7	55.4	9.0	0.0	310	170
24	MBS3520/MBS8814	198.4	106.7	405.0	20.1	9.9	54.3	10.8	8.0	290	140
14	BR105:N1652-B-006/MBS2655	191.8	103.1	1242.8	21.8	8.8	54.4	6.3	0.0	285	150
7	BR105:N(GEMN-0179)(GEMN-0155)-B-004/MBS2655	190.2	102.3	1027.3	21.7	8.8	53.4	6.6	2.7	290	180
16	GEMN-0225/MBS3520	190.0	102.2	993.5	20.8	9.1	55.0	3.0	0.0	290	150
6	BR105:N(GEMN-0179)(GEMN-0155)-B-002/MBS3520	188.9	101.6	1390.3	20.2	9.3	54.8	5.5	1.8	280	160
25	Pioneer 31D58	188.8	101.5	3763.8	20.8	9.1	57.3	13.5	4.5	275	150
26	Pioneer 33F85	184.2	99.1	4205.6	20.4	9.0	55.8	13.4	4.5	275	145
9	BR105:N(GEMN-0179)(GEMN-0155)-B-039/MBS2655	179.9	96.7	638.8	20.6	8.7	56.5	14.4	0.6	290	155
23	MBS9508/MBS2655	179.6	96.6	316.1	20.1	8.9	56.4	10.9	4.5	290	155
27	Pioneer 34R65	178.9	96.2	2782.7	18.5	9.6	57.2	4.8	0.0	255	120
8	BR105:N(GEMN-0179)(GEMN-0155)-B-004/MBS3520	177.5	95.4	622.4	20.7	8.6	52.7	7.3	2.7	310	190
4	BR105:N(GEMN-0174)(GEMN-0156)-101-001/MBS3520	176.6	94.9	1591.5	20.0	8.8	57.2	10.5	0.0	310	175
2	BR105:N(GEMN-0174)(GEMN-0156)-020-001/MBS3520	174.2	93.7	1404.0	20.1	8.7	57.0	7.7	0.0	295	165
12	GEMN-0249/MBS2655	173.9	93.5	1101.9	20.7	8.4	56.2	7.7	2.5	305	175
5	BR105:N(GEMN-0179)(GEMN-0155)-B-002/MBS2655	171.2	92.1	519.3	20.9	8.2	55.8	5.5	1.3	265	150
17	BR105:N(PHG35)(LH39)-006-001/HC33	170.9	91.9	634.5	17.7	9.6	59.5	13.7	0.4	300	155
10	BR105:N(GEMN-0179)(GEMN-0155)-B-039/MBS3520	170.7	91.8	1565.0	19.7	8.7	56.1	8.3	0.2	290	140
11	GEMN-0221/MBS3520	170.6	91.7	3060.6	19.4	8.8	54.3	8.7	2.1	280	160
Test Entry Means		177.3			19.9	8.9	56.1	9.5	2.0	294	160
Check Means		186.0			20.0	9.3	56.2	10.7	4.3	277	142
Overall Means		178.9			19.9	9.0	56.1	9.8	2.5	291	157
Yield Range		159.5 - 220.3									
CV		16.5			9.1						
LSD (p=0.05)		29.8			1.8						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Keota, IA; New Haven, IN; Oaktown, IN; Colona, IL; and Tekamah, NE.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514203

Tester: Varied

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
1	BR105:S1643-122-001/MBS8814	225.0	113.4	267.3	24.0	9.4	52.9	2.5	11.4	305	170
61	Pioneer 31D58	220.5	111.2	3436.0	21.3	10.3	56.5	0.3	3.8	320	150
60	MBS3520/MBS8814	213.8	107.8	1210.1	19.7	10.8	54.1	3.3	1.4	305	180
49	BR52051:S172641-B-018/LH287	204.9	103.3	132.3	21.8	9.4	55.1	1.2	3.2	280	135
35	BR105:S21z(GEMS-0162)-B-112-B/MBS8814	204.1	102.9	1030.6	24.4	8.3	54.1	1.4	0.3	305	170
39	BR105:S21z(GEMS-0162)-B-129-B/MBS8814	203.4	102.6	600.9	25.1	8.1	53.2	1.3	0.0	290	160
37	BR105:S21z(GEMS-0162)-B-127-B/MBS8814	203.2	102.4	1268.0	20.8	9.7	55.5	2.6	0.4	280	140
62	Pioneer 33F85	199.2	100.4	3692.9	20.2	9.9	55.7	2.4	0.7	265	135
43	BR106:S(LH132)(LH74)-080-001-B/MBS8814	198.5	100.1	138.8	24.1	8.3	52.8	0.7	1.6	280	120
54	BR52051:S172641-B-050/LH287	198.3	100.0	501.7	20.6	9.6	54.6	3.0	3.3	260	115
48	BR52051:S172641-B-012/LH287	198.1	99.9	1088.0	20.3	9.8	55.6	3.5	3.0	290	150
56	BR52051:S172641-B-054/LH287	198.1	99.9	1195.6	20.9	9.5	55.4	1.2	0.3	290	125
19	BR105:S1641-214-001-B/MBS8814	197.6	99.6	525.7	22.2	8.9	54.4	7.8	8.6	305	150
33	BR105:S21z(GEMS-0162)-B-106-B/MBS8814	196.8	99.2	522.7	24.3	8.1	53.1	16.9	4.1	280	165
44	GEMS-0226/MBS8814	195.5	98.6	2586.8	24.1	8.1	54.2	0.8	5.8	300	180
25	BR105:S21z(GEMS-0162)-B-061-B/MBS8814	194.4	98.0	636.0	21.6	9.0	54.4	4.3	3.8	285	160
47	BR52051:S172641-B-011/LH287	192.4	97.0	1573.3	20.2	9.5	55.2	5.6	2.8	270	130
15	BR105:S1641-178-001-B/MBS8814	192.4	97.0	2488.2	20.6	9.4	55.8	2.7	0.0		
53	BR52051:S172641-B-037/LH287	192.3	97.0	1665.8	20.1	9.6	54.6	2.9	2.1	290	140
5	BR105:S1641-007-001-B/MBS8814	192.3	96.9	994.0	23.4	8.2	53.4	1.5	8.3	280	170
Test Entry Means		180.5			20.3	8.9	55.6	7.1	4.2	283	145
Check Means		198.4			19.6	10.1	56.2	1.5	1.8	290	149
Overall Means		182.0			20.3	9.0	55.7	6.7	4.0	284	145
Yield Range		144.4 - 225.0									
CV		13.1			6.9						
LSD (p=0.05)		26.0			1.5						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Milo, IA; Sacramento, KY; Atlanta, IL; and Tekamah, NE.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514204

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
16	GEMS-0250/MBS8814	200.6	116.1	1152.7	22.5	8.9	53.5	2.0	8.3	295	155
46	PASCO14:S212612-B-051/MBS8814	199.2	115.3	1454.8	25.3	7.9	53.4	2.7	16.0	300	170
18	GEMS-0251/MBS8814	197.0	114.0	557.7	22.1	8.9	53.0	4.7	1.0	280	155
52	Pioneer 31D58	194.2	112.5	2244.4	21.2	9.2	55.8	5.1	0.0	280	145
32	GEMS-0245/MBS8814	190.2	110.1	2320.7	21.9	8.7	54.2	9.9	0.5	320	200
43	PASCO14:S212612-B-042/MBS8814	188.8	109.3	1438.5	23.8	7.9	54.1	1.6	2.5	295	170
10	(GEMS-0175/GEMS-0184)-B-B-037/MBS8814	188.2	108.9	701.5	20.9	9.0	54.5	3.0	0.8	295	190
37	GEMS-0237/MBS8814	188.0	108.8	1653.0	18.7	10.0	54.9	3.4	3.3	280	155
4	(GEMS-0175/GEMS-0184)-B-B-017/MBS8814	186.9	108.2	873.2	22.1	8.5	53.7	7.1	0.3	290	140
6	(GEMS-0175/GEMS-0184)-B-B-018/MBS8814	183.3	106.1	2883.8	21.8	8.4	53.5	2.8	0.8	280	190
53	Pioneer 33F85	183.1	106.0	3266.9	19.9	9.2	55.4	6.0	0.3	250	130
34	DKXL370:S08b46-B-031/LH287	182.9	105.9	2420.4	18.0	10.2	55.7	7.3	2.1	290	150
41	PASCO14:S212612-B-033/MBS8814	180.5	104.5	1260.0	22.4	8.1	54.3	3.6	0.0	275	145
54	Pioneer 34R65	178.1	103.1	873.8	18.2	9.8	57.7	0.0	1.0	260	110
7	(GEMS-0175/GEMS-0184)-B-B-030/MBS5411	177.5	102.8	3169.8	18.6	9.6	55.2	19.7	1.8	280	150
5	(GEMS-0175/GEMS-0184)-B-B-018/MBS5411	177.4	102.7	1772.0	18.4	9.6	54.3	13.7	0.5	295	160
1	(GEMS-0175/GEMS-0184)-B-B-008/MBS8814	177.2	102.6	1765.5	20.5	8.6	52.6	6.1	1.3	290	160
17	GEMS-0251/MBS5411	176.4	102.1	651.3	19.5	9.0	53.8	8.8	5.1	290	150
36	DKXL370:S08b46-B-032/MBS8814	174.9	101.2	1326.6	20.2	8.6	54.9	2.0	0.0	255	145
39	PASCO14:S212612-B-029/MBS8814	172.5	99.9	2667.1	23.1	7.5	53.8	2.4	1.2	280	175
Test Entry Means		164.9			20.3	8.1	54.8	8.2	2.1	284	160
Check Means		172.7			19.7	8.8	55.8	2.8	0.3	272	136
Overall Means		165.8			20.2	8.2	54.9	7.6	1.9	283	157
Yield Range		133.4 - 200.6									
CV		14.1			8.7						
LSD (p=0.05)		25.0			1.9						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Sturgis, KY; Sacramento, KY; Tekamah, NE; and Henry, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514205

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
27	Pioneer 33F85	208.2	112.6	1064.3	17.9	11.6	56.9	1.9	0.0	290	150
1	GEMS-0244/MBS8814	199.2	107.7	874.8	22.7	8.8	54.1	2.2	0.0	350	180
26	Pioneer 31D58	191.8	103.7	2334.8	19.2	10.0	56.6	0.8	0.3	290	150
23	NS1:S0852-B-068/LH287	190.4	102.9	440.6	17.7	10.8	54.9	1.7	3.9	290	130
16	CML341:S(GEMS-0115)(GEMS-0162)-B-016/LH287	189.6	102.5	808.5	18.9	10.0	55.8	2.4	5.1	310	150
7	CML325:S1840-B-024/MBS8814	187.9	101.6	938.7	18.3	10.2	55.0	3.0	1.1	320	150
24	MBS3520/MBS8814	187.8	101.5	956.4	17.8	10.5	53.6	2.6	0.0	290	140
11	CML341:S(GEMS-0115)(GEMS-0162)-B-003/LH287	185.7	100.4	867.1	19.4	9.6	53.8	5.3	7.0	320	165
15	CML341:S(GEMS-0115)(GEMS-0162)-B-015/LH287	183.0	98.9	1040.8	19.5	9.4	54.9	3.7	23.3	310	160
12	CML341:S(GEMS-0115)(GEMS-0162)-B-007/LH287	183.0	98.9	1053.6	19.4	9.4	54.5	2.3	7.2	285	155
13	CML341:S(GEMS-0115)(GEMS-0162)-B-013/LH287	180.6	97.7	482.5	18.2	9.9	55.1	1.8	12.6	310	140
17	CML341:S(GEMS-0115)(GEMS-0162)-B-021/LH287	180.0	97.3	1202.5	18.0	10.0	55.0	4.0	8.0	320	175
20	CML349:N(LH52)(GEMN-0097)-B-040/MBS3520	178.2	96.3	111.4	15.7	11.4	55.6	3.7	0.0	315	180
28	Pioneer 34R65	175.9	95.1	555.0	17.3	10.2	58.1	1.9	0.0	280	125
14	CML341:S(GEMS-0115)(GEMS-0162)-B-014/LH287	174.8	94.5	220.8	18.7	9.3	55.2	0.8	0.7	270	120
18	CML341:S(GEMS-0115)(GEMS-0162)-B-024/LH287	171.4	92.7	722.7	18.0	9.5	56.1	1.8	0.0	280	130
3	CML325:S1840-B-011/MBS8814	169.4	91.6	319.2	17.6	9.6	55.1	7.0	2.2	290	150
6	CML325:S1840-B-024/MBS5411	169.3	91.5	843.6	16.5	10.3	56.4	4.9	9.8	310	150
21	CML349:N(LH52)(GEMN-0097)-B-047/MBS2655	167.3	90.4	372.2	17.3	9.7	55.0	2.7	0.0	310	150
4	CML325:S1840-B-023/MBS5411	166.8	90.1	1170.1	16.3	10.2	56.2	10.6	0.0	285	160
Test Entry Means		172.2			17.7	9.7	55.3	5.5	4.1	302	153
Check Means		185.0			17.8	10.4	56.4	2.4	0.3	290	139
Overall Means		174.5			17.7	9.9	55.5	5.0	3.4	299	151
Yield Range		136.9 - 208.2									
CV		12.5			8.7						
LSD (p=0.05)		23.4			1.7						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Sturgis, KY; Champaign, IL; Elmwood, IL; and Tekamah, NE.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1514206

Tester: Varied

		All Location Means									
Entry	Pedigree	% Yield				Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
		Yield B/A	/CHK	Variance	% Moist						
37	MBS3520/MBS8814	193.2	110.5	3419.3	17.8	10.9	52.7	14.5	9.8	280	145
39	Pioneer 33F85	186.4	106.6	2223.7	19.4	9.6	55.3	17.5	4.9	285	140
30	(53NS2/GEMN-0133)-SIB-B-060/HC33	183.2	104.8	594.1	19.9	9.2	55.1	17.9	31.0	320	120
40	Pioneer 34R65	181.9	104.1	1600.1	18.1	10.1	57.1	12.5	0.0	290	140
11	(53NS2/GEMN-0128)-SIB-B-056/MBS2655	177.0	101.2	1430.3	19.9	8.9	54.1	9.2	0.2	290	155
8	(53NS2/GEMN-0128)-SIB-B-029/MBS3520	176.2	100.7	892.8	18.0	9.8	53.7	4.0	0.0	270	130
14	(53NS2/GEMN-0128)-SIB-B-067/MBS2655	175.7	100.5	349.8	20.1	8.7	53.3	20.6	5.1	290	140
12	(53NS2/GEMN-0128)-SIB-B-056/MBS3520	172.1	98.4	614.2	19.0	9.1	55.2	2.7	0.3	290	150
7	(53NS2/GEMN-0128)-SIB-B-029/MBS2655	170.0	97.3	609.1	18.6	9.1	53.4	21.3	0.0	310	130
35	MBS9508/MBS2655	168.1	96.2	801.0	17.5	9.6	55.9	15.5	4.5	275	135
16	(53NS2/GEMN-0128)-SIB-B-070/MBS2655	164.4	94.0	212.7	18.8	8.7	55.2	7.2	2.9	265	145
6	(53NS2/GEMN-0128)-SIB-B-027/MBS3520	164.0	93.8	1144.2	18.8	8.7	54.5	26.0	2.7	310	170
3	(53NS2/GEMN-0128)-SIB-B-023/MBS2655	161.5	92.4	1849.1	19.2	8.4	52.4	21.6	4.5	290	160
38	MBS9508/MBS2655	160.3	91.7	1016.2	18.2	8.8	55.2	16.4	9.9	280	140
36	MBS3644/MBS5411	159.1	91.0	665.2	15.2	10.5	54.8	15.8	7.7	295	160
4	(53NS2/GEMN-0128)-SIB-B-023/MBS3520	158.4	90.6	1024.1	17.5	9.1	55.2	19.0	6.3	290	140
5	(53NS2/GEMN-0128)-SIB-B-027/MBS2655	154.3	88.3	2655.4	18.8	8.2	53.8	17.8	2.1	295	155
13	(53NS2/GEMN-0128)-SIB-B-060/MBS3520	152.3	87.1	605.7	18.0	8.5	54.3	17.4	4.5	260	105
24	(53NS2/GEMN-0133)-SIB-B-042/HC33	150.8	86.3	1654.6	16.9	8.9	55.7	11.1	5.1	295	145
1	(53NS2/GEMN-0128)-SIB-B-019/MBS2655	148.3	84.8	1806.9	20.0	7.4	56.0	14.5	5.2	330	160
Test Entry Means		147.9			17.6	8.4	54.9	19.7	4.8	288	140
Check Means		174.8			17.7	9.9	55.2	15.4	6.1	284	143
Overall Means		152.0			17.7	8.6	54.9	19.0	5.0	288	141
Yield Range		121.8 - 193.2									
CV		18.2			7.6						
LSD (p=0.05)		29.6			1.4						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Sturgis, KY; Keota, IA; Champaign, IL; and Henry, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1552101

Tester: MBS3520

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
70	MBS3520/MBS8814	231.5	120.1	162.0	21.1	11.0	50.9	3.4	0.0		
73	Pioneer 33F85	206.8	107.3	521.1	21.2	9.8	54.8	2.9	7.3		
74	Pioneer 34R65	191.5	99.3	285.1	19.0	10.1	57.7	0.0	1.6		
4	AR268:N(LH82)-B-004/MBS3520	189.1	98.1	227.5	20.5	9.2	55.0	3.3	7.8		
71	MBS9508/MBS2655	188.3	97.7	725.4	20.3	9.3	55.4	0.8	1.3		
7	AR268:N(LH82)-B-007/MBS3520	185.2	96.1	154.6	22.2	8.4	53.8	1.7	5.1		
15	AR268:N(LH82)-B-015/MBS3520	184.1	95.5	543.6	22.5	8.2	53.8	3.8	17.5		
41	AR268:N(LH82)-B-042/MBS3520	183.9	95.4	332.7	22.5	8.2	54.1	4.4	4.5		
27	AR268:N(LH82)-B-027/MBS3520	182.5	94.7	348.2	21.4	8.5	54.0	5.4	21.4		
35	AR268:N(LH82)-B-036/MBS3520	182.3	94.6	307.5	22.6	8.1	52.4	8.4	32.5		
66	AR268:N(LH82)-B-067/MBS3520	181.6	94.2	1136.8	22.2	8.2	53.4	0.4	0.8		
36	AR268:N(LH82)-B-037/MBS3520	181.2	94.0	519.9	22.8	7.9	53.1	1.8	19.8		
26	AR268:N(LH82)-B-026/MBS3520	178.7	92.7	1026.2	23.7	7.5	52.6	1.6	1.0		
65	AR268:N(LH82)-B-066/MBS3520	177.1	91.9	651.6	21.8	8.1	53.7	5.8	23.8		
39	AR268:N(LH82)-B-040/MBS3520	175.1	90.8	356.5	22.2	7.9	53.1	8.7	19.3		
67	AR268:N(LH82)-B-068/MBS3520	174.3	90.4	636.5	22.2	7.9	52.9	2.1	12.6		
40	AR268:N(LH82)-B-041/MBS3520	172.4	89.4	1842.7	21.1	8.2	53.7	3.5	14.5		
37	AR268:N(LH82)-B-038/MBS3520	171.8	89.1	635.7	22.5	7.6	53.2	1.2	20.7		
62	AR268:N(LH82)-B-063/MBS3520	171.0	88.7	698.0	22.2	7.7	54.2	0.8	1.1		
64	AR268:N(LH82)-B-065/MBS3520	169.7	88.0	214.6	22.0	7.7	54.3	2.9	22.8		
Test Entry Means		160.0			21.8	7.3	53.6	3.0	13.9		
Check Means		192.8			20.6	9.4	55.0	2.3	2.0		
Overall Means		162.2			21.8	7.5	53.7	2.9	13.1		
Yield Range		131.1 - 231.5									
CV		10.6			4.1						
LSD (p=0.05)		24.9			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1553101

Tester: MBS8814

		All Location Means									
		% Yield		% Yield/		Plant		Ear			
Entry	Pedigree	Yield B/A	/CHK	Variance	Moist	Moist	TWT	% S.L.	% R.L.	Height	Height
59	Pioneer 33F85	239.2	107.6	406.1	22.8	10.5	54.0	1.4	0.0		
58	Pioneer 31D58	233.8	105.2	937.4	24.8	9.4	53.9	1.4	0.7		
24	AR17056:S1912-B-026/MBS8814	225.9	101.6	190.1	26.8	8.4	51.2	0.0	2.2		
23	AR17056:S1912-B-025/MBS8814	225.2	101.3	0.7	28.9	7.8	51.1	0.0	1.5		
7	AR17056:S1912-B-008/MBS8814	223.8	100.7	2.6	26.6	8.4	50.9	0.7	0.0		
20	AR17056:S1912-B-022/MBS8814	223.7	100.6	411.8	25.4	8.8	51.0	0.8	0.8		
56	MBS3520/MBS8814	222.9	100.3	2.4	22.6	9.9	50.6	1.5	0.0		
8	AR17056:S1912-B-009/MBS8814	220.9	99.4	0.0	26.7	8.3	50.1	4.1	1.5		
41	AR17056:S1912-B-046/MBS8814	219.4	98.7	17.4	22.5	9.7	50.7	0.0	1.5		
51	AR17056:S1912-B-056/MBS8814	218.9	98.5	4.5	26.6	8.2	50.6	0.0	0.7		
53	AR17056:S1912-B-058/MBS8814	217.7	97.9	480.5	25.8	8.5	50.4	0.0	0.0		
13	AR17056:S1912-B-014/MBS8814	217.3	97.8	180.5	25.3	8.6	51.7	1.5	1.5		
12	AR17056:S1912-B-013/MBS8814	217.0	97.6	36.1	26.6	8.2	50.2	2.8	1.4		
14	AR17056:S1912-B-015/MBS8814	216.4	97.3	6.8	23.2	9.3	51.5	3.5	0.0		
3	AR17056:S1912-B-004/MBS8814	215.0	96.7	0.2	24.5	8.8	50.4	3.5	4.3		
30	AR17056:S1912-B-032/MBS8814	214.9	96.7	351.1	25.2	8.5	50.8	3.0	0.0		
6	AR17056:S1912-B-007/MBS8814	214.5	96.5	285.6	23.1	9.3	53.0	2.6	0.8		
60	Pioneer 34R65	214.1	96.3	2.2	19.9	10.8	56.5	0.7	0.0		
21	AR17056:S1912-B-023/MBS8814	213.8	96.2	2.2	23.4	9.2	52.3	2.9	11.1		
50	AR17056:S1912-B-055/MBS8814	213.2	95.9	0.0	26.2	8.1	50.7	0.8	0.0		
Test Entry Means		205.3			25.1	8.2	51.0	1.9	1.6		
Check Means		222.3			22.4	9.9	53.7	1.0	0.5		
Overall Means		206.8			24.9	8.3	51.2	1.8	1.5		
Yield Range		179.2 - 239.2									
CV		6.2			3.5						
LSD (p=0.05)		25.8			1.7						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: 2 reps Keystone IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1554101

Tester: YSS100

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
73	Pioneer 31D58	224.2	110.8	390.0	24.2	9.3	54.5	0.0	5.5		
74	Pioneer 33F85	215.4	106.5	590.2	21.7	9.9	54.3	0.4	21.7		
71	MBS3520/MBS8814	199.4	98.6	2187.5	21.7	9.2	50.5	1.7	0.0		
70	GEMN-0204/GEMS-0227	198.1	97.9	214.4	21.8	9.1	54.4	0.4	11.1		
75	Pioneer 34R65	194.5	96.2	390.1	20.2	9.6	56.5	0.0	3.9		
25	FS8A(S):S0926i03-B-025/YSS100	178.9	88.5	104.4	25.5	7.0	52.2	0.8	1.3		
72	MBS9508/MBS2655	177.9	87.9	3724.7	20.3	8.8	54.9	1.7	1.0		
3	FS8A(S):S0926i03-B-003/YSS100	176.1	87.1	198.6	26.3	6.7	52.8	0.4	0.7		
10	FS8A(S):S0926i03-B-010/YSS100	176.0	87.0	213.0	26.9	6.5	53.2	0.0	0.0		
2	FS8A(S):S0926i03-B-002/YSS100	175.8	86.9	498.4	24.2	7.3	53.5	0.0	0.0		
58	FS8A(S):S0926i03-B-059/YSS100	174.9	86.5	7.9	25.5	6.9	53.3	1.0	0.0		
32	FS8A(S):S0926i03-B-032/YSS100	174.3	86.2	10.6	26.4	6.6	52.6	2.1	0.0		
19	FS8A(S):S0926i03-B-019/YSS100	172.9	85.5	247.8	23.8	7.3	54.8	0.4	0.0		
9	FS8A(S):S0926i03-B-009/YSS100	171.7	84.9	238.0	25.2	6.8	53.4	0.4	17.6		
16	FS8A(S):S0926i03-B-016/YSS100	171.7	84.9	287.7	25.7	6.7	53.0	0.0	0.0		
1	FS8A(S):S0926i03-B-001/YSS100	170.8	84.4	135.0	25.4	6.7	53.8	0.0	3.3		
36	FS8A(S):S0926i03-B-036/YSS100	169.6	83.9	135.6	25.4	6.7	54.3	0.0	18.9		
43	FS8A(S):S0926i03-B-044/YSS100	169.1	83.6	671.8	26.1	6.5	52.2	0.7	7.7		
13	FS8A(S):S0926i03-B-013/YSS100	168.7	83.4	619.0	25.1	6.7	53.2	2.0	0.5		
50	FS8A(S):S0926i03-B-051/YSS100	168.6	83.3	139.6	24.8	6.8	53.8	1.5	2.4		
Test Entry Means		148.3			25.0	5.9	53.4	0.6	2.3		
Check Means		202.3			21.6	9.4	54.1	0.8	6.4		
Overall Means		151.9			24.8	6.1	53.4	0.6	2.5		
Yield Range		86.8 - 224.2									
CV		13.1			3.2						
LSD (p=0.05)		29.8			1.2						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564101

Tester: MBS3520

		All Location Means									
		% Yield		Yield/				Plant		Ear	
Entry	Pedigree	Yield B/A	/CHK	Variance	% Moist	Moist	TWT	% S.L.	% R.L.	Height	Height
71	Pioneer 33F85	220.1	106.8	21.8	21.4	10.3	54.9	0.4	3.8		
68	MBS3520/MBS8814	217.4	105.4	219.9	21.1	10.3	51.2	0.7	11.5		
72	Pioneer 34R65	206.0	100.0	87.1	19.8	10.4	57.3	0.0	1.3		
16	((LH82/KO679Y)/GEMN-0205)-B-B-017/MBS3520	204.7	99.3	410.8	23.8	8.6	53.9	3.0	6.8		
70	Pioneer 31D58	202.4	98.2	776.4	23.3	8.7	54.6	2.3	0.0		
13	((LH82/KO679Y)/GEMN-0205)-B-B-014/MBS3520	202.2	98.1	147.3	21.7	9.3	52.6	5.4	0.0		
25	((LH82/KO679Y)/GEMN-0205)-B-B-026/MBS3520	201.5	97.7	66.0	22.4	9.0	52.9	0.4	11.5		
21	((LH82/KO679Y)/GEMN-0205)-B-B-022/MBS3520	201.4	97.7	417.9	22.3	9.0	51.4	3.4	1.5		
38	((LH82/KO679Y)/GEMN-0205)-B-B-041/MBS3520	191.0	92.7	1261.8	22.5	8.5	53.7	4.9	9.5		
3	((LH82/KO679Y)/GEMN-0205)-B-B-003/MBS3520	188.8	91.6	112.8	23.1	8.2	53.7	2.8	3.8		
60	((LH82/KO679Y)/GEMN-0205)-B-B-063/MBS3520	188.7	91.6	284.0	21.4	8.8	54.1	2.9	0.4		
57	((LH82/KO679Y)/GEMN-0205)-B-B-060/MBS3520	188.7	91.6	366.8	22.2	8.5	54.4	3.8	0.6		
46	((LH82/KO679Y)/GEMN-0205)-B-B-049/MBS3520	188.7	91.5	639.5	23.4	8.1	52.1	2.5	0.0		
65	((LH82/KO679Y)/GEMN-0205)-B-B-068/MBS3520	188.5	91.5	5.5	22.6	8.3	54.4	1.1	0.0		
69	MBS9508/MBS2655	184.7	89.6	60.9	20.2	9.1	55.1	0.4	0.0		
34	((LH82/KO679Y)/GEMN-0205)-B-B-035/MBS3520	183.2	88.9	713.1	25.1	7.3	50.4	3.9	7.1		
61	((LH82/KO679Y)/GEMN-0205)-B-B-064/MBS3520	183.1	88.8	503.3	20.3	9.0	53.4	13.9	25.3		
8	((LH82/KO679Y)/GEMN-0205)-B-B-009/MBS3520	183.1	88.8	942.9	22.5	8.1	52.7	1.9	3.8		
29	((LH82/KO679Y)/GEMN-0205)-B-B-030/MBS3520	182.6	88.6	440.9	23.3	7.8	52.3	0.7	3.0		
48	((LH82/KO679Y)/GEMN-0205)-B-B-051/MBS3520	182.6	88.6	395.8	23.2	7.9	53.1	6.1	1.7		
Test Entry Means		172.5			22.4	7.7	53.2	3.8	3.7		
Check Means		206.1			21.2	9.7	54.6	0.8	3.3		
Overall Means		174.9			22.3	7.8	53.3	3.6	3.7		
Yield Range		143.5 - 220.1									
CV		9.2			3.2						
LSD (p=0.05)		23.1			1.0						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564102

Tester: MBS3520

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/ Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
68	Pioneer 31D58	204.4	111.6	2179.1	22.2	9.2	54.5	0.9	0.0		
69	Pioneer 33F85	180.8	98.7	2926.3	20.3	8.9	55.2	1.9	0.0		
43	(GEMN-0192/GEMN-0152)-B-B-047/MBS3520	180.6	98.6	1652.6	23.1	7.8	51.7	3.9	2.6		
70	Pioneer 34R65	178.0	97.2	995.1	18.3	9.7	57.9	0.4	0.0		
66	MBS3520/MBS8814	176.4	96.3	7837.5	19.9	8.9	51.0	7.1	0.0		
67	MBS9508/MBS2655	176.2	96.2	223.2	19.3	9.1	55.4	2.0	0.0		
6	(GEMN-0192/GEMN-0152)-B-B-006/MBS3520	174.9	95.5	471.1	20.5	8.6	52.7	3.6	0.0		
14	(GEMN-0192/GEMN-0152)-B-B-014/MBS3520	174.1	95.1	797.1	19.2	9.1	53.8	1.8	1.6		
42	(GEMN-0192/GEMN-0152)-B-B-046/MBS3520	172.9	94.4	901.6	19.9	8.7	53.4	3.4	7.0		
11	(GEMN-0192/GEMN-0152)-B-B-011/MBS3520	170.7	93.2	717.3	19.6	8.7	52.3	2.5	0.5		
53	(GEMN-0192/GEMN-0152)-B-B-057/MBS3520	170.0	92.8	949.8	20.9	8.1	53.5	2.7	25.3		
9	(GEMN-0192/GEMN-0152)-B-B-009/MBS3520	168.7	92.1	166.8	19.9	8.5	52.6	2.0	2.4		
30	(GEMN-0192/GEMN-0152)-B-B-034/MBS3520	168.2	91.9	313.7	19.1	8.8	53.8	5.2	6.8		
4	(GEMN-0192/GEMN-0152)-B-B-004/MBS3520	165.7	90.5	1305.0	19.8	8.4	52.0	3.1	1.6		
40	(GEMN-0192/GEMN-0152)-B-B-044/MBS3520	164.6	89.9	1581.2	21.4	7.7	52.2	5.6	0.0		
2	(GEMN-0192/GEMN-0152)-B-B-002/MBS3520	164.0	89.5	800.7	21.8	7.5	53.9	5.2	0.0		
36	(GEMN-0192/GEMN-0152)-B-B-040/MBS3520	162.7	88.9	883.2	18.0	9.1	55.5	3.8	0.4		
15	(GEMN-0192/GEMN-0152)-B-B-015/MBS3520	161.9	88.4	677.1	22.2	7.3	51.4	1.1	0.4		
47	(GEMN-0192/GEMN-0152)-B-B-051/MBS3520	159.9	87.3	3838.7	21.6	7.4	52.5	1.0	1.7		
54	(GEMN-0192/GEMN-0152)-B-B-058/MBS3520	159.8	87.3	1119.8	20.8	7.7	54.1	3.0	4.8		
Test Entry Means		145.5			20.2	7.2	52.9	2.8	4.0		
Check Means		183.1			20.0	9.2	54.8	2.4	0.0		
Overall Means		148.2			20.1	7.4	53.1	2.8	3.8		
Yield Range		98.8 - 204.4									
CV		17.2			4.5						
LSD (p=0.05)		37.0			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564103

Tester: MBS3520

		All Location Means									
Entry	Pedigree	Yield B/A	% Yield /CHK	Variance	% Moist	Yield/Moist	TWT	% S.L.	% R.L.	Plant Height	Ear Height
74	Pioneer 33F85	223.5	109.4	291.1	21.3	10.5	54.7	0.4	0.0		
71	MBS3520/MBS8814	216.5	106.0	878.8	19.9	10.9	51.2	3.7	1.5		
73	Pioneer 31D58	211.9	103.7	463.0	22.1	9.6	55.1	1.4	0.0		
68	(GEMN-0193/GEMN-0179)-B-B-068/MBS3520	197.2	96.5	435.8	24.1	8.2	52.7	1.6	0.0		
75	Pioneer 34R65	194.4	95.2	292.0	19.1	10.2	57.2	0.4	0.0		
57	(GEMN-0193/GEMN-0179)-B-B-057/MBS3520	187.9	92.0	343.5	22.2	8.5	53.2	1.4	0.4		
46	(GEMN-0193/GEMN-0179)-B-B-046/MBS3520	183.8	90.0	69.4	22.5	8.2	54.3	1.6	3.0		
30	(GEMN-0193/GEMN-0179)-B-B-030/MBS3520	183.4	89.8	1045.8	25.3	7.2	53.4	1.5	1.6		
2	(GEMN-0193/GEMN-0179)-B-B-002/MBS3520	182.0	89.1	164.9	23.1	7.9	54.4	4.2	0.0		
65	(GEMN-0193/GEMN-0179)-B-B-065/MBS3520	181.4	88.8	48.0	23.1	7.8	53.6	3.7	1.9		
60	(GEMN-0193/GEMN-0179)-B-B-060/MBS3520	180.7	88.5	88.6	24.3	7.4	53.1	1.8	0.4		
70	(GEMN-0193/GEMN-0179)-B-B-070/MBS3520	179.2	87.7	283.3	23.8	7.5	53.0	3.6	0.3		
55	(GEMN-0193/GEMN-0179)-B-B-055/MBS3520	178.4	87.3	612.8	23.3	7.6	53.0	2.7	6.4		
32	(GEMN-0193/GEMN-0179)-B-B-032/MBS3520	178.2	87.2	75.8	23.4	7.6	54.1	4.5	0.0		
33	(GEMN-0193/GEMN-0179)-B-B-033/MBS3520	177.5	86.9	143.6	22.4	7.9	54.3	3.2	0.7		
8	(GEMN-0193/GEMN-0179)-B-B-008/MBS3520	177.4	86.8	1408.9	20.7	8.6	54.5	1.9	0.5		
11	(GEMN-0193/GEMN-0179)-B-B-011/MBS3520	175.6	85.9	596.3	23.9	7.3	52.8	0.8	0.0		
72	MBS9508/MBS2655	175.2	85.8	103.7	19.1	9.2	56.1	0.8	0.4		
54	(GEMN-0193/GEMN-0179)-B-B-054/MBS3520	174.7	85.5	589.6	23.4	7.5	50.8	2.3	0.0		
3	(GEMN-0193/GEMN-0179)-B-B-003/MBS3520	174.1	85.2	341.4	24.6	7.1	53.3	7.3	0.4		
Test Entry Means		159.4			23.0	6.9	53.9	3.3	1.0		
Check Means		204.3			20.3	10.1	54.8	1.3	0.4		
Overall Means		162.4			22.8	7.1	54.0	3.1	1.0		
Yield Range		127.7 - 223.5									
CV		11.2			4.0						
LSD (p=0.05)		25.8			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564104

Tester: MBS3520

		All Location Means									
		% Yield			% Yield/			Plant			Ear
Entry	Pedigree	Yield B/A	/CHK	Variance	Moist	Moist	TWT	% S.L.	% R.L.	Height	Height
74	Pioneer 33F85	214.7	110.1	162.1	20.6	10.4	54.9	3.6	0.0		
71	MBS3520/MBS8814	208.2	106.8	317.8	20.3	10.2	51.2	1.9	0.0		
73	Pioneer 31D58	191.9	98.5	789.1	22.6	8.5	55.2	3.9	0.0		
72	MBS9508/MBS2655	188.3	96.6	261.4	19.3	9.7	55.4	2.1	0.0		
19	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-019/MBS3520	186.4	95.6	896.3	20.2	9.2	53.0	6.7	0.0		
5	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-005/MBS3520	185.4	95.1	194.0	20.3	9.2	54.5	3.2	2.6		
3	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-003/MBS3520	184.5	94.7	593.1	21.8	8.5	53.4	5.5	3.6		
11	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-011/MBS3520	177.1	90.9	330.0	22.3	8.0	53.1	1.1	4.0		
44	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-045/MBS3520	176.5	90.5	426.2	20.7	8.5	54.0	6.2	1.7		
32	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-033/MBS3520	175.5	90.0	359.6	22.6	7.8	53.2	1.8	1.1		
23	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-023/MBS3520	175.3	89.9	178.4	22.9	7.6	51.8	11.5	0.0		
61	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-062/MBS3520	174.7	89.6	1572.7	19.4	9.0	54.2	1.1	6.0		
24	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-024/MBS3520	174.4	89.5	1005.9	21.4	8.1	53.9	1.5	8.7		
29	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-029/MBS3520	173.8	89.1	141.6	21.9	7.9	52.1	0.4	0.8		
75	Pioneer 34R65	171.6	88.0	2451.8	18.4	9.3	57.4	0.4	0.4		
40	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-041/MBS3520	171.4	87.9	1049.9	25.2	6.8	52.9	0.0	0.0		
52	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-053/MBS3520	170.8	87.6	671.6	21.2	8.1	54.5	2.2	0.0		
31	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-031/MBS3520	170.7	87.6	276.4	22.1	7.7	52.8	2.3	0.4		
25	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-025/MBS3520	169.6	87.0	742.7	20.2	8.4	54.4	2.8	0.0		
67	(LH61/(26e/GEMN-0124))-SIB-SIB-SIB-068/MBS3520	169.3	86.8	33.3	23.6	7.2	53.1	0.0	0.0		
Test Entry Means		154.3			21.3	7.3	53.5	2.6	1.5		
Check Means		194.9			20.2	9.6	54.8	2.4	0.1		
Overall Means		157.1			21.2	7.4	53.6	2.6	1.4		
Yield Range		102.1 - 214.7									
CV		13.7			4.3						
LSD (p=0.05)		31.2			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; and Milo, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564201

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
56	MBS3520/MBS8814	225.1	117.2	663.1	21.4	10.5	53.5	1.9	2.0	325	150
58	Pioneer 33F85	202.8	105.6	2876.1	20.9	9.7	57.2	3.6	0.6	310	155
36	MDI022:N(PHG35)(GEMN-0097)-072-001/HC33	202.5	105.4	460.7	20.4	9.9	57.2	3.3	5.8	330	155
14	GEMS-0234/MBS8814	200.0	104.1	522.0	22.4	8.9	54.7	1.4	0.6	295	130
43	GEMS-0240/MBS5411	197.7	102.9	1086.8	20.2	9.8	54.9	15.1	1.4	310	165
10	GEMN-0247/MBS3520	195.5	101.8	1268.4	21.5	9.1	53.5	5.7	8.7	305	165
42	UR11002:S1409-087-001/LH287	195.0	101.5	2277.0	20.1	9.7	57.0	9.1	0.6	275	100
57	MBS9508/MBS2655	192.8	100.4	620.1	19.3	10.0	57.6	1.3	1.6	325	175
20	CHIS740:S(PHW17)(87916W)-126-001/WT993	191.6	99.8	1317.7	23.9	8.0	55.1	19.4	10.8	290	275
40	UR11002:S1409-001-001/LH287	190.3	99.1	982.5	20.1	9.5	55.8	15.5	5.9	320	140
12	GEMS-0248/MBS8814	190.2	99.0	1698.6	22.5	8.4	54.9	8.0	0.3	290	145
3	(GEMN-0140/GEMN-0097)-B-B-034/MBS3520	190.1	99.0	1198.7	20.5	9.3	54.5	4.6	1.3	290	150
4	(GEMN-0140/GEMN-0097)-B-B-054/HC33	189.3	98.5	1495.7	19.0	10.0	56.5	5.6	0.3	310	165
34	MDI022:N(PHG35)(GEMN-0097)-044-001/HC33	188.5	98.1	208.4	19.4	9.7	57.2	21.7	3.5	330	170
41	UR11002:S1409-068-001/LH287	188.3	98.0	329.7	20.5	9.2	57.1	2.2	1.5	290	120
37	MDI022:N(PHG35)(GEMN-0097)-136-001/HC33	183.4	95.5	442.3	20.5	8.9	56.9	5.1	13.5	330	140
35	MDI022:N(PHG35)(GEMN-0097)-057-001/HC33	183.2	95.4	1520.7	21.5	8.5	55.5	8.4	5.2	315	160
2	(GEMN-0140/GEMN-0097)-B-B-029/MBS3520	182.9	95.2	2671.0	18.9	9.7	56.0	19.2	0.0	310	160
55	MBS3644/MBS5411	182.2	94.9	914.2	16.7	10.9	56.8	6.1	8.9	300	165
54	MBS9508/MBS2655	180.9	94.2	503.9	20.5	8.8	56.8	13.0	0.4	310	150
Test Entry Means		169.7			20.1	8.4	56.4	13.4	5.6	305	151
Check Means		192.1			19.5	9.8	56.9	4.5	2.2	310	153
Overall Means		172.0			20.1	8.6	56.4	12.5	5.2	305	151
Yield Range		139.8 - 225.1									
CV		16.0			7.5						
LSD (p=0.05)		33.6			1.8						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Monmouth, IL; Carroll, IA; and Henry, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564202

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
41	MBS3520/MBS8814	208.1	104.6	1978.5	21.3	9.8	52.5	4.1	0.7	330	160
27	ANTIG01:N16(DE4)-(2n)-066/MBS3520	202.0	101.5	1150.7	23.6	8.6	52.8	4.0	11.1	305	140
44	Pioneer 33F85	201.4	101.3	1822.0	21.8	9.2	54.4	2.0	18.6	310	150
45	Pioneer 34R65	198.3	99.7	235.5	19.3	10.3	57.1	0.0	0.0	310	140
1	(53SS4/GEMS-0026)-SIB-B-003/LH287	198.2	99.7	437.7	21.1	9.4	54.4	3.5	25.4	290	150
43	Pioneer 31D58	197.4	99.3	1359.8	23.3	8.5	54.4	3.3	0.9	310	165
33	ANTIG01:N16(DE4)-(2n)-173/MBS3520	197.3	99.2	443.6	21.7	9.1	52.1	10.0	12.1	300	150
17	(53SS4/GEMS-0031)-SIB-B-034/LH287	194.2	97.6	925.9	21.1	9.2	52.9	3.1	8.5	300	125
18	(53SS4/GEMS-0031)-SIB-B-039/LH287	194.2	97.6	800.2	20.9	9.3	54.2	1.8	3.2	280	100
28	ANTIG01:N16(DE4)-(2n)-098/HC33	193.1	97.1	904.4	19.9	9.7	55.8	7.5	17.5	350	165
26	ANTIG01:N16(DE4)-(2n)-066/HC33	192.8	96.9	1592.0	22.2	8.7	54.3	5.7	1.6	300	150
32	ANTIG01:N16(DE4)-(2n)-173/HC33	190.5	95.8	685.9	20.6	9.3	53.7	6.3	8.4	300	165
16	(53SS4/GEMS-0031)-SIB-B-020/LH287	190.2	95.6	999.2	21.5	8.9	53.3	0.4	40.0	310	150
31	ANTIG01:N16(DE4)-(2n)-162/MBS3520	189.8	95.4	2672.2	21.1	9.0	53.5	2.9	1.5	340	160
42	MBS9508/MBS2655	189.3	95.2	473.7	19.8	9.5	56.0	2.2	1.6	310	150
22	(53SS4/GEMS-0031)-SIB-B-062/LH287	188.8	94.9	927.4	21.0	9.0	54.6	0.6	5.8	295	120
10	(53SS4/GEMS-0026)-SIB-B-070/LH287	188.3	94.6	1189.5	21.7	8.7	54.1	3.5	5.9	290	130
14	(53SS4/GEMS-0031)-SIB-B-018/LH287	187.6	94.3	709.2	21.0	8.9	54.5	4.3	3.6	300	145
29	ANTIG01:N16(DE4)-(2n)-098/MBS3520	185.8	93.4	968.2	22.2	8.4	54.2	3.9	18.5	345	200
3	(53SS4/GEMS-0026)-SIB-B-021/LH287	185.3	93.2	3842.8	21.3	8.7	54.2	2.3	13.7	180	130
Test Entry Means		181.4			21.0	8.6	54.3	5.7	9.9	297	145
Check Means		198.9			21.1	9.4	54.9	2.3	4.4	314	153
Overall Means		183.3			21.0	8.7	54.3	5.3	9.3	299	146
Yield Range		152.5 - 208.1									
CV		13.2			8.2						
LSD (p=0.05)		25.1			1.8						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; Frankfort, IN; Champaign, IL; Elmwood, IL; Carroll, IA; and Henry, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564203

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
63	Pioneer 31D58	207.2	109.4	1230.2	20.7	10.0	57.8	1.7	1.2	270	145
37	(GEMS-0176/S49x)-B-B-024/LH287	206.2	108.9	447.9	20.0	10.3	55.2	5.3	3.5	305	155
61	MBS3520/MBS8814	205.4	108.5	785.9	19.9	10.3	53.4	1.0	0.0	300	170
46	BS20(S)C2:S(CUBA117:S1520-156-1-B-B)-B-060/LH287	200.8	106.1	1174.6	22.4	9.0	53.8	1.1	5.2	290	155
19	(GEMS-0147/GEMS-0180)-B-039-001/MBS8814	200.1	105.7	456.0	23.4	8.6	54.5	1.1	0.0	300	170
14	(GEMS-0147/GEMS-0115)-B-002-001/LH287	197.1	104.1	1066.3	20.8	9.5	54.0	3.2	1.1	280	160
64	Pioneer 33F85	196.9	104.0	527.4	19.7	10.0	57.1	4.1	0.0	280	125
22	(GEMS-0175/GEMS-0115)-B-B-026/LH287	196.6	103.8	1897.7	19.8	9.9	54.5	4.3	9.2	310	175
23	(GEMS-0175/GEMS-0115)-B-B-026/MBS8814	193.7	102.3	1687.6	21.0	9.2	53.6	3.2	0.3	305	165
17	(GEMS-0147/GEMS-0180)-B-033-001/MBS8814	193.6	102.3	571.8	21.9	8.8	53.8	1.4	1.1	300	180
54	CUBA164:T26bS41-069-001-B/LH287	193.3	102.1	386.0	20.5	9.4	55.2	2.3	2.0	300	150
2	GEMS-0219/MBS8814	193.0	102.0	485.2	19.9	9.7	56.9	2.4	0.3	290	155
27	(GEMS-0176/S49w)-B-B-028/LH287	192.9	101.9	832.8	19.3	10.0	56.5	0.8	0.0	275	135
13	(GEMS-0115/S49w)-B-B-070/LH287	192.0	101.4	524.2	20.4	9.4	55.1	4.5	1.6	290	125
21	(GEMS-0175/GEMS-0115)-B-B-024/LH287	191.4	101.1	873.8	19.8	9.7	55.3	1.2	6.9	275	115
12	(GEMS-0115/S49w)-B-B-062/LH287	191.4	101.1	478.1	19.2	10.0	54.9	3.9	1.2	290	150
6	(GEMS-0115/S49w)-B-B-036/LH287	190.4	100.5	853.7	19.9	9.5	55.4	4.0	3.6	285	135
53	CUBA164:S(GEMS-0149)(GEMS-0162)-B-044/LH287	189.0	99.8	1733.8	20.3	9.3	55.4	1.5	1.7	270	135
59	UR05017:S0414-B-049/LH287	188.3	99.5	274.9	21.4	8.8	54.9	4.2	5.9	270	115
41	(GEMS-0176/S49x)-B-B-039/LH287	186.9	98.7	748.4	20.7	9.0	56.0	8.0	6.3	290	150
Test Entry Means		180.5			20.2	8.9	55.6	4.5	2.3	286	144
Check Means		189.3			19.3	9.8	57.0	1.8	0.3	285	143
Overall Means		181.4			20.1	9.0	55.8	4.3	2.1	286	144
Yield Range		151.1 - 207.2									
CV		10.9			6.2						
LSD (p=0.05)		21.1			1.3						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; MO Valley, IA; and Champaign, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564204

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
34	DKXL212:S0943b-(2n)-004B/MBS8814	221.4	111.6	918.0	22.3	9.9	52.6	5.1	2.4	310	140
52	Pioneer 33F85	217.8	109.7	196.8	19.9	11.0	55.6	3.5	14.3	280	140
1	((KO679Y/GEMS-0115)/GEMS-0181)-B-015/MBS8814	212.8	107.2	682.0	21.2	10.0	53.3	0.9	9.5	305	180
19	AR16035:S0209-(2n)-026B/MBS8814	212.8	107.2	1082.4	21.6	9.8	52.0	2.9	4.3	290	160
51	Pioneer 31D58	212.3	107.0	574.1	21.3	10.0	54.8	3.2	0.0	280	130
31	AR16035:S0209-(2n)-141/MBS8814	211.7	106.7	564.4	22.1	9.6	52.7	1.9	1.3	280	140
32	AR17056:S1217-B-025/MBS8814	208.6	105.1	576.6	22.4	9.3	51.9	3.3	2.9	280	155
9	((KO679Y/GEMS-0115)/GEMS-0181)-B-036/MBS8814	206.2	103.9	233.4	23.3	8.8	52.6	1.8	2.6	280	150
3	((KO679Y/GEMS-0115)/GEMS-0181)-B-023/MBS8814	205.2	103.4	601.6	21.4	9.6	52.3	0.5	2.7	310	190
37	DKXL212:S0943b-(2n)-105/MBS8814	204.5	103.0	292.0	22.0	9.3	52.5	1.8	4.1	285	150
14	(KO679Y/GEMS-0115)-B-B-059/MBS8814	203.9	102.7	664.6	24.2	8.4	52.1	3.0	0.3	290	170
7	((KO679Y/GEMS-0115)/GEMS-0181)-B-026/MBS8814	203.3	102.4	713.1	24.7	8.2	51.3	4.0	3.2	280	165
21	AR16035:S0209-(2n)-044/MBS8814	203.1	102.3	128.8	20.1	10.1	53.3	2.1	0.0	270	145
18	AR16035:S0209-(2n)-026B/LH287	202.5	102.0	707.6	19.8	10.2	53.5	5.7	0.0	275	155
49	MBS3520/MBS8814	201.3	101.5	508.4	19.5	10.3	52.0	2.7	0.6	280	145
45	((KO679Y/GEMS-0115)/GEMS-0162)-036-001/LH287	199.7	100.6	369.7	21.4	9.3	53.0	4.1	9.7	300	160
5	((KO679Y/GEMS-0115)/GEMS-0181)-B-025/MBS8814	199.3	100.4	107.7	21.4	9.3	51.7	7.2	2.3	280	150
12	(GEMN-0117/DKXL212:N11a-139-001-001-B-B-B-B-B)-B-B-039/MBS3520	198.5	100.0	882.6	18.1	11.0	53.8	3.7	2.5	320	175
27	AR16035:S0209-(2n)-128/MBS8814	197.3	99.4	588.7	21.8	9.1	53.3	2.5	2.6	265	125
20	AR16035:S0209-(2n)-043/MBS8814	196.3	98.9	333.3	20.0	9.8	54.3	4.1	1.6	260	130
Test Entry Means		192.2			20.4	9.4	53.6	5.0	4.6	280	145
Check Means		198.4			19.7	10.1	54.9	2.3	2.9	268	132
Overall Means		192.9			20.4	9.5	53.7	4.7	4.4	279	144
Yield Range		165.5 - 221.4									
CV		9.5									
LSD (p=0.05)		23.7									

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; MO Valley, IA; and Champaign, IL.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564205

Tester: Varied

		All Location Means									
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height</i>	<i>Ear Height</i>
32	Pioneer 31D58	215.3	109.1	1552.9	22.5	9.6	54.9	10.4	0.2	305.0	165.0
33	Pioneer 33F85	205.5	104.1	523.8	20.3	10.1	55.6	2.8	13.7	280.0	155.0
21	GEMS-0227/MBS8814	203.1	102.9	531.9	21.1	9.6	53.5	1.4	0.0	300.0	130.0
30	UR13085:S(N28)(CUBA117:S1520-156-1-B-B)-B-B-B-B-007-001-001-B/MBS8814	200.9	101.7	449.1	22.8	8.8	51.8	2.8	0.9	335.0	160.0
5	(GEMN-0179/GEMN-0205)-B-B-036/HC33	197.8	100.2	401.1	20.0	9.9	55.1	2.7	2.9	325.0	170.0
11	GEMN-0097/MBS3520	197.1	99.8	723.6	18.3	10.8	54.6	2.6	0.2	280.0	135.0
20	GEMS-0228/MBS9508	191.9	97.2	578.9	18.6	10.3	56.1	4.0	14.2	310.0	150.0
10	GEMN-0097/MBS2655	191.9	97.2	141.6	18.6	10.3	54.4	2.4	0.9	325.0	175.0
1	(GEMN-0179/GEMN-0205)-B-B-002/HC33	189.9	96.2	897.2	20.1	9.5	55.1	2.2	1.5	300.0	150.0
29	GEMS-0241/MBS8814	189.8	96.1	109.6	21.7	8.7	53.1	4.9	2.0	280.0	165.0
28	GEMS-0240/MBS8814	189.0	95.7	694.8	24.9	7.6	52.6	7.1	17.7	320.0	190.0
13	GEMN-0238/MBS3520	188.0	95.2	877.9	21.0	8.9	53.5	1.2	2.9	315.0	180.0
31	MBS3520/MBS8814	187.6	95.0	297.3	21.0	8.9	52.6	2.3	0.0	290.0	125.0
19	GEMS-0227/MBS5411	186.7	94.5	261.0	19.3	9.7	54.7	0.8	9.5	310.0	150.0
27	SCRO1:N1318-180-001/HC33	186.7	94.5	582.6	23.1	8.1	54.1	1.6	0.2	340.0	180.0
6	(GEMN-0179/GEMN-0205)-B-B-042/HC33	183.0	92.7	395.5	20.1	9.1	54.4	1.6	9.6	280.0	150.0
22	GEMS-0147/LH181	182.2	92.3	739.5	18.9	9.6	55.7	2.5	0.6	305.0	155.0
18	NEI9004:N0846-B-201/MBS2655	181.8	92.1	108.6	21.3	8.6	53.1	9.3	0.0	295.0	170.0
25	NEI9008:N0826(GEMN-0155)-B-088/HC33	181.7	92.0	541.4	23.7	7.7	54.1	1.4	2.9	310.0	155.0
34	Pioneer 34R65	181.4	91.9	190.4	19.7	9.2	56.4	0.4	0.7	300.0	140.0
Test Entry Means		183.1			20.8	8.8	54.4	3.7	3.1	303.8	163.0
Check Means		197.4			20.9	9.5	54.9	4.0	3.6	293.8	146.3
Overall Means		184.8			20.8	8.9	54.4	3.7	3.2	302.6	161.0
Yield Range		170.2 - 215.3									
CV		11.2			9.5						
LSD (p=0.05)		22.1			2.1						

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, IA; Crawfordsville, IA; Keystone, IA; MO Valley IA; Champaign, IL, Oaktown, IN, and Carroll, IA.

2015 GEM Ames Yield Trial Top Twenty Entries

Experiment: GEM1564206

Tester: Varied

		All Location Means								
<i>Entry</i>	<i>Pedigree</i>	<i>Yield B/A</i>	<i>% Yield /CHK</i>	<i>Variance</i>	<i>% Moist</i>	<i>Yield/ Moist</i>	<i>TWT</i>	<i>% S.L.</i>	<i>% R.L.</i>	<i>Plant Height Ear Height</i>
1	Pioneer 31D58	225.9	106.1	123.3	24.1	9.4	55.0	1.0	33.8	
2	Pioneer 33F85	221.6	104.0	948.7	21.7	10.2	54.9	1.4	19.5	
14	GEMN-0247/HC33	213.8	100.4	743.7	21.6	9.9	53.5	1.8	13.3	
27	GEMS-0227/MBS8814	213.6	100.3	272.0	21.6	9.9	52.8	5.9	13.9	
38	GEMS-0226/MBS9508	212.0	99.5	596.7	20.5	10.4	57.4	7.5	19.4	
36	GEMS-0219/MBS9508	210.4	98.8	305.7	18.6	11.3	58.1	2.9	11.4	
31	GEMS-0183/MBS9508	205.9	96.6	488.8	22.3	9.2	55.2	7.2	9.1	
22	GEMN-0097/MBS3520	205.7	96.5	1053.1	18.9	10.9	53.1	2.6	11.4	
4	GEMS-0185/GEMN-0186	204.3	95.9	1276.8	22.7	9.0	53.0	2.4	30.8	
19	GEMN-0097/MBS2535	203.8	95.7	1013.0	19.3	10.6	53.2	6.8	6.1	
25	GEMN-0247/MBS3633	203.0	95.3	859.8	20.6	9.9	53.9	1.5	5.1	
30	GEMS-0180/MBS9508	201.2	94.5	897.8	21.8	9.2	55.4	0.7	23.9	
11	GEMN-0193/HC33	200.9	94.3	172.1	19.7	10.2	56.0	12.0	17.6	
40	GEMS-0228/MBS9508	198.8	93.3	258.2	20.7	9.6	55.3	2.5	6.6	
33	GEMS-0200/MBS9508	198.0	93.0	567.7	20.6	9.6	56.4	14.9	33.8	
24	GEMN-0239/MBS3633	197.8	92.8	184.2	21.5	9.2	54.5	6.9	16.0	
35	GEMS-0202/MBS9508	197.2	92.6	363.3	20.5	9.6	56.2	10.3	33.3	
34	GEMS-0201/MBS9508	195.8	91.9	662.3	21.1	9.3	54.8	8.4	28.6	
29	GEMS-0147/MBS9508	195.6	91.8	254.6	21.1	9.3	55.5	2.5	28.5	
39	GEMS-0227/MBS9508	195.4	91.7	40.0	19.2	10.2	56.6	9.3	25.0	
Test Entry Means		189.8			20.1	9.5	55.0	7.4	18.4	
Check Means		213.0			21.8	9.8	55.7	1.3	24.6	
Overall Means		191.6			20.2	9.5	55.1	6.9	18.9	
Yield Range		160.4 - 225.9								
CV		9.0			4.0					
LSD (p=0.05)		25.1			1.2					

* All trial data will be posted on the website. Highlighted lines are 2016 Released Lines

** Locations: Ames, Crawfordsville, and 2 reps Keystone in Iowa.

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
SS	NS701	bt
NS	LH59	bu
SS	NC368	bv

GEM Yield Trial Decode

"1552102" is 2015, temperate 50% exotic crosses, first year testing stage, test #02.

First Two Digits = Year

Third Digit = Homologous Area

- 1 = Tropical
- 5 = Temperate
- 6 = Both
- 7 = Other

Fourth Digit = Test Stage

- 1 = First Year
- 2 = Second Year
- 3 = Other

Last Two Digits = Sequential Number