ANNUAL REPORT

Calendar Year 2007

1. NRSP-6: UNITED STATES POTATO GENEBANK

Introduction, Classification, Preservation, Evaluation and Distribution of tuber-bearing *Solanum* Species.

2. COOPERATIVE AGENCIES AND PRINCIPAL LEADERS

State Agricultural Experimental Stations		**Representative**
Southern Region		J. C. Miller, Jr.
Western Region	Secretary (2008)	I. Vales
North Central Region	Vice-Chair (2008)	D. S. Douches
Northeastern Region		W. De Jong

United States Department of Agriculture		
Agricultural Research Service		
Technical Representative	Chairman (2008)	C. R. Brown
National Program Staff		P. K. Bretting
Area Director, Midwest Area		S. Shafer
Cooperative States Research Education & Extension Service		A. M. Thro
Animal and Plant Health Inspection Service		M. D. Bandla
NRSP-6 Project Leader		J. B. Bamberg

Agriculture Canada	T. R. Tarn

Administrative Advisors		
Southern Region		R. Guthrie
Western Region	Lead AA	C. Y. Hu
North Central Region		M. Jahn
Northeastern Region		E. Ashworth

3. PROGRESS AND PRINCIPAL ACCOMPLISHMENTS

A. Introduction of New Stocks

John Bamberg and Alfonso del Rio (US Potato Genebank) had a successful collecting expedition to the Guadalupe Mountain National Park (GMNP) in west Texas in late September of 2007 (supported with extramural funding from USDA). They collected four new populations. These were the first *S. stoloniferum* germplasm from Culberson County, TX and first potato collections from Eddy County, NM.

A total of 5 accessions were assigned PI numbers in 2007: one primitive cultivar from Peru and 4 accessions collected from the SW United States. These accessions are now available from the NRSP-6 *Solanum* germplasm collection.

The NRSP-6 web page (http://www.ars-grin.gov/nr6) has been updated to include all new stocks and screening information. Clients who have ordered from NRSP-6 in the past four years are contacted three times per year informing them of new materials that are now available either as true seed, tubers, in vitro plantlets, or herbarium samples. A new service we are offering is dried ground leaf samples for DNA testing. For foreign requesters this is useful since there are no quarantine restrictions on dried tissue.

B. Preservation and Increase of Stocks

In 2007, a total of 155 accessions were increased as botanical seed populations.

A total of 672 potato spindle tuber viroid (PSTVd) tests were performed on seed increase parents, seedlots and research materials. Germination tests were performed on 1120 accessions, ploidy determinations were made on 35 accessions, and tetrazolium seed viability tests were done on 55 seedlots.

Progress was made on several international collaborative projects.
We are working with CIP on a project to assess the impact of agrichemicals on pollen and seed viability of wild species (oral presentation at the PAA07). Agrichemicals depress reproduction and diversity of wild potato germplasm, suggesting remote populations should be targeted for future collecting by genebanks.

John Bamberg visited Peru in May 2007 to harvest calcium and frost plots. A low cost source of calcium applied to research plots located in the highlands of Peru resulted in an increase yield of 60% for some clones. Work is now being planned to identify genetics of stocks that respond well to added calcium.

Frost is a major problem for the highland farmers in Peru, with major devastating episodes in the past two years. We supplied selected frost resistant germplasm for testing, and continue to synthesize hybrids of native cultivars with highly frost resistant wild species for tests in Peru.

We initiated quarantine seed increase of seed rescued from the VIR collection to incorporate into the US Potato Genebank. We are also planning an intergenebank cooperative project to evaluate

primitive cultivated species *andigena* for hidden recessive traits and incorporate word holdings data into the global germplasm database (IPD).

Hypertension in humans and black spot bruise in potatoes are both problems for which increased tuber potassium could have a positive influence. Potassium screening of the minicore collection funded by the Crop Germplasm Committee (CGC) grant has shown great species variation which could lead to a selection of high-K varieties that lower blood pressure and reduce black spot bruise.

We continued screening for antioxidants in uncolored wild potato species tubers of *S. okadae* hybrids with USDA cooperator Dr. Navarre. We have extended this work to discovery of high antiox species more crossable to tuberosum, and synthesis of diploid segregating populations.

We discovered a new floral development mutant in *S. microdontum* which we have named *crazy sepal* (cs1) because it grows multiple (indeterminate) sets of sepals instead of anthers and pistils. This is a potential tool for studying floral development and cost of flowering on tuber yield. It would prevent transgene escape from GMO potato. We have made crosses with diploid *tuberosum* to investigate these opportunities and made the mutant available to other workers (Short Communication in AJPR).

Plant parts are known to vary widely for pH, but little is known about the variation, basis, or utility of pH extremes in potato tubers. When pH was measured on species of the mini-core collection, replicates over years and populations gave consistent results, with pH range of (5.0-6.2). Fine screening has now discovered very acidic species more amenable to crossing with *tuberosum*, and we have produced F2 segregating populations. This opens the door to studies linking acidity to a wide range of tuber parameters like processing quality, skin color retention, disease resistance, calcium content, glycemic index and acrylamide formation.

Solanum microdontum is remarkably extreme and variable for several characteristics (acid, potassium, calcium, late blight and antioxidants). We continued to perform replicated characterization of *S. microdontum* for these traits. We also collected DNA to compare variation for useful phenotypic traits to gross genetic variation.

C. Classification

Dr. Spooner et al. have published and are working on five different areas of potato research: 1) molecular markers for genebank studies, 2) cultivated potato origins, 3) relationships in wild tomatoes and potatoes, 4) the predictive power of taxonomy relative to disease resistance data, and 5) a linkage map showing late blight in wild potatoes.

D. Distribution

The volume and types of stocks sent to various consignee categories are summarized in the table below. NRSP-6 distributed to clients in 24 states of the USA and 8 other countries.

	Units of Germplasm Sent[1]								
Category	S	TF	TC	IVS	DNA	PL	HER	Total	PIs
Domestic	3,892	283	624	603	364	0	11	5,777	3,654
Foreign	1,168	0	25	343	0	0	0	1,536	402
Total	5,060	283	649	946	364	0	11	7,313	4,056

	Units of Germplasm used in house[2]								
NRSP-6	7,233	0	74	215	0	0	0	7,522	1,586

[1] Types of stocks sent/(number of seeds, tubers or plantlets per standard shipping unit): S= True Seeds/(50), TF= Tuber Families/(10), TC=Tuber Clones/(3), IVS=In Vitro Stocks/(1), DNA=DNA samples/(1), PL=Plants in plugs/(1), Her= Herbarium/(1).

[2] Includes chromosome counts, germination tests, ID and Taxonomic check plantings, in vitro maintenance, seed increases, PSTV tests, miscellaneous plantings, and NSSL seed backup.

4. IMPACT STATEMENT

Potato is the number one vegetable crop and ranks number four among world food crops. The US Potato Genebank's purpose is to provide a high quality, ready source of seed, technology and information to support potato enhancement, breeding and research in the USA and around the world.

The impact of the genebank has been strong in the past. Staff have been instrumental in developing technologies widely used in potato breeding, like cut-stem pollination, hormone pre-treatment of seeds for better germination, extraction of haploids and use with 2n gametes in breeding. The genebank imported valuable germplasm and generated, formatted and computerized a wide array of trait evaluation data and taxonomic characterization. One way the impact of these contributions can be measured is by the occurrence of NRSP-6 germplasm in the pedigrees of new, improved potato cultivars. About 70% of all potatoes grown in the United States have germplasm in their pedigrees from the genebank. Three cultivar releases were published in the American Journal of Potato Research in 2007: 'Blazer Russet', 'Dakota Crisp' and 'MegaChip'. Each is known to contain wild species.

The impact of genebank contributions is also evident in the numerous publications in 2007 that provide information that ultimately contribute to better exploitation of the germplasm resource. Section 6 lists 89 papers, 53 abstracts, 1 patent, 2 patents pending and 4 theses which report the use of NRSP-6 *Solanum* introductions this year.

The impact of the genebank is expected to increase in the future for several reasons. 1) Mutants discovered and characterized by staff will be increasingly valuable as research models. 2) Intragenic transformation of potato has now been demonstrated and identified as a kind of GMO much more accepted by the consumer, so useful exotic potato genes will be increasingly valuable as the technology to easily insert them into existing cultivars improves. 3) Potato is rapidly expanding in large new growing regions, so the need for genetic resources for breeding in new environments and for new tastes will surge. 4) The collection and organization of data at the genebank for an ever-

increasing array of traits (e.g., nutritional) is expected to become more and more critical for breeding efficiency.

5. WORK PLANNED FOR 2008

Fast and accurate delivery of high quality germplasm and information will continue to be the general objective of NRSP-6. We also aim to raise awareness of the germplasm resource through an advertising/outreach program, and by conducting and publishing research that demonstrates new ways the germplasm can be useful for potato improvement. It will be a goal to perform 100 additional successful seed increases in the upcoming year, for a total of 250.

Evaluation experiments will continue on *Solanum* species for these and other traits: antioxidants, tuber acidity, apomixis, crazy sepal mutant, tuber potassium, frost hardiness, tuber calcium, hormone mutants and anti-cancer compounds.

APIC Intergenebank projects, such as researching the status and dynamics of genetic diversity using DNA markers will continue to strengthen ties with sister genebanks around the world. We intend to pursue extramural funding to continue the APIC project to study effect of agrichemicals on in situ diversity. We also intend to conduct a collecting expedition for native wild potatoes in the Pinaleno mountains of SE Arizona.

6. PUBLICATIONS ISSUED DURING THE YEAR

A. Publications issued by NRSP-6 Personnel

Alvarez, N.M., I.E. Peralta and D. Spooner. 2007. Morphological evaluation of the *Solanum brevicaule* complex: a replicated field trial from Argentina. Am J Potato Res 84:73-74. (Abstract)

Ames, M., A. Salas-Lopez and D. Spooner. 2007. Taxonomic evaluation of putatively related wild potato species of *Solanum* series *Cuneoalata, Ingifolia, Olmosiana, Piurana,* and *Simplicissima*, by morphological data from an Andean field station. Am J Potato Res 84:74. (Abstract)

Bamberg, J.B. 2007. *Crazy Sepal*: A new floral *Sepallata*-like mutant in the wild potato *Solanum microdontum* Bitter. Am J Potato Res 84:76. (Abstract)

Bamberg, J.B., A. del Rio and C. Fernandez. 2007. Sampling remote *in situ* sites of USA wild potato captures more diversity. Am J Potato Res 84:76. (Abstract)

Bamberg, John and Alecia Kiszonas. 2007. Variation for tuber acidity among potato species. Am J Potato Res 84:76-77. (Abstract)

Bamberg, J.B., J.P. Palta and M.W. Martin. 2007. Using a wild species, *Solanum microdontum*, to move high tuber calcium trait to the cultivated potatoes. Am J Potato Res 84:77. (Abstract)

Busse, J.S., J.B. Bamberg and J.P. Palta. 2007. Correlation between aerial shoot and tuber calcium accumulation in *Solanum* genotypes segregating for tuber calcium uptake efficiency. Am J Potato Res 84:79-80. (Abstract)

Centeno-Diaz, Ruth, Alberto Salas-Lopez, Alfonso del Rio, John Bamberg, and William Roca. 2007. Impact of crop pesticides on the reproductive ability of wild potato species. Am J Potato Res 84:81-82. (Abstract)

Fajardo, D., A. Salas-Lopez, R. Castillo, and D. Spooner. 2007. Species and series boundaries of *Solanum* series *Conicibaccata* and phonetically similar species in ser. *Piurana* (sect. *Petota*): Morphological data from a field study in Peru. Am J Potato Res 84:89-90. (Abstract)

Hijmans, R.J., T. Gavrilenko, S. Stephenson, J.B. Bamberg, A. Salas, and D.M. Spooner. 2007. Geographical and environmental range expansion through polyploidy in wild potatoes (*Solanum* section *Petota*). Global Ecol Biogeogr 16:485-495 (Supplement 1, Supplement 3, Ploidy paper data)

Knapp, S., D.M. Spooner and B. Leon. 2006. Solanaceae endemicas del Peru. Rev. Peru. Biol. Numero especial 13(2):612s-643s.

Nzaramba, M. Ndambe, J.B. Bamberg and J.C. Miller, Jr. 2007. Effect of propagule type and growing environment on antioxidant activity and total phenolic content in potato germplasm. Am J Potato Res 84:323-330.

Peralta, I.E. and D.M. Spooner. 2007. History, origin and early cultivation of tomato (Solanaceae). Pp 1-27. In: Genetic Improvement of Solanaceous Crops, Vol. 2: Tomato. M.K. Razdan and A.K. Mattoo (eds.), Science Publishers, Enfield, USA.

Rios, D., M. Ghislain, F. Rodriguez, and D.M. Spooner. 2007. What is the origin of the European potato? Evidence from Canary Island landraces. Crop Sci 47:1271-1280.

Rodriquez, F., F. Wu, S. Tanksley, and D. Spooner. 2007. A multiple single-copy gene phylogenetic analysis of wild tomatoes (*Solanum* L. section *Lycopersicon* (Mill.) Wettst.) and their outgroup relatives. Am J. Potato Res 84:113. (Abstract)

Salas-Lopez, A., N.M. Alvarez, M. Ames, M. Blancas, D. Fajardo, H. Juarez, I.E. Peralta, W. Roca, E. Rojas, R. Simon, M. Vargas, K. Vivanco, and D. Spooner. Am J Potato Res 84:115. (Abstract)

Simko, I., S.H. Jansky, S. Stephenson, and D.M. Spooner. 2007. Genetics of resistance to pests and disease. In: Potato Biology and Biotechnology: Advances and Perspectives. R. Vreugdenhil, J. Bradshaw, C. Gebhardt, F. Govers, D.K.L. MacKerron, M.A. Taylor, and H.A. Ross (eds.). pp. 117-155, Elsevier, Amsterdam, The Netherlands.

Spooner, D.M. 2006. *Simsia* Persoon for Flora of North America North of Mexico. Vol. 21:140-141. Oxford University Press, New York.

Spooner, D.M., L. Bohs, J. Giovannoni, R. Olmstead, and S. Daitsuke (Editors). 2007. Solanaceae VI – Genomics meets biodiversity. Acta Hort 1-564.

Spooner, D.M., D. Fajardo and G.J. Bryan. 2007. Species limits of *Solanum berthaultii* Hawkes and *S. tarijense* Hawkes and the implications for species boundaries in *Solanum* sect. *Petota*. Taxon 56:987-999.

Spooner, D.M., S.H. Jansky and A.J. Bussan. 2007. Experiences of a local arrangement committee for a large scientific conference. Acta Hort 745:513-532.

Spooner, D.M., J. Nunez, G. Trujillo, M. del Rosario Herrera, F. Guzman, and M. Ghislain. 2007. Extensive simple sequence repeat genotyping of potato landraces supports a major reevaluation of their gene pool structure and classification. Proc Natl Acad Sci USA 104:19398-19403.

Vega, S., M. Aziz, J. Bamberg, A. Verma, and J. Palta. 2007. Screening potato germplasm for carboxypeptidase inhibitor and its potential anticancer properties. Am J Potato Res 84:118-119. (Abstract)

B. Journal Articles and Abstracts Reporting Research with NRSP-6 Stocks

Alvarez, A.E. 2007. Resistance mechanisms of *Solanum* species to *Myzus persicae*. Wageningen University, Wageningen Netherlands. Iv + 182 pp.

Alvarez, A.E., W.F. Tjallingii, E. Garzo, V. Vleeshouwers, M. Dicke, and B. Vosman. 2006. Location of resistance factors in the leaves of potato and wild tuber-bearing *Solanum* species to the aphid *Myzus persicae*. Ent Exp et Appl 121(2):145-157.

Bae, Jinjoo, Shelley Jansky and Douglas Rouse. 2007. Early generation selection for resistance to Verticillium wilt. Am J Potato Res 84:75. (Abstract)

Baldwin, S., R. Genet, R. Macknight, K. Dodds, and J.M.E. Jacobs. 2007. Genetics of resistance to powdery scab (*Spongospora subterranean*) of potato. Am J Potato Res 84:75-76. (Abstract)

Beketova, M.P., P.E. Drobyazina and E.E. Khavkin. 2006. The *R1* gene for late blight resistance in early and late maturing potato cultivars. Russian j Plant Physiol 53(3):384-389.

Beketova, M.P., P.E. Drobyazina, E.A. Sokolova, E.A. Tsar'kova, V.A. Vorobiev, I.M. Yashina, and E.E. Khavkin. 2007. DNA markers for potato introgression breeding, In: Potato production and innovative technologies (Haverkort, A.J. and Anisimov, B.V., eds.), Wageningen Acad. Publ., pp. 397-404.

Belknap, W.R., S.S. Chang, D.R. Rockhold, N.T. Taylor, and K.F. McCue. 2007. *Solanum bulbocastanum* polyubiquitin Bu427 promoter and uses thereof. Patent Pending: United States.

Belknap, W.R., S.S. Chang, D.R. Rockhold, N.T. Taylor, and K.F. McCue. 2007. *Solanum bulbocastanum* polyubiquitin Bul409 promoter and uses thereof. Patent Pending: United States.

Benoit, Bizimungu and Qin Chen. 2007. Evaluation of interspecific hybrid derivatives possessing disease resistance traits for potential use in a potato breeding program. Am J Potato Res 84:78. (Abstract)

Bernal, A.M., J.E. Arias, J.D. Moreno, I. Valbuena, and L.E. Rodriguez. 2006. Confrontation between an *a priori* clustering of potato germplasm *Solanum tuberosum* subspecies *andigena* vs a non-hierarchic clustering. Agronomia Colombiana 24(2):214-225.

Bizimungu, B., D.R. Lynch, L.M. Kawchuk, Q. Chen, M. Konschuh, C. Schaupmeyer, J. Wahab, D. Waterer, D. Driedger, H. Wolfe, P. McAllister, R. Howard, and H. W. Platt. 2007. Northstar: A high-yielding, white cold-storage chipping potato cultivar with attractive oval tubers resistant to late blight. Am J Potato Res 84:437-445.

Bradeen, J.M. and D.S. Mollov. 2007. Herbicide tolerance in primitive diploid potato species comprising superseries *Stellata*: Toward establishment of seedling cultivation conditions for field evaluations. Am J Potato Res 84:415-424.

Bradeen, J.M. and D.S. Mollov. 2007. Herbicide tolerance in Diploid 1EBN and 2EBN potato species. Potato Assoc of America Annual Meeting, Idaho Falls, ID, Aug. 2007. (Abstract)

Burkhart, C.R., B.J. Christ and K.G. Haynes. 2007. Non-additive genetic variance governs resistance to Fusarium dry rot in a diploid hybrid potato population. Am J Potato Res 84:199-204.

Carputo, D., L. Castaldi, I. Caruso, R. Aversano, L. Monti, and L. Frusciante. 2007. Resistance to frost and tuber soft rot in near-pentaploid *Solanum tuberosum-S. commersonii* hybrids. Breed Sci 57(2):145-151.

Carputo, Domenico, Amalia Barone, Immacolata Caruso, Massimo Iorizzo, Astolfo Zoina, and Luigi Frusciante. 2007. Fertile *Solanum commersonii-S. tuberosum* sexual hybrids as source of resistance to *Ralstonia solanacearum*. Am J Potato Res 84:80. (Abstract)

Chantha, S.-C. and D.P. Matton. 2007. Underexpression of the plant *NOTCHLESS* gene, encoding a WD repeat protein, causes pleitropic phenotype during plant development. Planta 225:1107-1120.

Chantha, S.-C., F. Tebbji and D.P. Matton. 2007. From the Notch signaling pathway to ribosome biogenesis. Plant Signaling & Behavior 2:168-170.

Chevalier, E. and D.P. Matton. 2007. RALF, a secreted peptide involved in plant reproduction. Plant Biology & Botany Joint Congress, American Society of Plant Biologists (ASPB), Chicago, Illinois, USA, 7-11 July, 2007. Poster presentation. (Abstract)

Clark, Catherine, Yvan Pelletier, Robert Coffin, and William Hardy. 2007. Field evaluation of resistance of wild *Solanum* species to aphids. Northeast Potato Technology Forum. Charlottetown, PEI, Canada. March 14-15, 2007.

Colton, L., S. Wielgus, Y. Chen, B. Bowen, F. Nevaro, and J. Jiang. 2007. Continuation of marker-assisted selection for late blight resistant potatoes. Am J Potato Res 84:83-84. (Abstract)

Cortes, C., E. Salazar, H. Prieto, and R. Pertuze. 2006. Determinacion del grado de hibridacion entre papa cultivada (*Solanum tuberosum*) y especies silvestres relacionadas a partir de polinizacion dirigida (Determination of the degree of hibridization among cultivated potato (*Solanum tuberosum*) and wild relative species by manual pollinization). 57° Congreso Agronomico de Chile, Santiago-Chile, October 17-20, 2006. Abstract book, p. 97. (Abstract)

Cortes, C., E. Salazar, H. Prieto, and R. Pertuze. 2007. Antecedentes sobre la Posibilidad de Hibridacion entre Papa Cultivada y Diez Especies de *Solanum* Silvestres Nativos de Chile (Antecedents about hybridization possibility between cultivated potato and ten wild native

Solanum species of Chile). VI Symposium of Genetic Resources for Latin America and the Caribbean. Mexico DF, Mexico. November 13-16, 2007. (Abstract)

Costanzo, S., M. Ospina-Giraldo, K.L. Deahl, C.J. Baker, and R.W. Jones. 2007. Alternate intron processing of family 5 endoglucanase transcripts from the genus *Phytophthora*. Current Genetics 52:115-123.

D'Hoop, B.B., M.J. Paulo, R.A. Mank, H.J. van Eck, and F.A. van Eeuwijk. 2007. Association mapping of quality traits in potato (*Solanum tuberosum* L.). Euphytica DOI 10.1007/s10681-007-9565-5.

Domanski, L., E. Zimnoch-Guzowska, M. Domanska, and H. Jakuczun. 2006. The effect of heterosis of diploid potato clone DG.97-943 of cold shipping type and producing *2n* gametes. Biuletyn Instyt Hod Aklim Roslin 240/241:307-313.Gray-Mitsumune, M., M. O'Brien, C. Bertrand, F. Tebbji, A. Nantel, and D.P. Matton. 2006. Loss of ovule identity induced by over-expression of the fertilization-related kinase 2 (ScFRK2), a MAPKKK FROM *Solanum chacoense*. J Exp Botany 57(15):4171-4187.

Dorion, S., F. Dumas and J. Rivoal. 2006. Autophosphorylation of *Solanum chacoense* cytosolic nucleoside diphosphate kinase on Ser117. J Exp Botany 57(15):4079-4088.

Drobyazina, P.E. and E.E. Khavkin. 2007. Structural homologs of *CONSTANS* and *LEAFY* in potato and its wild relatives. Acta Hort 745:411-419.

Drobyazina, P.E. and E.E. Khavkin. 2007. Two structural variants of the *CONSTANS-LIKE* gene in long- and short-day *Solanum* plants. ASPB Plant Biology & Botany Joint Congress, Chicago, USA, July 2007. (Abstract)

Drobyazina, P.E., E.V. Rogozina, E.A. Sokolova, E.A. Tsar'kova, V.A. Vorobiev, I.M. Yashina, G.A. Yakovleva, and E.E. Khavkin. 2007. SCAR-markers of *Solanum* wild species for introgression potato breeding. II International Vavilov Conference "Crop Genetic Resources in the 21st Century: Current Status, Problems and Prospects", St. Petersburg, Russia, November 2007. (Abstract)

Erazzu, L.E. and E.L. Camadro. 2007. Direct and indirect detection of *2n* eggs in hybrid diploid families derived from haploid tbr x wild species crosses. Euphytica 155(1/2):57-62.

Franco J. and G. Main. 2006. Screening for resistance to *Nacobbus aberrans* and *Globodera* spp. in wild potato species resistant to other pathogens. Nematol Mediterranea 34(2):165-169.

Gabriel, J., A. Coca, G. Plata, and J.E. Parlevliet. 2007. Characterization of the resistance to *Phytophthora infestans* in local potato cultivars in Bolivia. Euphytica 153(3):321-328.

Germain, H., J. Houde, M. Gray-Mitsumune, R.T. Sawasaki, Y. Endo, and D.P. Matton. 2007. Characterization of ScORK28, a transmembrane functional protein receptor kinase predominantly expressed in ovaries from the wild potato species *Solanum chacoense*. FEBS Letters 581:5137-5142.

Gillen, A.M. and R.G. Novy. 2007. Molecular characterization of the progeny of *Solanum etuberosum* identifies a genomic region associated with resistance to potato leafroll virus. Euphytica 155(3):403-415.

Goyer, A. and D.A. Navarre. 2007. Determination of folate concentrations in diverse potato germplasm using a trienzyme extraction and a microbiological assay. J Ag Food Chem 55(9):3523-3528.

Goyer, A., P. Hamm and R. Navarre. 2007. Germplasm mining and metabolic engineering as strategies to boost folates in potato tubers. Am J Potato Res 84:90-91. (Abstract)

Groza, H.I., B.D. Bowen, A.J. Bussan, W.R. Stevenson, F. Navarro, D. Kichefski, S.J. Peloquin, J. Palta, and J. Jiang. 2007. MegaChip – A new potato variety for chipping. Am J Potato Res 84:343-350.

Halseth, D.E. and E.R. Sandsted. 2007. Management profile for 'Marcy', a high yielding chipping variety. Am J Potato Res 84:91. (Abstract)

Haynes, K.G. 2007. Chip color in a high specific gravity *Solanum phureja-Solanum stenotomum* population. Am J Potato Res 84:92. (Abstract)

Haynes, K.G., R.W. Goth, D.H. Lambert, and B.J. Christ. 2007. Evaluation of a short-day adapted tetraploid potato population with horizontal resistance to *Phytophthora infestans* under long-day conditions in northern Maine. Am J Potato Res 84:459-466.

Honermeier, B. and G. Knipp. 2006. Fructans potato – health improving components in new tubers. Kartoffelbau 7:336-338.

Hudak, I., J. Dobranszki and M. Hevesi. 2006. In vitro methods for testing potato clones against soft rot Erwiniae. In: Proceedings of the Fifth International Symposium on In Vitro Culture and Horticultural Breeding. Debrecen, Hungary, September 12-17, 2004. (M.G. Fari, I. Holb and G.D. Bisztray, eds.) Acta Hort 725(1):445-449.

Inglis, D.A., C.R. Brown, B.G. Gunderson, L.D. Porter, J.S. Miller, D.A. Johnson, H. Lozoya-Saldana, and K.G. Haynes. 2007. Assessment of *Solanum hougasii* in Washington and Mexico as a source of resistance to late blight. Am J Potato Res 84:217-228.

Iorizzo, M., J.M. Bradeen, L. Frusciante, and D. Carputo. 2007. Development of a DarT Microarray for Comparative Structural Genomics and Mapping of Agriculturally Significant Genes in Wild Potato Species. ANNUAL CONGRESS "SOCIETA' ITALIANA DI GENETICA AGRARIA XLXI", Riva del Garda, Italy, Sept. 2007. (Abstract)

Iovene, M., S. Savarese, T. Cardi, L. Frusciante, N. Scotti, P. Simon, and D. Carputo. 2007. Assessment of nuclear and cytoplasmic genome composition in *Solanum bulbocastanum* (+) *S. tuberosum* somatic hybrids. Am J Potato Res 84:95. (Abstract)

Iovene, M., S. Savarese, T. Cardi, L. Frusciante, N. Scotti, P.W. Simon, and D. Carputo. 2007. Nuclear and cytoplasmic genome composition of *Solanum bulbocastanum* (+) *S. tuberosum* somatic hybrids. Genome 50(5):443-450.

Jansky, Shelley. 2007. Characterization of genotypic and environmental contributions to baked potato flavor. Am J Potato Res 84:95-96. (Abstract)

Kelly, K., A. Gillen, J. Whitworth, and R. Novy. 2007. Development of molecular markers for introgression of potato leafroll virus resistance from *S. etuberosum* into cultivated potato. Am J Potato Res 84:97. (Abstract)

Khu DongMan, S.L. Love, Mo HwangSung, Li KuiHua, and Lim HakTae. 2007. In vitro screening of potato genotypes for resistance to common scab using thaxtomin A. Hort Environ Biotech 48(4):224-227.

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7. APPROVED

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J. C. Miller, Jr., Chairman, Technical Committee Date

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C. Y. Hu , Lead Administrative Advisor Date