Executive 3-year summary for NRSP6 Midterm Review, CY2010-2012

A. Acquisition. A total of 74 new germplasm accessions were collected in the wild and 33 more imported from cooperators.

B. Preservation schedule was maintained and **Evaluation** was successful for many useful traits: Seed increase = 660, germination tests = 4014, virus tests = 2110. Over 3000 field plots were grown for evaluation and taxonomy. We worked with numerous cooperators, providing germplasm enhancement technology, custom samples and hybrids resulting in identification of elite new materials for antioxidants, anti-appetite proteins, orange flesh, folate, thiamine, starch balance, low acrylamide, anti-cancer, resistance to greening, frost tolerance and calcium use efficiency. We discovered a new floral mutant. We demonstrated that hotspots of diversity can be identified for collecting, and that an AFLP-based core collection of model species will capture all of the known useful traits. We showed that pesticide overspray of wild populations near farmers' fields in Peru may reduce fecundity, but probably not gentic diversity.

C. Classification reduced the number of species to about 100, for a more stable and predictive taxonomy.

D. Distribution totals were strong showing continued interest and value in our germplasm:

Category	Seed	TU	TC	IV	DNA	Plants	Herb	Total	PIs
Domestic	6,709	13	7,681	4,435	123	586	11	19,558	13,236
Foreign	2,537	0	0	1,578	3	0	0	4,118	2,460
Total	9,246	13	7,681	6,013	126	586	11	23,676	15,696

[1] Types of stocks sent/(number of seeds, tubers or plantlets per standard shipping unit): Seed= True Seeds/(50), TU = Tuber families/(12), TC = Tuber Clones/(3), IV = *in vitro* stocks/(3), DNA = dried leaf samples/(1), Plants = rooted cuttings /(1), Herb= herbarium specimens/(1).

E. Outreach. A robust website including access to all NRSP6 stock data, ordering information, technology tips, mapping features, publications, and complete reference to administrative reports was maintained. We hosted numerous visiting scientists, were featured in two documentary films and a syndicated article by the Milwaukee Journal Sentinel, gave invited keynote lectures at the US Botanic Gardens (DC), and Latin American Potato Association (Cuzco); served as Editor in Chief for American Journal of Potato Research and chairman of the Potato Crop Germplasm Committee. We returned benefits to Peru by cooperatively selecting and testing productive frost hardy and calcium responsive lines in the highlands. We trained two summer interns attending UW-Madison and Princeton.

F. Impact. Ten cultivar releases were published, each having at least one of nine different exotic potato species in their pedigrees. No other crop matches potato in use of exotics in practical breeding. Staff published 55 scholarly research papers, and nearly 400 more were cited by others using NRSP6 species.

Work Plans / Staff & Funding / administration / Integration

Acquire germplasm in southwest USA and valuable germplasm from other genebanks and/or scientists
Preserve 200 populations per year, with associated maintenance of purity, germination, and health
Classify in a way that maximizes the groupings of germplasm by genetic value
Distribute germplasm and info rapidly to clients in a way that maximizes their research and breeding success
Evaluate traits already under study and engage new traits, especially nutritional ones (like anti-diabetes)
Publish results of evaluation and technical research (see above)
Lead Crop Germplasm Committee and American Journal of Potato Research
Maintain integration with UW-Madison as full professor in Dept of Horticulture
Maintain >$45K level of 2012 industry support and $150K maintenance level from MRF