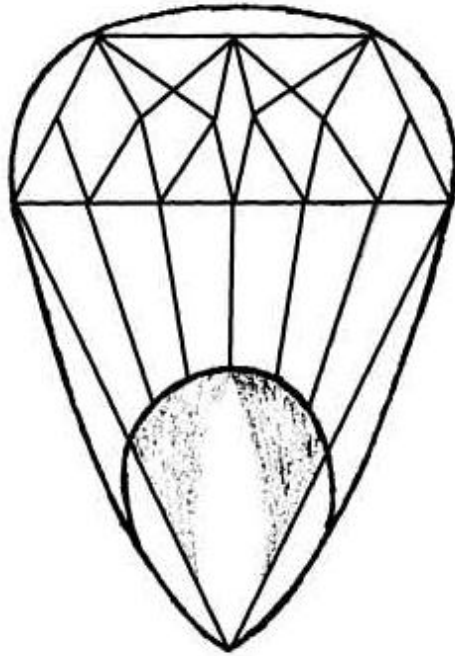


**United States Department of Agriculture
Agricultural Research Service**



Germplasm Enhancement of Maize

2009 GEM Field Day Handout

September 17th 2009

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

GEM Mission:

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

Germplasm Enhancement of Maize (GEM) Project Field Day September 17th 2009

Table of Contents

Breeding History & GEM Protocol.....	Entries 1-29
GEM Recommended Lines (Ames & NC).....	Entries 30-64
Top Crosses (GEM Recommended Lines).....	Entries 100-121
ISU Lines.....	Entries 66-69; 82
Top Crosses (ISU Lines).....	Entries 65; 83-86
Drought Tolerant Lines (Texas A&M U.).....	Entries 70-74
Top Crosses-Drought Tolerant (Texas A&M U.).....	Entries 77-81
Top Crosses (GEM x GEM).....	Entries 87-97
Top Crosses (Waxy GEM Lines).....	Entries 98-99
Top Crosses (2 nd year Retests).....	Entries 125-135
Allelic Diversity Model.....	Entries 136-140
Amylomaize GEMS-0067 line (Truman State U.).....	Entry 141
Top Crosses (Amylomaize VII) (Truman State U.).....	Entries 142-144
Top Crosses-Anthracoze resistant (Cornell U.).....	Entries 145-147
Top Crosses- Silage (U. of Wisconsin).....	Entries 148-150
Check Hybrid (HC33 x LH287).....	Entries 22, 29, 75, 124
Check Hybrid (LH200 x LH262).....	Entries 76, 122
Check Hybrid (MBS3644 x MBS5411).....	Entry 123

Field Information

Planted: **May 4, 2009**

Fertilizer: 150 lbs N, 50 lbs P, 50 lbs K/acre (168 kg N, 56 kg P, 56 kg K/hectare)

Herbicide: PPI: Harness 2 pints/acre (2.33 liters/hectare)

Plant Population: 29,040 plants/acre (71,742 plants/hectare)

Legend

AAI	Amino Acid Index (MET, LYS, TRP)
GDU	Growing Degree Units (Fahrenheit, base 50)
GLS	Gray Leaf Spot
NLB	Northern Corn Leaf Blight
SLB	Southern Corn Leaf Blight

Entry 001

Stiff Stalk Synthetic (SSS)

- † Derived from 16 line synthetic
- † Developed in 1930's by Sprague
- † 70% of lines trace to Reid germplasm
- † 1271 GDU's (77 days) to 50% anthesis

Entry 002

BSSS(HT)C5

- † Ames 28168
- † Synthetic population cycle 5 that B73 was derived from
- † 1288 GDU's (78 days) to 50% anthesis

Entry 003

B14

- † Public inbred derived from SSS C0
- † Released in 1953
- † 1350 GDU's (81 days) to 50% anthesis

Entry 004

A632

- † Public inbred derived from (Mt42 x B14) B14
- † Released in 1964
- † 1254 GDU's (76 days) to 50% anthesis

Entry 005

LH74

- † Related to inbreds B14 and B73
- † Expired PVP certificate # 8200063
- † 1215 GDU's (73 days) to 50% anthesis

Entry 006

B37

- † Public inbred derived from SSS C0
- † Released in 1958
- † 1370 GDU's (82 days) to 50% anthesis

Entry 007

LH132

- 📄 Related to B73 and B37
- 📄 Expired PVP certificate # 8300148
- 📄 1254 GDU's (76 days) to 50% anthesis

Entry 008

B73

- 📄 Public inbred derived from SSS C5
- 📄 Released in 1972
- 📄 1350 GDU's (81 days) to 50% anthesis

Entry 009

Lancaster Sure Crop

- 📄 Recommended for Eastern states in 1936 Yearbook of Ag
- 📄 Developed 1860 – 1920 by Hershey Family
- 📄 1095 GDU's (67 days) to 50% anthesis

Entry 010

C103

- 📄 Parent of Mo17
- 📄 Released in 1949
- 📄 Derived from Lancaster Sure Crop
- 📄 1271 GDU's (77 days) to 50% anthesis

Entry 011

Mo17

- 📄 Public inbred derived from C103 x 187-2
- 📄 Released in 1964
- 📄 1254 GDU's (76 days) to 50% anthesis

Entry 012

LH51

- 📄 Related to Mo17
- 📄 Expired PVP certificate # 8200062
- 📄 1306 GDU's (79 days) to 50% anthesis

Entry 013

Oh43

- Public inbred derived from Oh40B x W8
- Released in 1949
- 1116 GDU's (68 days) to 50% anthesis

Entry 014

A619

- Public inbred derived from (A171 x Oh43) Oh43
- Released in 1961
- 1156 GDU's (70 days) to 50% anthesis

Entry 015

LH39

- Related to Oh43
- Expired PVP certificate # 8000067
- 1201 GDU's (72 days) to 50% anthesis

Entry 016

B73 x OH43

- Public hybrid of 1970's
- 1180 GDU's (71 days) to 50% anthesis

Entry 017

A632 x A619

- Public hybrid of 1960's – 1970's
- 1116 GDU's (68 days) to 50% anthesis

Entry 018

B73 x LH39

- Public x Ex PVP
- Hybrid of 1970's – 1980's
- 1135 GDU's (69 days) to 50% anthesis

Entry 019

B73 x Mo17

- 📌 Popular hybrid from mid-1970's – 1980's
- 📌 First tested in 1973
- 📌 1254 GDU's (76 days) to 50% anthesis

Entry 020

LH132 x LH51

- 📌 Ex PVP x Ex PVP
- 📌 Hybrid of 1980's – 1990's
- 📌 1254 GDU's (76 days) to 50% anthesis

Entry 021

LH74 x LH51

- 📌 Ex PVP x Ex PVP
- 📌 Hybrid of 1980's – 1990's
- 📌 1215 GDU's (73 days) to 50% anthesis

Entry 022

HC33 x LH287

- 📌 Check Hybrid-Medium Maturity (109 days)
- 📌 Modern hybrid
- 📌 1215 GDU's (73 days) to 50% anthesis

Entry 023

Jarvis Golden Prolific

- 📌 Southern US OPV
- 📌 Related to Caribbean flint and Creole races
- 📌 1447 GDU's (86 days) to 50% anthesis

Entry 024

CUBA 164

- 📌 Tropical GEM accession
- 📌 Source of drought stress
- 📌 Source of high protein and oil content
- 📌 Source of unique starch thermal properties
- 📌 Race: Mixed (Creole)
- 📌 1688 GDU's (98 days) to 50% anthesis

Entry 025

CUBA164:S20

- ‡ 50% Tropical Breeding Cross
- ‡ CUBA164 x SS 20
- ‡ 1412 GDU's (84 days) to 50% anthesis

Entry 026

CUBA164:S2008c

- ‡ 25% Tropical Breeding Cross
- ‡ (CUBA164 x SS 20) x SS 08c
- ‡ 1350 GDU's (81 days) to 50% anthesis

Entry 027

CUBA164:S2008c-289-001-B-B

- ‡ S4 line from CUBA164:S2008c
- ‡ 1390 GDU's (83 days) to 50% anthesis

Entry 028

CUBA164:S2008c-289-001/LH287

- ‡ Top cross of entry 27
- ‡ 1215 GDU's (73 days) to 50% anthesis

Entry 029

HC33 x LH287

- ‡ Check Hybrid-Medium Maturity (109 days)
- ‡ 1215 GDU's (73 days) to 50% anthesis

Entry 030

(see TC entry 121)

GEMN-0187

(25% tropical exotic; NS heterotic group)

- ‡ Deriv. ANTIG03:N1218-056-001 (S4)
- ‡ 2009 Recommended Line
- ‡ 12.2% protein, 3.9% oil, 70.5% starch
- ‡ Origin: Antigua Race: Criollo
- ‡ 1350 GDU's (81 days) to 50% anthesis

Entry 031 (see TC entry 120)

GEMS-0188

(25% tropical exotic; SS heterotic group)

- ¶ Deriv. DKXL212:S0912-012-001 (S4)
- ¶ 2009 Recommended Line
- ¶ **13.8% protein**, 4.2% oil, 68.9% starch
- ¶ Origin: Brazil Race: Tropical Hybrid
- ¶ 1306 GDU's (79 days) to 50% anthesis

Entry 032 (see TC entry 119)

GEMS-0189

(25% tropical exotic; SS heterotic group)

- ¶ Deriv. DKXL212:S0912-117-001 (S4)
- ¶ 2009 Recommended Line
- ¶ **14.1% protein**, 4.2% oil, 68.9% starch
- ¶ Origin: Brazil Race: Tropical Hybrid
- ¶ 1350 GDU's (81 days) to 50% anthesis

Entry 033 (see TC entry 118)

GEMN-0190

(25% tropical exotic; NS heterotic group)

- ¶ Deriv. PASCO14:N0424-078-001 (S4)
- ¶ 2009 Recommended Line
- ¶ 11.8% protein, 3.8% oil, 70.8% starch
- ¶ Origin: Peru Race: Cuban Yellow
- ¶ 1370 GDU's (82 days) to 50% anthesis

Entry 034 (see TC entry 117)

GEMN-0191

(25% tropical exotic; NS heterotic group)

- ¶ Deriv. SCROGP3:N2017-003-001 (S4)
- ¶ 2009 Recommended Line
- ¶ 11.9% protein, 3.4% oil, 70.9% starch
- ¶ Origin: St. Croix Race: Tusón
- ¶ 1432 GDU's (85 days) to 50% anthesis

Entry 035 (see TC entry 116)

GEMN-0192

(25% tropical exotic; NS heterotic group)

- ¶ Deriv. SCROGP3:N2017-172-001 (S4)
- ¶ 2009 Recommended Line
- ¶ 12.2% protein, 4.5% oil, 70.0% starch, (Starch Properties)
- ¶ Origin: St. Croix Race: Tusón
- ¶ 1201 GDU's (72 days) to 50% anthesis

Entry 036 (see TC entry 115)

GEMN-0193

(25% temperate exotic; NS heterotic group)

- ¶ Deriv. UR11002:N0308b-086-001 (S4)
- ¶ 2009 Recommended Line
- ¶ 12.0% protein, 4.2% oil, 70.3% starch
- ¶ Origin: Uruguay Race: Dente Branco
- ¶ 1370 GDU's (82 days) to 50% anthesis

Entry 037 (see TC entry 114)

GEMN-0194

(50% tropical exotic; NS heterotic group)

- Deriv. DK888:N11(95)-B-027-001-011 (S5)
- 2009 Recommended Line – NC State/USDA-ARS
- Origin: Thailand Race: Tropical Hybrid
- 1642 GDU's (96 days) to 50% anthesis

Entry 038 (see TC entry 113)

GEMN-0195

(50% tropical exotic; NS heterotic group)

- Deriv. DK888:N11(95)-B-027-001-015 (S5)
- 2009 Recommended Line – NC State/USDA-ARS
- Origin: Thailand Race: Tropical Hybrid
- 1642 GDU's (96 days) to 50% anthesis

Entry 039 (see TC entry 112)

GEMN-0196

(50% tropical exotic; NS heterotic group)

- Deriv. DK888:N11(95)-B-003-001-001 (S5)
- 2009 Recommended Line – NC State/USDA-ARS
- Origin: Thailand Race: Tropical Hybrid
- 1736 GDU's (100 days) to 50% anthesis

Entry 040 (see TC entry 111)

GEMN-0198

(50% tropical exotic; NS heterotic group)

- Deriv. DK212T:N11-040-001-007 (S4)
- 2009 Recommended Line – NC State/USDA-ARS
- Origin: Thailand Race: Tropical Hybrid
- 1535 GDU's (91 days) to 50% anthesis

Entry 041 (see TC entry 110)

GEMN-0174

(25% temperate exotic; NS heterotic group)

- Deriv. AR17056:N2025-574-001 (S7)
- 2008 GEM Release
- 16.3% protein**, 3.1% oil, 67.2% starch (Starch Properties)
- Origin: Argentina Race: Cristalino Colorado
- 1306 GDU's (79 days) to 50% anthesis

Entry 042 (see TC entry 109)

GEMS-0175

(25% tropical exotic; SS heterotic group)

- Deriv. BVIR155:S2012-029-001 (S4)
- 2008 Recommended Line
- 13.9% protein**, 4.4% oil, 66.8% starch
- Upright leaf phenotype
- Origin: British Virgin Islands Race: Tusón
- 1306 GDU's (79 days) to 50% anthesis

Entry 043 (see TC entry 108)

GEMS-0176

(25% tropical exotic; SS heterotic group)

- 🌱 Deriv. CUBA164:S2008c-289-001 (S4)
- 🌱 2008 Recommended Line
- 🌱 **13.2% protein**, 4.1% oil, 68.3% starch
- 🌱 Origin: Cuba Race: Mixed (Creole)
- 🌱 1390 GDU's (83 days) to 50% anthesis

Entry 044 (see TC entry 107)

GEMN-0177

(25% tropical exotic; NS heterotic group)

- 🌱 Deriv. DK888:N11a08a-395-001 (S4)
- 🌱 2008 Recommended Line
- 🌱 11.3% protein, 3.9% oil, 70.8% starch
- 🌱 Resistant to NLB & SLB
- 🌱 Origin: Thailand Race: Tropical Hybrid
- 🌱 1370 GDU's (82 days) to 50% anthesis

Entry 045 (see TC entry 106)

GEMN-0178

(25% tropical exotic; NS heterotic group)

- 🌱 Deriv. DK888:N11a08a-440-001 (S4)
- 🌱 2008 Recommended Line
- 🌱 11.4% protein, 4.0% oil, 70.5% starch
- 🌱 Origin: Thailand Race: Tropical Hybrid
- 🌱 1432 GDU's (85 days) to 50% anthesis

Entry 046 (see TC entry 105)

GEMN-0179

(25% temperate exotic; NS heterotic group)

- 🌱 Deriv. FS8B(T):N11a08c-030-002 (S4)
- 🌱 2008 Recommended Line
- 🌱 12.8% protein, **5.2% oil**, 67.7% starch
- 🌱 Resistant to NLB; Upright leaf phenotype
- 🌱 Origin: USA (Florida) Race: Mixed
- 🌱 1306 GDU's (79 days) to 50% anthesis

Entry 047 (see TC entry 104)

GEMS-0180

(25% tropical exotic; SS heterotic group)

- 🌱 Deriv. GUAT209:S1308a-047-001 (S4)
- 🌱 2008 Recommended Line
- 🌱 10.9% protein, 3.6% oil, **71.6% starch** (Starch Properties)
- 🌱 Resistant to NLB & SLB
- 🌱 Origin: Guatemala Race: Tusón
- 🌱 1447 GDU's (86 days) to 50% anthesis

Entry 048 (see TC entry 103)

GEMS-0181

(25% tropical exotic; SS heterotic group)

- 🌱 Deriv. GUAT209:S1308a-068-001 (S4)
- 🌱 2008 Recommended Line
- 🌱 12.6% protein, 4.3% oil, 69.1% starch
- 🌱 Resistant to GLS
- 🌱 Origin: Guatemala Race: Tusón
- 🌱 1370 GDU's (82 days) to 50% anthesis

Entry 049 (see TC entry 102)

GEMS-0182

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-084-001 (S4)
- 2008 Recommended Line
- 11.1% protein, 4.0% oil, 70.6% starch
- Resistant to SLB & GLS
- Origin: Guatemala Race: Tusón
- 1370 GDU's (82 days) to 50% anthesis

Entry 050 (see TC entry 101)

GEMS-0183

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-104-001 (S4)
- 2008 Recommended Line
- 12.4% protein, 3.7% oil, 69.9% starch
- Origin: Guatemala Race: Tusón
- 1350 GDU's (81 days) to 50% anthesis

Entry 051 (see TC entry 100)

GEMS-0184

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-120-001 (S4)
- 2008 Recommended Line
- 11.8% protein, 4.6% oil, 69.4% starch
- Origin: Guatemala Race: Tusón
- 1390 GDU's (83 days) to 50% anthesis

Entry 052 (see TC entry 99)

GEMS-0185

(25% tropical exotic; SS heterotic group)

- Deriv. CUBA164:S2012-966-001-B wx
- 2008 Recommended line – **Waxy**
- Origin: Cuba Race: Mixed (Creole)
- 1254 GDU's (76 days) to 50% anthesis

Entry 053 (see TC entry 98)

GEMN-0186

(25% tropical exotic; NS heterotic group)

- Deriv. DKXL370:N11a20-036-002-B wx
- 2008 Recommended line – **Waxy**
- Origin: Brazil Race: Tropical Hybrid
- 1271 GDU's (77 days) to 50% anthesis

Entry 054 (see TC entry 97)

GEMS-0061

(50% temperate exotic; SS heterotic group)

- Deriv. AR16026:S17-010-001 (S5)
- 12.6% protein, 4.4% oil, 67.7% starch
- Low aflatoxin and fumonisin
- Origin: Argentina Race: Cristalino Colorado
- 1254 GDU's (76 days) to 50% anthesis

Entry 055 (see TC entry 96)

GEMN-0140

(25% tropical exotic; NS heterotic group)

- 🌿 Deriv. BR51675:N0620-033-001 (S5)
- 🌿 2006 Recommended Line
- 🌿 11.4% protein, 3.6% oil, 70.4% starch; Good YM
- 🌿 Resistant to GLS; low fumonisin
- 🌿 Origin: Brazil Race: Dente Amarelo
- 🌿 1327 GDU's (80 days) to 50% anthesis

Entry 056 (see TC entry 95)

CUBA117:S15-101-001-B-B-B-B-B

(50% tropical exotic; SS heterotic group)

- 🌿 12.6% protein, 4.7% oil, 67.4% starch
- 🌿 Low aflatoxin
- 🌿 Origin: Cuba Race: Argentino
- 🌿 1432 GDU's (85 days) to 50% anthesis

Entry 057 (see TC entry 94)

GEMN-0130

(50% tropical exotic; NS heterotic group)

- 🌿 Deriv. DKXL370A:N11-B-005-010 (S6)
- 🌿 2005 Recommended Line – NC State/USDA-ARS
- 🌿 13.3% protein, 4.0% oil, 68.9 % starch
- 🌿 Low aflatoxin/fumonisin
- 🌿 Origin: Brazil Race: Tropical Hybrid
- 🌿 1589 GDU's (94 days) to 50% anthesis

Entry 058 (see TC entry 93)

GEMS-0162

(25% tropical exotic; SS heterotic group)

- 🌿 Deriv. CUBA117:S1542-057-002 (S4)
- 🌿 2007 Recommended Line
- 🌿 **15.7% protein, 5.0% oil**, 65.0% starch
- 🌿 Origin: Cuba Race: Argentino
- 🌿 1306 GDU's (79 days) to 50% anthesis

Entry 059 (see TC entry 92)

GEMS-0163

(25% tropical exotic; SS heterotic group)

- 🌿 Deriv. CUBA164:S2012-456-001 (S4)
- 🌿 2007 Recommended Line
- 🌿 12.5% protein, 4.4% oil, 68.2% starch
- 🌿 Upright leaf phenotype
- 🌿 Origin: Cuba Race: Mixed (Creole)
- 🌿 1390 GDU's (83 days) to 50% anthesis

Entry 060 (see TC entry 91)

GEMN-0111

(25% temperate exotic; NS heterotic group)

- 🌿 Deriv. CH05015:N1204-057-001 (S5)
- 🌿 2005 Recommended Line
- 🌿 **14.0% protein**, 4.7% oil, 63.0% starch, Good AAI
- 🌿 Fusarium ear rot resistant
- 🌿 Origin: Chile Race: Camelia
- 🌿 1288 GDU's (78 days) to 50% anthesis

Entry 061 (see TC entry 90)

MDI022:N2120-253-001-B-B-B-B
(25% tropical exotic; NS heterotic group)

- ☞ 11.4% protein, 3.3% oil, 70.9% starch
- ☞ Good AAI
- ☞ Origin: Peru Race: Cuban yellow
- ☞ 1479 GDU's (88 days) to 50% anthesis

Entry 062 (see TC entry 89)

GEMS-0116
(25% tropical exotic; SS heterotic group)

- ☞ Deriv. DKB844:S1601-003-002 (S7)
- ☞ 2005 Recommended line
- ☞ Excellent combining ability; Biomass research
- ☞ **14.8% protein**, 3.8% oil, 68.6% starch (Starch Properties)
- ☞ Origin: Mexico Race: Tropical Hybrid
- ☞ 1511 GDU's (90 days) to 50% anthesis

Entry 063 (see TC entry 88)

GEMN-0145
(25% tropical exotic; NS heterotic group)

- ☞ Deriv. MDI022:N2120-333-001 (S5)
- ☞ 2007 Recommended Line; Biomass research
- ☞ **13.8% protein**, 3.7% oil, 68.4% starch; Good AAI
- ☞ Origin: Peru Race: Cuban Yellow
- ☞ 1390 GDU's (83 days) to 50% anthesis

Entry 064 (see TC entry 87)

GEMN-0132
(50% tropical exotic; NS heterotic group)

- ☞ Deriv. DKXL370A:N11-B-005-021 (S6)
- ☞ 2005 Recommended line – NC State/USDA-ARS
- ☞ Biomass research
- ☞ **13.9% protein**, 3.3% oil, 68.8% starch; Good AAI
- ☞ Origin: Brazil Race: Tropical Hybrid
- ☞ 1511 GDU's (90 days) to 50% anthesis

Entry 065 (see TC entry 86)

[B73/B89)-013-1/2/B84/B89)-037-1]02)-05-03-01-01-01-B-B/3/LH287

- ☞ Iowa State University
- ☞ Derived from B73/B89
- ☞ 1288 GDU's (78 days) to 50% anthesis

Entry 066 (see TC entry 85)

BS31(R)C1-112-01-02-01-02-01-B-B-B

- ☞ Iowa State University
- ☞ Derived from FS8A(T) C4
- ☞ 1479 GDU's (88 Days) to 50% Anthesis

Entry 067 (see TC entry 84)

B116

- 📍 Iowa State University
- 📍 Derived from B97 x B99
- 📍 Good combining ability with SS
- 📍 1327 GDU's (80 Days) to 50% Anthesis

Entry 068 (see TC entry 83)

BSKRL1(HI)C2-141-01-03-03-02-01-B-B

- 📍 Iowa State University
- 📍 Derived from narrow based synthetic (B73, B84, B89, B94)
- 📍 1370 GDU's (82 days) to 50% anthesis

Entry 069 (see TC entry 82)

B125

- 📍 Iowa State University
- 📍 Derived from BSKRL2
- 📍 BSKRL2 is narrow based synthetic (B90, B91, B95, B97, B99)
- 📍 Good combining ability with SS; Excellent root and stalks
- 📍 1215 GDU's (73 days) to 50% anthesis

Entry 070 (see TC entry 81)

AR03056:N0902)-1

(25% temperate exotic; NS heterotic group)

- 📍 Texas A&M University
- 📍 Origin: Argentina Race: Dentado Blanco
- 📍 1370 GDU's (82 Days) to 50% Anthesis

Entry 071 (see TC entry 80)

BR52051:N04)-1

(50% tropical exotic; NS heterotic group)

- 📍 Texas A&M University
- 📍 Origin: Brazil Race: Dente Amarelo
- 📍 1493 GDU's (89 Days) to 50% Anthesis

Entry 072 (see TC entry 79)

CUBA117:S15)-1A-1

(50% tropical exotic; SS heterotic group)

- 📍 Texas A&M University
- 📍 Origin: Cuba Race: Argentino
- 📍 1479 GDU's (88 Days) to 50% Anthesis

Entry 073 (see TC entry 78)

Tx204

(25% temperate exotic; NS heterotic group)

- † Deriv. AR01150:N0406
- † Public Texas A&M Release
- † Drought and heat tolerant
- † Origin: Argentina Race: Dente Blanco Rugoso
- † 1463 GDU's (87 days) to 50% anthesis

Entry 074 (see TC entry 77)

Tx205

(25% temperate exotic; NS heterotic group)

- † Deriv. AR01150:N0406
- † Public Texas A&M Release
- † Drought and heat tolerant
- † Origin: Argentina Race: Dente Blanco Rugoso
- † 1589 GDU's (94 days) to 50% anthesis

Entry 075

HC33 x LH287

- † Check Hybrid-Medium Maturity (109 days)
- † 1215 GDU's (73 days) to 50% anthesis

Entry 076

LH200 x LH262

- † Check Hybrid-Late Maturity (117 days)
- † 1370 GDU's (82 days) to 50% anthesis

Entry 077 (see entry 74)

LH200 x Tx205

(25% temperate exotic; NS heterotic group)

- † Tx205 (Deriv. AR01150:N0406)
- † Texas A&M University
- † Drought and heat tolerant
- † Origin: Argentina Race: Dent. Blanco Rugoso
- † 1390 GDU's (83 days) to 50% anthesis

Entry 078 (see entry 73)

LH200 x Tx204

(25% temperate exotic; NS heterotic group)

- † Tx204 (Deriv. AR01150:N0406)
- † Texas A&M University
- † Drought and heat tolerant
- † Origin: Argentina Race: Dent. Blanco Rugoso
- † 1390 GDU's (83 days) to 50% anthesis

Entry 079 (see entry 72)

**CUBA117:S15)-1A-1 x
BR52051:N04)-1**

- 🌿 GEM x GEM Cross
- 🌿 Texas A&M University
- 🌿 1447 GDU's (86 days) to 50% anthesis

Entry 080 (see entry 71)

BR52051:N04)-1 x LH200
(50% tropical exotic; NS heterotic Group)

- 🌿 Texas A&M University
- 🌿 Origin: Brazil Race: Dente Amarelo
- 🌿 1412 GDU's (84 days) to 50% anthesis

Entry 081 (see entry 70)

**AR03056:N0902)-1 x
CUBA117:S15)-1A-1**

- 🌿 GEM x GEM Cross
- 🌿 Texas A&M University
- 🌿 1306 GDU's (79 days) to 50% anthesis

Entry 082

**[B73/B89)-013-1/2/B84/B89)-037-
1]02)-05-03-01-01-01-B-B-B**

- 🌿 Iowa State University
- 🌿 Derived from B73/B89
- 🌿 (No data for GDU – water stress)

Entry 083

**BS31(R)C1-112-01-02-01-02-
01-B-B/TR7322**

- 🌿 Iowa State University
- 🌿 Derived from FS8A(T) C4
- 🌿 1350 GDU's (81 Days) to 50% Anthesis

Entry 084 (see entry 67)

LH332 x B116

- 🌿 Iowa State University
- 🌿 B116 Derived from (B97x B99)
- 🌿 1271 GDU's (77 days) to 50% anthesis

Entry 085

BSKRL1(HI)C2-141-01-03-03-02-01-B-B/B114

- 📍 Iowa State University
- 📍 Derived from narrow based synthetic (B73, B84, B89, B94)
- 📍 1254 GDU's (76 Days) to 50% anthesis

Entry 086

SGI890 x B125

- 📍 Iowa State University
- 📍 Derived from BSKRL2
- 📍 BSKRL2 is narrow based synthetic (B90, B91, B95, B97, B99)
- 📍 Good combing ability with SS; Excellent root and stalks
- 📍 1271 GDU's (77 days) to 50% anthesis

Entry 087

(see entry 64)

GEMS-0182 x GEMN-0132

- 📍 Deriv. GUAT209:S1308a-084-001-B-B/DKXL370:N11-B-005-021-B-B-B
- 📍 GEM x GEM Cross
- 📍 Biomass research
- 📍 1254 GDU's (76 days) to 50% anthesis

Entry 088

(see entry 63)

GEMS-0162 x GEMN-0145

- 📍 Deriv. CUBA117:S1542-057-002-B-B-SIB/MDI022:N2120-333-001-B-B-B
- 📍 GEM x GEM Cross
- 📍 Biomass research
- 📍 1271 GDU's (77 days) to 50% anthesis

Entry 089

(see entry 62)

GEMS-0116 x GEMN-0132

- 📍 Deriv. DKB844:S1601-003-002-B-B-B-B-B/DKXL370:N11-B-005-021-B-B
- 📍 GEM x GEM Cross
- 📍 Biomass research
- 📍 1412 GDU's (84 days) to 50% anthesis

Entry 090

(see entry 61)

GEMS-0091 x MDI022:N2120-253-001-B-B

- 📍 Deriv. CHIS740:S1411a-783-002-B-B-Sib/MDI022:N2120-253-001-B-B
- 📍 GEM x GEM Cross
- 📍 Good AA1
- 📍 1306 GDU's (79 days) to 50% anthesis

Entry 091 (see entry 60)

GEMS-0091 x GEMN-0111

- † Deriv. CHIS740:S1411a-783-002-B-B-Sib/CH05015:N1204-057-001-B-B-B
- † GEM x GEM Cross
- † Good AAI
- † 1215 GDU's (73 days) to 50% anthesis

Entry 092 (see entry 59)

GEMS-0163 x GEMN-0179

- † Deriv. CUBA164:S2012-456-001-B-B-SIB/FS8B(T):N11a08c-030-002-B-B
- † GEM x GEM Cross
- † 1306 GDU's (79 days) to 50% anthesis

Entry 093 (see entry 58)

GEMS-0162 x GEMN-0179

- † Deriv. CUBA117:S1542-057-002-B-B-SIB/FS8B(T):N11a08c-030-002-B-B
- † GEM x GEM Cross
- † Upright leaf phenotype
- † 1224 GDU's (74 days) to 50% anthesis

Entry 094 (see entry 57)

CUBA117:S15-101-001-B-B-B-B-B x GEMN-0130

- † Deriv. CUBA117:S15-101-001-B-B-B-B-B/DKXL370:N11-B-005-010-B-B-B
- † GEM x GEM Cross
- † Low aflatoxin x low aflatoxin/fumonisin
- † 1412 GDU's (84 days) to 50% anthesis

Entry 095 (see entry 56)

CUBA117:S15-101-001-B-B-B-B-B x GEMN-0140

- † Deriv. CUBA117:S15-101-001-B-B-B-B-B/BR51675:N0620-033-001-B-B-B
- † GEM x GEM Cross
- † Low aflatoxin x low fumonisin
- † 1288 GDU's (78 days) to 50% anthesis

Entry 096 (see entry 55)

GEMS-0116 x GEMN-0140

- † Deriv. DK888:S11-B-015-003-B-B-sib-B-B-B/BR51675:N0620-033-001-B-B-B
- † GEM x GEM Cross
- † Low fumonisin (GEMN-0140)
- † 1271 GDU's (77 days) to 50% anthesis

Entry 097 (see entry 54)

GEMS-0061 x GEMN-0130

- Deriv. AR16026:S17-010-001-B-B-B-B/DKXL370:N11-B-005-010-B-B-B
- Low aflatoxin/fumonisin x low aflatoxin/fumonisin
- 1412 GDU's (84 days) to 50% anthesis

Entry 098 (see entry 53)

AR16035:S02-615-001-B wx x GEMN-0186

- Deriv. AR16035:S02-615-001-B wx x DKXL370:N11a20-036-002-B wx
- GEM x GEM Cross
- Waxy** converted GEM lines
- 1306 GDU's (79 days) to 50% anthesis

Entry 099 (see entry 52)

GEMS-0185 x GEMN-0186

- Deriv. Cuba164:S2012-966-001-B wx x DKXL370:N11a20-036-002-B wx
- GEM x GEM Cross
- Waxy** converted GEM lines
- 1224 GDU's (74 days) to 50% anthesis

Entry 100 (see entry 51)

GEMS-0184 x MBS5411

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-120-001
- 2008 Recommended Line
- Inbred traits: 11.8% protein, 4.6% oil, 69.4% starch
- Origin: Guatemala Race: Tusón
- 1254 GDU's (76 days) to 50% anthesis

Entry 101 (see entry 50)

GEMS-0183 x LH287

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-104-001
- 2008 Recommended Line
- Inbred traits: 12.4% protein, 3.7% oil, 69.9% starch
- Origin: Guatemala Race: Tusón
- 1215 GDU's (73 days) to 50% anthesis

Entry 102 (see entry 49)

GEMS-0182 x LH287

(25% tropical exotic; SS heterotic group)

- Deriv. GUAT209:S1308a-084-001
- 2008 Recommended Line
- Inbred traits: 11.1% protein, 4.0% oil, 70.6% starch
- Inbred traits: Resistant to SLB & GLS
- Origin: Guatemala Race: Tusón
- 1215 GDU's (73 days) to 50% anthesis

Entry 103 (see entry 48)

GEMS-0181 x MBS5411

(25% tropical exotic; SS heterotic group)

- 📄 Deriv. GUAT209:S1308a-068-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: 12.6% protein, 4.3% oil, 69.1% starch
- 📄 Inbred traits: Resistant to GLS
- 📄 Origin: Guatemala Race: Tusón
- 📄 1271 GDU's (77 days) to 50% anthesis

Entry 104 (see entry 47)

GEMS-0180 x MBS5411

(25% tropical exotic; SS heterotic group)

- 📄 Deriv. GUAT209:S1308a-047-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: 10.9% protein, 3.6% oil, **71.6% starch**
- 📄 Resistant to NLB & SLB
- 📄 Origin: Guatemala Race: Tusón
- 📄 1271 GDU's (77 days) to 50% anthesis

Entry 105 (see entry 46)

GEMN-0179 x HC33

(25% temperate exotic; NS heterotic group)

- 📄 Deriv. FS8B(T):N11a08c-030-002
- 📄 2008 Recommended Line
- 📄 Inbred traits: 12.8% protein, **5.2% oil**, 67.7% starch
- 📄 Origin: USA (Florida) Race: Mixed
- 📄 1224 GDU's (74 days) to 50% anthesis

Entry 106 (see entry 45)

GEMN-0178 x HC33

(25% tropical exotic; NS heterotic group)

- 📄 Deriv. DK888:N11a08a-440-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: 11.4% protein, 4.0% oil, 70.5% starch
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1271 GDU's (77 days) to 50% anthesis

Entry 107 (see entry 44)

GEMN-0177 x HC33

(25% tropical exotic; NS heterotic group)

- 📄 Deriv. DK888:N11a08a-395-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: 11.3% protein, 3.9% oil, 70.8% starch
- 📄 Inbred traits: Resistant to NLB & SLB
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1288 GDU's (78 days) to 50% anthesis

Entry 108 (see entry 43)

GEMS-0176 x LH287

(25% tropical exotic; SS heterotic group)

- 📄 Deriv. CUBA164:S2008c-289-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: **13.2% protein**, 4.1% oil, 68.3% starch
- 📄 Origin: Cuba Race: Mixed (Creole)
- 📄 1224 GDU's (74 days) to 50% anthesis

Entry 109 (see entry 42)

GEMS-0175 x LH287

(25% tropical exotic; SS heterotic group)

- 📄 Deriv. BVIR155:S2012-029-001
- 📄 2008 Recommended Line
- 📄 Inbred traits: **13.9% protein**, 4.4% oil, 66.8% starch
- 📄 Origin: British Virgin Islands Race: Criollo
- 📄 1224 GDU's (74 days) to 50% anthesis

Entry 110 (see entry 41)

GEMN-0174 x LH200

(25% temperate exotic; NS heterotic group)

- 📄 Deriv. AR17056:N2025-574-001
- 📄 Inbred traits: Starch and Protein Research
- 📄 Inbred traits: **16.3% protein**, 3.1% oil, 67.2% starch
- 📄 Origin: Argentina Race: Cristalino Colorado
- 📄 1254 GDU's (76 days) to 50% anthesis

Entry 111 (see entry 40)

GEMN-0198 x (FR992xFR1064)

(50% tropical exotic; NS heterotic group)

- 📄 Deriv. DK212T:N11-040-001-007 (S4)
- 📄 2009 Recommended Line – NC State/USDA-ARS
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1306 GDU's (79 days) to 50% anthesis

Entry 112 (see entry 39)

GEMN-0196 x (FR992xFR1064)

(50% tropical exotic; NS heterotic group)

- 📄 Deriv. DK888:N11(95)-B-003-001-001 (S5)
- 📄 2009 Recommended Line – NC State/USDA-ARS
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1350 GDU's (81 days) to 50% anthesis

Entry 113 (see entry 38)

GEMN-0195 x (FR992xFR1064)

(50% tropical exotic; NS heterotic group)

- 📄 Deriv. DK888:N11(95)-B-027-001-015 (S5)
- 📄 2009 Recommended Line – NC State/USDA-ARS
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1327 GDU's (80 days) to 50% anthesis

Entry 114 (see entry 37)

GEMN-0194 x (LH244xLH245)

(50% tropical exotic; NS heterotic group)

- 📄 Deriv. DK888:N11(95)-B-027-001-011 (S5)
- 📄 2009 Recommended Line – NC State/USDA-ARS
- 📄 Origin: Thailand Race: Tropical Hybrid
- 📄 1432 GDU's (85 days) to 50% anthesis

Entry 115 (see entry 36)

GEMN-0193 x HC33

(25% temperate exotic; NS heterotic group)

- Deriv. UR11002:N0308b-086-001 (S4)
- 2009 Recommended Line
- 12.0% protein, 4.2% oil, 70.3% starch
- Origin: Uruguay Race: Dente Branco
- 1254 GDU's (76 days) to 50% anthesis

Entry 116 (see entry 35)

GEMN-0192 x HC33

(25% tropical exotic; NS heterotic group)

- Deriv. SCROGP3:N2017-172-001 (S4)
- 2009 Recommended Line
- 12.2% protein, 4.5% oil, 70.0% starch, (Starch Properties)
- Origin: St. Croix Race: Tusón
- 1254 GDU's (76 days) to 50% anthesis

Entry 117 (see entry 34)

GEMN-0191 x HC33

(25% tropical exotic; NS heterotic group)

- Deriv. SCROGP3:N2017-003-001 (S4)
- 2009 Recommended Line
- 11.9% protein, 3.4% oil, 70.9% starch
- Origin: St. Croix Race: Tusón
- 1224 GDU's (74 days) to 50% anthesis

Entry 118 (see entry 33)

GEMN-0190 x HC33

(25% tropical exotic; NS heterotic group)

- Deriv. PASCO14:N0424-078-001 (S4)
- 2009 Recommended Line
- 11.8% protein, 3.8% oil, 70.8% starch
- Origin: Peru Race: Cuban Yellow
- 1271 GDU's (77 days) to 50% anthesis

Entry 119 (see entry 32)

GEMS-0189 x MBS5411

(25% tropical exotic; SS heterotic group)

- Deriv. DKXL212:S0912-117-001 (S4)
- 2009 Recommended Line
- 14.1% protein**, 4.2% oil, 68.9% starch
- Origin: Brazil Race: Tropical Hybrid
- 1224 GDU's (74 days) to 50% anthesis

Entry 120 (see entry 31)

GEMS-0188 x MBS5411

(25% tropical exotic; SS heterotic group)

- Deriv. DKXL212:S0912-012-001 (S4)
- 2009 Recommended Line
- 13.8% protein**, 4.2% oil, 68.9% starch
- Origin: Brazil Race: Tropical Hybrid
- 1224 GDU's (74 days) to 50% anthesis

Entry 121 (see entry 30)

GEMN-0187 x HC33

(25% tropical exotic; NS heterotic group)

- Deriv. ANTIG03:N1218-056-001 (S4)
- 2009 Recommended Line
- 12.2% protein, 3.9% oil, 70.5% starch
- Origin: Antigua Race: Criollo
- 1306 GDU's (79 days) to 50% anthesis

Entry 122

LH200 x LH262

- Check Hybrid-Late Maturity (117 days)
- 1350 GDU's (81 days) to 50% anthesis

Entry 123

MBS3644 x MBS5411

- Check Hybrid-Early Maturity (105 days)
- 1156 GDU's (70 days) to 50% anthesis

Entry 124

HC33 x LH287

- Check Hybrid-Medium Maturity (109 days)
- 1201 GDU's (72 days) to 50% anthesis

Entry 125

BR105:S1640-125-001 x LH287

(25% tropical exotic; SS heterotic group)

- New experimental line
- Origin: Brazil Race: Composite (Suwan)
- 1224 GDU's (74 days) to 50% anthesis

Entry 126

BR105:S1640-003-001 x LH287

(25% tropical exotic; SS heterotic group)

- New experimental line
- Origin: Brazil Race: Composite (Suwan)
- 1224 GDU's (74 days) to 50% anthesis

Entry 127

BR105:S1612-132-001 x LH287

(25% tropical exotic; SS heterotic group)

- † New experimental line
- † Origin: Brazil Race: Composite (Suwan)
- † 1224 GDU's (74 days) to 50% anthesis

Entry 128

BR105:S1612-057-001 x LH287

(25% tropical exotic; SS heterotic group)

- † New experimental line
- † Origin: Brazil Race: Composite (Suwan)
- † 1215 GDU's (73 days) to 50% anthesis

Entry 129

AR16021:S0908c-046-001 x LH287

(25% temperate exotic; SS heterotic group)

- † New experimental line
- † Origin: Argentina Race: Cristalino Colorado
- † 1201 GDU's (72 days) to 50% anthesis

Entry 130

AR16021:S0908a-065-001 x LH287

(25% temperate exotic; SS heterotic group)

- † New experimental line
- † Origin: Argentina Race: Cristalino Colorado
- † 1156 GDU's (70 days) to 50% anthesis

Entry 131

CUBA117:S1516-321-001 x LH287

(25% tropical exotic; SS heterotic group)

- † New experimental line
- † Origin: Cuba Race: Argentino
- † 1215 GDU's (73 days) to 50% anthesis

Entry 132

CUBA117:S1516-259-001 x LH287

(25% tropical exotic; SS heterotic group)

- † New experimental line
- † Origin: Cuba Race: Argentino
- † 1215 GDU's (73 days) to 50% anthesis

Entry 133

ANTIG03:N3215-167-001 x HC33

(25% tropical exotic; NS heterotic group)

- † New experimental line
- † Origin: Antigua Race: Criollo
- † 1224 GDU's (74 days) to 50% anthesis

Entry 134

GUAD05:N3215-175-001 x HC33

(25% tropical exotic; NS heterotic group)

- † New experimental line
- † Origin: Guadalupe Race: Early Caribbean
- † 1224 GDU's (74 days) to 50% anthesis

Entry 135

GUAD05:N3215-099-001 x HC33

(25% tropical exotic; NS heterotic group)

- † New experimental line
- † Origin: Guadalupe Race: Early Caribbean
- † 1224 GDU's (74 days) to 50% anthesis

Entry 136

Cuzco 31

- † Origin: Peru Race: Confite Puntigudo
- † 1350 GDU's (81 days) to 50% anthesis

Entry 137

PHB47/CON PUNT CUZ13

- † Allelic Diversity F1
- † Origin: Peru Race: Confite Puntigudo
- † 1156 GDU's (70 days) to 50% anthesis

Entry 138

(PHB47/CON PUNT CUZ13)/PHB47

- † Allelic Diversity BC1F1
- † Origin: Peru Race: Confite Puntigudo
- † 1215 GDU's (73 days) to 50% anthesis

Entry 139

**((PHB47/CON PUNT
CUZ13)/PHB47)-B**

- † Allelic Diversity BC1F2
- † Origin: Peru Race: Confite Puntigudo
- † 1215 GDU's (73 days) to 50% anthesis

Entry 140

**((PHB47/CON PUNT
CUZ13)/PHB47)-B-B**

- † Allelic Diversity BC1F3
- † Origin: Peru Race: Confite Puntigudo
- † 1271 GDU's (77 days) to 50% anthesis

Entry 141

GEMS-0067

(50% tropical exotic; SS heterotic group)

- † Deriv. GUAT209:S13 x (H99ae x OH43 ae)-4-4-2-1
- † Truman State University
- † Public GEM Release
- † **Amylomaize** VII (70%) S4 line
- † Origin: Guatemala Race: Tusón
- † 1350 GDU's (81 days) to 50% anthesis

Entry 142

GEMS-0003 x GEMN-0147

- † Truman State University
- † **Amylomaize** VII converted GEM lines
- † Donor source of ae is GEMS-0067
- † 1327 GDU's (80 days) to 50% anthesis

Entry 143

**SCR01:N1310-358-1-B-B x
DKXL370:N11a20-31-1-B**

- † Truman State University
- † **Amylomaize** VII converted GEM lines
- † Donor source of ae is GEMS-0067
- † 1224 GDU's (74 days) to 50% anthesis

Entry 144

**SCR01:N1310-358-1-B-B x
AR16035:S02-615-1-B-B**

- † Truman State University
- † **Amylomaize** VII converted GEM lines
- † Donor source of ae is GEMS-0067
- † 1224 GDU's (74 days) to 50% anthesis

Entry 145

LH198 x AR01150:N0406-266

(25% temperate exotic; NS heterotic group)

- 🇺🇸 Cornell University
- 🌿 Anthracnose resistant line
- 🌍 Origin: Argentina Race: Dente Blanco Rugoso
- 🕒 1224 GDU's (74 days) to 50% anthesis

Entry 146

LH198 x FS8B(T):N1802-212

(25% temperate exotic; NS heterotic group)

- 🇺🇸 Cornell University
- 🌿 Anthracnose resistant line
- 🌍 Origin: USA (Florida) Race: Mixed races
- 🕒 1224 GDU's (74 days) to 50% anthesis

Entry 147

LH198 x FS8B(T):N1802-215

(25% temperate exotic; NS heterotic group)

- 🇺🇸 Cornell University
- 🌿 Anthracnose resistant line
- 🌍 Origin: USA (Florida) Race: Mixed races
- 🕒 1224 GDU's (74 days) to 50% anthesis

Entry 148

W609S x LH244

(50% temperate exotic; NS heterotic group)

- 🇺🇸 University of Wisconsin
- 🌿 Deriv. FS8B(T):N11a-322-1-B-B-19-1-1
- 🌿 Silage Top Cross
- 🌍 Origin: USA (Florida) Race: Mixed Races
- 🕒 1201 GDU's (72 days) to 50% anthesis

Entry 149

W607S x LH244

(50% tropical exotic; NS heterotic group)

- 🇺🇸 University of Wisconsin
- 🌿 Deriv. BR52051:N04-76-1-B-B-22-1-1
- 🌿 Silage Top Cross
- 🌍 Origin: Brazil Race: Dente Amarelo
- 🕒 1215 GDU's (73 days) to 50% anthesis

Entry 150

W606S x LH244

(25% tropical exotic; NS heterotic group)

- 🇺🇸 University of Wisconsin
- 🌿 Deriv. SCRO1:N1310-398-1-B-21-1-1-B-B-1
- 🌿 Silage Top Cross
- 🌍 Origin: St. Croix Race: St. Croix
- 🕒 1254 GDU's (76 days) to 50% anthesis