# ANNUAL REPORT

**Calendar Year 2006**

## 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 | Chairman (2007) | J. C. Miller, Jr. |
| Western Region | | I. Vales |
| North Central Region | Secretary (2007) | D. S. Douches |
| Northeastern Region | | W. De Jong |

| **United States Department of Agriculture** | | |
|---|---|---|
| Agricultural Research Service | | |
| Technical Representative | Vice-Chair(2007) | 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 |
| Inter-Regional Potato Introduction Project | Project Leader | J. B. Bamberg |

**Agriculture Canada** T. R. Tarn

**Administrative Advisors**

| | | |
|---|---|---|
| Southern Region | | R. Guthrie |
| Western Region | | C. Y. Hu |
| North Central Region | Lead | S. A. Slack |
| Northeastern Region | | S. D. Reiling |

## 3. PROGRESS AND PRINCIPAL ACCOMPLISHMENTS

### A. Introduction of New Stocks

A total of 41 accessions were assigned PI numbers in 2006: one clone from Korea, one late blight clone from Mexico, one mapping population parent from CIP, 25 tuber moth resistant clones from CIP, and 13 accessions collected from Arizona. 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. Clientele that 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. For foreign requesters this is useful since there are no quarantine restrictions on dried material.

### B. 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) linkage map of late blight in wild potatoes.

### C. Preservation and Increase of Stocks

In 2006, a total of 223 accessions were increased as botanical seed populations.

A total of 600 potato spindle tuber viroid (PSTVd) tests were performed on seed increase parents, seedlots and research materials. Germination tests were performed on 1,307 accessions, ploidy determinations were made on 40 accessions, and tetrazolium seed viability tests were done on 31 seedlots.

### D. Evaluation

International collaboration. 1) with CIP, study of the impact of agrichemicals on *in situ* wild potato reproduction continued, and we initiated a related project to assess the impact of mining pollution on wild potato reproduction. The frost resistant breeding family developed by NRSP-6 staff was evaluated in Peru, and results appear to be promising. The elite clonal selections from this population grown in Hancock, Wisconsin had good tuber type and cold hardiness to –5ºC. 2) with CIP, calcium application trials in the highlands showed impressive yield improvement, and suggest our parallel ongoing program to enhance calcium uptake efficiency via *S. microdontum* introgression might have impressive application in some locations in the Andes. 3) with CIP, progress was made on a joint project to study *in situ* germplasm capture (see below) and molecular-based assessment of allele density. 4) with PICTICPAPA: The entire collection of *S. microdontum* was evaluated for late blight in Toluca, Mexico (results pending).

Nutritional. 1) Potato potassium is in a unique position to mitigate hypertension, which has huge health and economic impact. Potassium levels in the tubers are also correlated to the incidence

of black spot bruise. We screened and found significant species differences in K uptake potential (funding anticipated from CGC). 2) Work continued with Dr. C. Miller's lab screening for antioxidants in uncolored wild potato species tubers. We found an important GxE effect, demonstrating that some germplasm is only high antiox when grown artificially in the greenhouse, not in the field (two papers submitted). 3) Plans were made to preselect and screen the primitive cultivated species collection for high phenolics. 4) We began researching and planning experiments to examine anticancer potential of high tuber tomatine. 5) We characterized exotics and adapted materials for Potato Carboxypeptidase Inhibitor, a tiny heat- and digestion-resistant protein reported to inhibit some of the most pernicious human cancers (funded by the Crop Germplasm Committee, CGC). We staged parents for making and testing segregating hybrids for all of these traits.

Mutants and other new traits. 1) We initiated crossing for adapted tubers in the background of the *crazy sepal* sterile floral mutant. BSA of *crazy* and flowering plants are planned for a fair test of the potential yield improvement without the sink in flowers. 2) Continued tests to relate tuber pH to other traits like calcium and antiox. *S. microndontum* was newly identified as a species for which some populations' tubers are extremely acidic (10x most cultivated types). 3) Produced calcium introgression hybrids at 2x and 4x level and evaluated in WI and Hawaii. 4) Confirm that other GA mutants published as *pito* and *ga2* are both likely the same as our *ga1*. Staged for study of spontaneous reversion to the functional allele. 5) Purple-less *fendleri*: Eliminated genome suppression as explanation for distorted segregation observed in some mutant testcrosses.

Genebank technology and diversity management. 1) Found that long-term germination is declining more rapidly outside of local -20 and NSSL storage, so moved our active inventory to -20. 2) Found germination is not biased by density of sowing. 3) Found seedlots generated in 1986 with and without extra fertilization do not show clear germination effect due to "seed quality" after 20-yr storage. 4) Found seedlings are taller under sodium vs metal halide lamps. 5) Characterized 100 *microdontum* pops for pH, calcium, antiox, *cs1* mutant and late blight pursuant to testing effectiveness of DNA-based core collection within a species. 6) Tested seed increase phenology and found later summer plantings produce more seeds per pollination. 7) With CIP cooperators continued case study of capture of diversity at easy-vs-hard collecting sites. 8) Found proximity of other species does not explain distinction of northern *S. verrucosum* populations in Mexico. 9) Published results showing small DNA differences between reputed duplicates in NRSP-6 and CIP collections. 10) Published conclusion that no loss of diversity happens at selection of excess small seedlings at transplant for inbred species.

## E. Distribution

NRSP-6 distributions are shown in the table below. Stocks were sent to clientele in 25 states of the USA and 11 other countries.

VOLUME AND TYPES OF STOCKS DISTRIBUTED

| | Units[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Category | S | TF | TS | IVS | DNA | PL | HERB | TOT | PIs |
| Domestic | 3,794 | 214 | 1,158 | 617 | 0 | 11 | 0 | 5,794 | 3,088 |
| Foreign | 481 | 0 | 16 | 20 | 42 | 0 | 0 | 559 | 529 |
| NRSP-6[2] | 9,192 | 0 | 62 | 284 | 0 | 0 | 0 | 9,538 | 2,271 |
| Total | 13,467 | 214 | 1,236 | 921 | 42 | 11 | 0 | 15,891 | 5,888 |

[1] Types of stocks sent/(number of seeds, tubers or plantlets per standard shipping unit): S= True Seeds/(50), TF= Tuber Families/(10), TS=Tuber Stocks/(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.

## F. Visitors From Other Countries

| | |
|---|---|
| Dr. Shaoguan Duan | China |
| Dr. Liping Jin | China |
| Dr. Shuzhi Jaing | China |
| Dr. Kaiyun Xie | China |
| Dr. Wenbo Pan | China |
| Dr. Conghua Xie | China |
| Dr. Jun Liu | China |
| Dr. Nune Sarukhanyan | Armenia |
| Dr. Klaus J. Dehmer | Germany |
| Dr. Glenn Bryan | Scotland |
| Dr. Gavin Ramsay | Scotland |
| Dr. Caroline Marques Castro | Brazil |

# 4. USEFULNESS OF FINDINGS

NRSP-6's purpose is to provide a ready source of raw materials, technology and information to support potato enhancement, breeding and research in the USA and around the world. Thus, one way the success of NRSP-6 can be measured is by the occurrence of NRSP-6 germplasm in the pedigrees of new, improved potato cultivars. Another is in the use of NRSP-6 stocks in more basic research programs, which is reflected in publications that provide information that ultimately contribute to better use of the germplasm resource.

Nine cultivar releases were published in the American Journal of Potato Research in 2006: ‘Dakota Jewel’, ‘Dakota Rose’, ‘Beacon Chipper’, ‘Reeves Kingpin’, ‘Western Russet’,

'Gemstar Russet', 'Marcy', 'Defender', and 'White Pearl'. All of these are known to have wild species in their pedigrees.

Section 6 lists 100 papers, 45 abstracts, and 4 theses which report the use of NRSP-6 *Solanum* introductions this year.

## 5. WORK PLANNED FOR 2007

Fast and accurate delivery of high quality germplasm and information will continue to be the general objective of NRSP-6. We also plan 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.

Evaluation will continue on *Solanum* species for the traits described for the past year, as funds are available.

## 6. PUBLICATIONS ISSUED DURING THE YEAR

### A. Publications issued by NRSP-6 Personnel


Bamberg, John. 2006. *Crazy Sepal*: A new floral *sepallata*-like mutant in the wild potato *Solanum microdontum* Bitter. Am J Potato Res 83:433-435.

Bamberg, J.B. and A. del Rio. 2006. Seedling transplant selection does not cause genetic shifts in genebank populations of inbred potato species. Crop Sci 46:424-427.

Bamberg, John, Charles Fernandez and Alfonso del Rio. 2006. A new wild potato mutant in *Solanum stoloniferum* Schltdl. lacking purple pigment. Am J Potato Res 83:437-445.

Bamberg, J., J.P. Palta and M. Martin. 2006. Using a wild species, *S. microdontum*, to move high calcium trait to the cultivated potatoes. *In* Potato Association of America/Solanaceae 2006 Annual Meeting. p. 163 (Abstract)

Busse, J.S., J. Bamberg and J.P. Palta. 2006. Correlation between aerial and tuber calcium accumulation in Solanum genotypes segregating for tuber calcium uptake efficiency. *In* Potato Association of America/Solanaceae 2006 Annual Meeting. p. 204 (Abstract)

Del Rio, A.H., J.B. Bamberg and Z. Huaman. 2006. Genetic equivalence of putative duplicate germplasm collections held at CIP and US Potato Genebanks. Am J Potato Res 83:279-285.

Del Rio, Alfonso, John B. Bamberg and Charles Fernandez. 2006. Assessment of the genetic structure of *in situ* populations of wild potato *Solanum fendleri* eco-geographically dispersed in the Chiricahua mountains, Arizona. Am J Potato Res 83:108. (Abstract)

Ghislain, M., D. Andrade, F. Rodriguez, R.J. Hijmans, and D.M. Spooner. 2006. Genetic analysis of the cultivated potato *Solanum tuberosum* L. Phureja Group using RAPDs and nuclear SSRs. Theor Appl Genet 113:1515-1527.

Jansky, S.H., R. Simon and D.M. Spooner. 2006. Testing taxonomic predictivity. Crop Sci 46:2561-2570.

Kuang, H.H., F.S. Wei, M.R. Marano, U. Wirtz, X.X. Wang, J. Liu, W.P. Shum, J. Zaborsky, L.J. Tallon, W. Rensink, S. Lobst, P.F. Zhang, C.E. Tornqvist, A. Tek, J. Bamberg, J. Helgeson, W. Fry, F. You, M.C. Luo, J.M. Jiang, C.R. Buell, and B. Baker. 2005. The *R1* resistance gene cluster contains three groups of independently evolving, type I *R1* homologues and shows substantial structural variation among haplotypes of *Solanum demissum*. Plant J 44(1):37-51.

Lozoya-Saldana, H., O. Barrios and John Bamberg. 2006. *Phytophthora infestans*: races vs genotypes in the Toluca Valley, Mexico. Am J Potato Res 83:122. (Abstract)

Nzaramba, Ndambe M., John Bamberg, Douglas C. Scheuring, and J. Creighton Miller Jr. 2006. Antioxidant activity in *Solanum* species as influenced by seed type and growing location. Am J Potato Res 83:127. (Abstract)

Peralta, I.E., S. Knapp and D.M. Spooner. 2006. Nomenclature for wild and cultivated tomatoes. Rep Tomato Genet Coop 56:6-12.

Spooner, D.M. and A. Salas. 2006. Structure, biosystematics, and genetic resources. In: J. Gopal and S.M. Paul Khurana (eds.) Handbook of potato production, improvement, and post-harvest management. Haworth's Press, Inc., Binghampton, New York. Pgs.1-39.

Vega, S.E., M. Aziz, J. Bamberg, A. Verma, and J.P. Palta. 2006. Screening potato germplasm for carboxy-peptidase inhibitor and its potential anticancer property. *In* Potato Association of America/Solanaceae 2006 Annual Meeting. p. 160 (Abstract)

Vega, S.E., J.P. Palta and J. Bamberg. 2006. Exploiting cultivated germplasm to breed for enhanced tuber quality. *In* A.J. Bussan and M. Drilias (eds.). Proceedings of the Wisconsin's Annual Potato Meeting. pp. 143-144. (Abstract)

Vega, Sandra E., John B. Bamberg and Jiwan P. Palta. 2006. Gibberellin-deficient dwarfs in potato vary in exogenous $GA_3$ response when the *ga1* allele is in different genetic backgrounds. Am J Potato Res 83:357-363.

Vega, Sandra E., Jiwan P. Palta and John B. Bamberg. 2006. Root zone calcium can modulate GA induced tuberization signal. Am J Potato Res 83:135. (Abstract)

Vega, Sandra E., Jiwan P. Palta and John B. Bamberg. 2006. Exploiting cultivated germplasm to breed for enhanced tuber calcium accumulation ability. Am J Potato Res 83:136. (Abstract)

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


Andrivon, D., R. Pellé and D. Ellissèche. 2006. Assessing resistance types and levels to epidemic diseases from the analysis of disease progress curves: principles and application to potato late blight. Am J Potato Res 83:455-461.

Blanco, M. and R. Valverde. 2005. Bulk segregant analysis (BSA) for the detection of AFLPs linked to the PVX resistance gene in *Solanum commersonii*. Agronomia Costarricense 29(2):45-55.

Blanco, M. and R. Valverde. 2005. Identification and mapping of AFLPs linked to the PVX resistance gene in *Solanum commersonii*. Agronomia Costarricense 29(2):57-71.

Bradeen, J.M., M.J. Sanchez and D.S. Mollov. 2006. Multi-genotype allelic mining at the RB late blight resistance locus reveals broad allele distribution and an in planta recombination event. Am. Phytopathological Society Annual Meeting, Quebec, City, Canada. (Abstract)

Bradeen, J.M., B.P. Millett and D.S. Mollov. 2006. In Planta transcriptional and functional patterns of an agriculturally relevant R gene. Society for In Vitro Biology meeting, Minneapolis, MN. Invited presentation as part of "Genomics of Plant Microbe Interactions" Colloquium. (Abstract)

Bradshaw, J.E., G.J. Bryan, A.K. Lees, K. McLean, and R.M. Solomon-Blackburn. 2006. Mapping the *R10* and *R11* genes for resistance to late blight (*Phytophthora infestans*) present in the potato (*Solanum tuberosum*) R-gene differentials of Black. Theor Appl Genet 112(4):744-751.

Brown, C.R., W. De Jong and C-P Yang. 2006. Inheritance of total Carotenoid in high-content diploid germplasm. Am J Potato Res 83:99. (Abstract)

Brown, C.R., T.S. Kim, Z. Ganga, K. Haynes, D. De Jong, M. Jahn, I. Paran, and W. De Jong. 2006. Segregation of total Carotenoid in high level potato germplasm and its relationship to beta-carotene hydroxylase polymorphism. Am J Potato Res 83:365-372.

Brown, C.R., H. Mojtahedi, S. James, R.G. Novy, and S. Love. 2006. Development and evaluation of potato breeding lines with introgressed resistance to Columbia root-knot nematode (*Meloidogyne chitwoodi*). Am J Potato Res 83:1-8.

Bu, QingYun, Liang Wu, ShiHu Yang, and JianMin Wan. 2006. Cloning of a potato proteinase inhibitor gene *PINII-2x* from diploid potato (*Solanum phureja* L.) and transgenic investigation of its potential to confer insect resistance in rice. J Integrative Pl Bio 48(6):732-739.

Busse, J.S. and J.P. Palta. 2006. Investigating the in vivo calcium transport path to developing potato tuber using $^{45}Ca$: a new concept in potato tuber calcium nutrition. Physiologia Plantarum 128(2):313-323.

Cadena, M., A. Naranjo and C.E. Nustez. 2005. Evaluating the response of 60 *Solanum phureja* (Juz. *et* Buk.) genotypes to attacks by the Guatemalan moth (*Tecia solanivora* Povolny). Agro Colombiana 23(1):112-116.

Caromel, B., D. Mugniery, M.C. Kerlan, S. Andrzejewski, A. Palloix, D. Ellisseche, F. Rousselle-Bourgeois, and V. Lefebvre. 2005. Resistance quantitative trait loci originating from *Solanum sparsipilum* act independently on the sex ratio of *Globodera pallida* and together for developing a necrotic reaction. Mol Pl-Microbe Interact 18(11):1186-1194.

Castelli, L., G. Bryan, V.C. Blok, G. Ramsay, and M.S. Phillips. 2005. Investigation of resistance specificity amongst fifteen wild *Solanum* species to a range of *Globodera pallida* and *G. rostochiensis* populations. Nematology 7(5):689-699.

Castelli, L., G. Bryan, V.C. Blok, G. Ramsay, and M.S. Phillips. 2005. Life stage responses observed amongst fifteen wild *Solanum* species resistant to *Globodera pallida*. Nematology 7(5):701-711.

Castelli, L., G. Bryan, V.C. Blok, G. Ramsay, M. Sobczak, T. Gillespie, and M.S. Phillips. 2006. Investigations of *Globodera pallida* invasions and syncytia formation within roots of the susceptible potato cultivar Desiree and resistant species *Solanum canasense*. Nematology 8(1):103-110.

Chashinsky, A.V. and V.A. Kozlov. 2006. Use of genetic resources of potato in breeding for resistance to late blight. Questions of potato growing. Actual problems of a science and practice. Proc. Int. Conf. All-Russian Potato Research Institute, Moskov, 2006. pp. 406-412.

Chen, Q., Y-Z Shi, H-Y Li, D. Beasley, D. Lynch, and M. Goettel. 2006. Incorporation and establishment of first somatic hybrids carrying both late blight and Colorado potato beetle resistance from Mexican wild species *Solanum pinnatisectum*. Am J Potato Res 83:101-102. (Abstract)

Coca Morante, M. and N. Montealegre Villanueva. 2006. Short communication. Resistance to *Phytophthora infestans* in populations of wild potato species in the Sorata microcentre of genetic diversity, La Paz, Bolivia. Spanish J Ag Res 4(2): 156-160.

Colton, L.M., H.I. Groza, S.M. Wielgus, and J. Jiang. 2006. Marker-assisted selection for the broad-spectrum potato late blight resistance conferred by gene *RB* derived from a wild potato species. Crop Sci 46:589-594.

Connor, T. and P. Barrell. 2005. Resistance to soft rot: *Solanum brevidens* as a source of resistance to soft rot for potato breeding. Grower 60(10):55-56.

Coombs, J.J., D.S. Douches, S.G. Cooper, E.J. Grafius, W.L. Pett, and D.D. Moyer. 2005. Combining natural and engineered host plant resistance mechanisms in potato for Colorado potato beetle: choice and no-choice field studies. J Am Soc Hort Sci 130(6):857-864.

Cooper, Susannah, David Douches, Joseph Coombs, and Edward J. Grafius. 2006. Evaluating natural and engineered resistance mechanisms in potato (*Solanum tuberosum* L.) against Colorado potato beetle (*Leptinotarsa decemlineata* Say) in a no-choice field study. Am J Potato Res 83:104. (Abstract)

Couch, B.C., R. Spangler, C. Ramos, and G. May. 2006. Pervasive purifying selection characterizes the evolution of *I2* homologs. Mol Pl-Microbe Interact 19(3):288-303.

Daniell, H., S.B. Lee, J. Grevich, C. Saski, T. Quesada-Vargas, C. Guda, J. Tomkins, and R.K. Jansen. 2006. Complete chloroplast genome sequences of *Solanum bulbocastanum* and *Solanum Lycopersicum*, and comparative analyses with other Solanaceae genomes. Theor Appl Genetics 112(8):1503-1518.

Davis, J.A., E.B. Radcliffe and D.W. Ragsdale. 2006. Identifying and mapping resistance to green peach aphid, *Myzus persicae* (Sulzer) in potato. 90th Annual Meeting of The Potato Association of America, Madison, WI. July 24th, 2006. (Abstract)

Davis, Jeffrey A., Edward B. Radcliffe, David W. Ragsdale, and Christian A. Thill. 2006. Identifying resistance to aphids in crosses with somatic fusions of *Solanum tuberosum* L. and *Solanum bulbocastanum* Dun. Am J Potato Res 83:106. (Abstract)

De Jong, Walter S., Donald E. Halseth, Bill B. Brodie, Keith L. Perry, Joseph B. Sieczka, Barbara J. Christ, Gregory A. Porter, Ken M. Paddock, Michael W. Peck, and Robert L. Plaisted. 2006. Marcy: A chipping variety with resistance to common scab and the golden nematode. Am J Potato Res 83:189-193.

D'hoop, Björn, João Paulo, Ben Vosman, Herman van Eck, Richard Visser, and Fred van Eeuwijk. 2006. Association mapping in tetraploid potato (*Solanum tuberosum* L.) – a pilot study. EAPR, The Science of Selection, in Carlow, Ireland. (Abstract)

D'hoop, Björn, M. João Paulo, Ben Vosman, Herman van Eck, Richard Visser, Rolf Mank, and Fred van Eeuwijk. 2006. Association Mapping in Potato (*Solanum tuberosum* L.). EUCARPIA XIII, Biometrics in Plant Breeding Section Meeting, in Zagreb, Croatia. (Abstract)

De Jong, W.S., D.E. Halseth, B.B. Brodie, K.L. Perry, J.B. Sieczka, B.J. Christ, G.A. Porter, K.M. Paddock, M.W. Peck, and R.L. Plaisted. 2006. Marcy: A chipping variety with resistance to common scab and the golden nematode. Am J Potato Res 83:189-193.

De Koeyer, D., Y. Pelletier, D. Ronis, C. Clark, and V. Burns. 2006. *Solanum oplocense*: a new source of resistance to Colorado potato beetle and processing quality attributes. Am J Potato Res 83:107-108. (Abstract)

Dobson, G., D.W. Griffiths, H.V. Davies, and J.W. McNicol. 2004. Comparison of fatty acid and polar lipid contents of tubers from two potato species, *Solanum tuberosum* and *Solanum phureja*. J Ag Food Chem 52(20):6306-6314.

Dorion, S., D.P. Matton and J. Rivoal. 2006. Characterization of a cytosolic nucleoside diphosphate kinase associated with cell division and growth in potato. Planta 224(1):108-124.

Douches, D.S., J. Coombs, R. Hammerschmidt, W.W. Kirk, C. Long, S. Snapp, Ben Kudwa, Don Flannery, and Terry Bourgoin. 2006. Beacon Chipper: A round white chip-processing potato variety. Am J Potato Res 83:241-247.

Escallón, R., M. Ramirez and C.E. Nustez. 2005. Evaluating potential yield and resistance to *Phytophthora infestans* (Mont. de Bary) in the *Solanum phureja* (Juz. *et* Buk.) yellow potato collection. Agronomia Colombiana 23(1):35-41.

Evers, D., C. Schweitzer, N. Nicot, S. Gigliotti, M.R. Herrera, J.F. Hausman, L. Hoffmann, B. Trognitz, J. Dommes, and M. Ghislain. 2005. Two *PR-1* loci detected in the native cultivated potato *Solanum phureja* appear differentially expressed upon challenge by late blight. Physio Mol Pl Path 67(3/5):155-163.

Fock, I., J. Luisetti, C. Collonnier, F. Vedel, G. Ducreux, H. Kodja, and D. Sihachakr. 2005. *Solanum phureja* and *S. stenotomum* are sources of resistance to *Ralstonia solanacearum* for somatic hybrids of potato. In: Bacterial wilt disease and the *Ralstonia solanacearum* species complex. C. Allen, P. Prior, and A.C. Hayward (eds.), St. Paul, MN, USA; Am Phytopath Soc (APS Press), pp. 253-259.

Frost, K.E., S.H. Jansky and D.I. Rouse. 2006. Transmission of Verticillium wilt resistance to tetraploid potato via unilateral sexual polyploidization. Euphytica 149:281-287.

Ganga, Z.N., G.A. Porter, D. Lambert, G. Sewell, and A. Bushway. 2006. Reeves Kingpin: a high yielding mid-season variety suitable for fry processing. Am J Potato Res 83:110. (Abstract)

Ganga, Z.N., G.A. Porter, D.H. Lambert, G. Sewell, A. Bushway, and B. de los Reyes. 2006. Reeves Kingpin: A high-yielding mid-season potato variety suitable for fry processing. Am J Potato Res 83:141-147.

Garry, G., G.A. Forbes, A. Salas, M. Santa Cruz, W.G. Perez, and R.J. Nelson. 2005. Genetic diversity and host differentiation among isolates of *Phytophthora infestans* from cultivated potato and wild Solanaceous hosts in Peru. Plant Path 54(6):740-748.

Gebhardt, C., D. Bellin, H. Henselewski, W. Lehmann, J. Schwarzfischer, and J.P.T. Valkonen. 2006. Marker-assisted combination of major genes for pathogen resistance in potato. Theor Appl Genet 112(8):1458-1464.

Germain, H., S. Rudd, C. Zotti, S. Caron, M. O'Brien, S.C. Chantha, M. Lagacé, F. Major, and D.P. Matton. 2005. A 6374 unigene set corresponding to low abundance transcripts expressed following fertilization in *Solanum chacoense* Bitt, and characterization of 30 receptor-like kinases. Pl Mol Bio 59(3):515-532.

Glynn, M. and J.R. Sowokinos. 2006. Marketing potential of advanced breeding clones. Valley Potato Grower 71(166):12-14.

Glynn, M. and J.R. Sowokinos. 2006. Advanced potato clones with increased cold sweetening resistance (CSR). Valley Potato Grower 71(167):12-15.

Greco, N., D. Carputo, L. Frusciante, G. Russo, and A. Brandonisio. 2005. Screening of clones of *Solanum* spp. for resistance to potato cyst nematodes, *Globodera rostochiensis* and *G. pallida*. Nematol Mediterranea 33(2)163-170.

Groza, H.I., B.D. Bowen, W.R. Stevenson, J.R. Sowokinos, M.T. Glynn, C. Thill, S.J. Peloquin, A.J. Bussan, and J. Jiang. 2006. White Pearl - A chipping potato variety with high level of resistance to cold sweetening. Am J Potato Res 83:259-267.

Hamidoghli, Yousef and K. Ward. 2006. Plant regeneration from protoplasts of *Solanum tuberosum* and *S. stoloniferum*. Hort Environ Bio 47(1):14-18.

Hawkes, J.G. 2004. Hunting the wild potato in the South American Andes: memories of the British Empire potato collecting expedition to South America 1938-1939. Nijmegen, Netherlands; Botanical and Experiment Garden, University of Nijmegen, 223 pp.

Haynes, K.G. and B.J. Christ. 2006. Improvements in foliar late blight-resistance in a diploid hybrid *Solanum phureja-S. stenotomum* population. Am J Potato Res 83:112-113. (Abstract)

Haynes, Kathleen G. and Barbara J. Christ. 2006. Recurrent maternal half-sib selection improves resistance to foliar late blight in a diploid hybrid *Solanum phureja-Solanum stenotomum* population. Am J Potato Res 83:181-188.

Horackova, V. and J. Domkarova. 2005. The Czech bank of potato genetic resources. Czech J Genet Plant Breed 41(3):117-119.

Jansky, S.H. 2006. Overcoming hybridization barriers in potato. Plant Breeding 125:1-12.

Jansky, S.H. and S.J. Peloquin. 2006. Advantages of wild diploid *Solanum* species over cultivated diploid relatives in potato breeding programs. Genet Resour Crop Evol 53:669-675.

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**7. APPROVED**

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

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S.A. Slack, Lead Administrative Advisor Date