



## Maize Genetics Cooperation • Stock Center

USDA/ARS/MWA - Soybean/Maize Germplasm, Pathology & Genetics Research Unit  
&  
University of Illinois at Urbana/Champaign - Department of Crop Sciences

S-123 Turner Hall  
1102 South Goodwin Avenue  
Urbana, IL 61801-4730

(217) 333-6631 [phone]  
(217) 333-6064 [fax]  
maize@uiuc.edu [e-mail]  
<http://www.uiuc.edu/ph/www/maize> [URL]

8,801 seed samples have been supplied in response to 300 requests for 2010. These include 108 requests received from 24 foreign countries. Popular stock requests include the NAM RIL populations, Hi-II lines, *ig1* lines, Stock 6 haploid-inducing lines, male sterile cytoplasm, UniformMu sequence indexed stocks, other transposable element lines, and Maize Inflorescence Project EMS lines.

Approximately 5.7 acres of nursery were grown this summer at the Crop Sciences Research & Education Center located at the University of Illinois. Optimal spring weather allowed us to plant our crossing nurseries in a timely manner. Our first crossing nursery planted on April 29 had excellent stands. However, seedling predation by redwing blackbirds reduced the stands in our second crossing nursery planted on May 25. This appears to be becoming a perennial problem caused by lack of rainfall between planting and seedling emergence. Birds find it relatively easy to pull seedlings out of the soft soil bed. We may have to routinely irrigate if there is no rainfall prior to seedling emergence in order to harden up the seedbed and make it more difficult for the birds to uproot the seedlings with attached kernel. Fortunately, despite the reduced stands in our second planting this year, there were sufficient plants for an adequate increase in most instances. During June, above normal rainfall patterns were established resulting in repeated flooding and standing water in portions of our fields. This affected our observation blocks more than our crossing blocks, and little material will need to be replanted next year. Warm temperatures and low plant stress following planting resulted in an earlier than normal pollination season and excellent yields.

Special plantings were made of several categories of stocks:

1. Plantings were made of donated stocks from the collections of Alice Barkan (photosynthetic mutants), James Brewbaker (*Hi27* near-isogenic mutant lines), Karen Cone (plant and kernel color lines), Ryan Douglas (*rgd2-R*), Patrice Dubois (*elm1-ref*, *phyB1*, and *phyB2* lines), Giuseppe Gavazzi (*a1-eap*), Inna Golubovskaya (meiotic mutants), Jerry Kermicle (various *r1* and *ga2* alleles), John Woodward (*thi2-blk1*), and others. We expect to receive additional accessions of stocks from maize geneticists within the upcoming year.
2. We conducted allelism tests of several categories of mutants with similar phenotype or chromosome location. We identified additional alleles of *lazy1*, *indeterminate1*, *viviparous2*, *viviparous9*, and *etched1*. In 2011, we plan to continue testing additional members of the pale endosperm class of mutants if space and manpower are available. In this manner, we hope to incorporate more stocks from our vast collection of unplaced uncharacterized (phenotype-only) mutants into the main collection.
3. Occasionally, requestors bring to our attention stocks that do not carry the traits they are purported to carry. We devote field space each year to analyzing these stocks, fixing or enhancing those we can, and soliciting replacements from researchers for those we can't. In those rare instances in which a particular variation or combination of variations cannot be recovered, we modify our catalog to reflect this.
4. We are continuing to characterize the *Enr* (*Fcu*) system of *r1* aleurone color enhancers as well as other factors that affect expression of *r1*. We are characterizing additional alleles of

*Enr1* and other *r1* aleurone color enhancers. We are also trying to recover instances of the lapsed *y5* locus from PI accessions of orange endosperm tropical flints.

6. Fresh increases were made of several older A-A translocation stocks. The outcrosses will be grown in 2011 Observation to confirm by seed set which ones actually carry the translocation. We continued checking translocations received from W. R. Findley and Don Robertson marked with *wx1* to confirm the chromosome arms involved. For those where we found no linkage, all sources were discarded.

7. Stocks produced from the NSF project "Regulation of Maize Inflorescence Architecture" (see: <http://www.maizegdb.org/MIP/>) were grown again this summer. Approximately 300 families of M2 materials that were produced in 2007 were grown to increase seed supplies and recover previously observed mutations; this also included previously phenotyped families that had limited seed supplies. In addition, 1,306 families of 2008 and 2009 EMS seed increase materials were grown for adult plant observation and 595 families were screened in sand benches for seedling traits; the materials observed include mainly mutated B73 and Mo17 inbred lines, B73xMo17 hybrid, and various other inbred lines.

We grew a winter crop of 0.5 acres during the 2009/2010 growing season at the Illinois Crop Improvement Association's facilities in Juana Díaz, Puerto Rico. Heavy rainfall following pollination resulted in many moldy ears and a less than normal harvest. We did not plant a winter nursery in Puerto Rico this year. Critical plantings of a limited number of stocks were made in our greenhouse facilities this winter instead.

We have received 2,450 additional UniformMu sequence indexed lines produced by the Construction of Comprehensive Sequence Indexed Transposon Resources for Maize project (<http://www.maizegdb.org/documentation/uniformmu/>). We presently have 3,665 of these stocks.

Our IT Specialist has continued to make updates and improvements to our curation tools, which are used to maintain data for our collection. These tools input our public stock data directly into MaizeGDB to give maize scientists access to up-to-date information about our collection. The tools are also used for our internal database (*e.g.*, inventory, pedigrees and requests). Currently, a more advanced search tool is being written in order to allow more flexibility in locating specific items in our inventory. Improvements have been made to the pedigree input tool in order to fix some problems with certain types of entries. Planning for a tool or improvements to current tools is underway for harvest information management as well as other work to improve the process used to generate tags for use during harvest. Importing data from MaizeGDB into our local database has been streamlined. We worked closely with MaizeGDB to insure that all communications and tools continued to work after MaizeGDB's migration to a new database- and web-hosting arrangement. Maintenance continues on our web site (<http://www.uiuc.edu/ph/www/maize>).

We mourn the recent and sudden loss of our colleague and friend Janet Day Jackson. Janet worked at The Maize Genetics Cooperation - Stock Center since 1989. Janet began her career as a maize geneticist in 1980, working with John Laughnan and Susan Gabay-Laughnan. Janet will be profoundly missed.

Marty Sachs  
Director

Philip Stinard  
Curator

Shane Zimmerman  
Agric Sci Res Tech (Plants)

Josh Tolbert  
Information Tech Specialist