State of New Mexico

Annual Report for Calendar Year 2007
to the W-6 Technical Committee

Compiled by Ian M. Ray

Thirteen individuals from New Mexico requested 210 accessions from the NPGS in 2007. These included: 27 *Amaranthus* accessions, 1 *Lathyrus* accession, 4 *Pisum* accessions, 3 *Vicia* accessions, 48 *Malus* accessions, 11 *Solanum* accessions, 28 *Panicum* accessions, 45 *Allium* accessions, 1 *Actinidia* accession, 1 *Lycopersicon* accession, 1 *Ricinus* accession, 10 *Arachis* accessions, 4 *Gossypium* accessions, 13 *Prunus* accessions, and 13 *Brassica* accessions. Six of 13 recipients of these materials responded to a query letter requesting information on the quality of the plant materials received and the purposes for which the materials were being grown.

Mr. Ray Hickman indicated that the Lycopersicon accession, MANX MARVEL tomato, had very poor germination rate (~10%) and was being grown to evaluate its adaptability to arid New Mexico environments. Adaptability of this accession was poor in general.

Dr. Christopher Cramer, NMSU onion breeding program, evaluated 45 Allium accessions as part of a Master of Science graduate student research project to identify potential redundancy among accessions of the Allium germplasm collection. These materials were transplanted to the field in fall 2007 and will be evaluated in 2008 for morphological characteristics and DNA markers in order to estimate genetic diversity/similarities among the accessions. Germination of all accessions was acceptable.

Dr. Naveen Puppala, NMSU peanut breeding program, will be evaluating 10 Arachis accessions as potential parents for the NMSU peanut breeding program. These materials, and other Arachis accessions previously provided by the NPGS, have been evaluated for storage, anti-nutritional and allergenic proteins.

Mr. Carl Roberts, USDA-ARS SWS Cotton Ginning Research Lab will be evaluating 4 Gossypium accessions for seed coat fragmentation characteristics that can potentially reduce fiber and seed quality during the cotton fiber ginning process. Germination of all accessions was good.

Ms Karen Hill, Los Alamos National Laboratory, is evaluating genetic diversity within genotypes of the single Ricinus communis accession that she received.

Ms Martha Davis is evaluating apricot and mulberry scions received from the NPGS for evaluation of adaptability to northern New Mexico climates. The scionwood received was in good shape.

Publications based on data collected from NPGS accessions:

Bhandari et al. 2007. Combining abilities and heterosis for forage yield among high-yielding accessions of the alfalfa core collection. *Crop Sci*. 47: 665-673.

Kottapalli et al. 2008. Proteomic analysis of mature seed of four peanut cultivars using two-dimensional gel electrophoresis reveals distinct differential expression of storage, anti-nutritional, and allergenic proteins. *Plant Science* (In press).