

NPGCC Justification for Funding the Regional Germplasm Centers and NRSP-6

February 2009

This document is an update of a white paper based on the discussion and presentation about the challenges facing the National Plant Germplasm System (NPGS) at the 2005 ESS meeting in Lake Tahoe, NV. The National Plant Germplasm Coordinating Committee (NPGCC) was charged with examining how the regional research associations deal with funding the four regional germplasm accounts (NE-9 located at Cornell University, S-9 located at the University of Georgia, W-6 located at Washington State University and NC-7 located at Iowa State University) along with the Potato Introduction Project at Sturgeon Bay, WI (NRSP-6) that support germplasm activities. This white paper will provide background information and justification for continued SAES funding of these activities.

Brief History of NPGS Plant Introduction Stations

The U. S. National Plant Germplasm System (NPGS) has responsibility for conserving and encouraging the use of the Nation’s plant genetic resources and associated information, which are critical to ensuring the stability and productivity of U. S. agriculture. The NPGS is funded jointly by Federal and State resources, real and in-kind. Among the most important NPGS genebanks are the four Regional Plant Introduction Stations and the Interregional Potato Station.

The U. S. National Research Council in 1943 identified the need for more organized regional plant germplasm conservation efforts. In response, the Research and Marketing Act of 1946 [Public Law 733] authorized the establishment of the National Potato Introduction Station (now NRSP-6, Sturgeon Bay, WI) and the Regional Plant Introduction Stations (RPIS) at Ames, IA (North Central Project 7), Geneva, NY (Northeastern Project 9), Griffin, GA (Southern Project 9), and Pullman, WA (Western Project 6). Subsequently, the RPIS and the National Potato Introduction Station were established under a Memorandum of Understanding between USDA and the State Agricultural Experiment Stations (SAES), their Directors Associations, and the Committee of Nine, with operations commencing between 1948 and 1952.

During more than 60 years of operation, the RPIS and the NRSP-6 have evolved into the backbone of the NPGS and now conserve 244,000 accessions, or about ½ of the total of 510,000 managed by the 20+ NPGS genebanks. At their inception, it was envisioned that the USDA/ARS and the SAES would share the cost of operating these five sites more or less equally. Currently, the USDA/ARS provides most of the funding (Table 1), and has primary responsibility for managing them and the NPGS in total. Nevertheless, the States contribute in many ways beyond the annual off-the-top funding by providing land, facilities, equipment, student workforces, etc.

Table 1: FY 08 USDA/ARS and SAES Budgets for RPIS and the Potato Station

FY 08 Funding	NC-7 Ames	NE-9 Geneva	NRSP-6 Sturgeon Bay	S-9 Griffin	W-6 Pullman
NRSP or MRF SAES Funding	522,980 (20%)	176,000 (9%)	150,000 (23%)	407,208 (15%)	355,560 (14%)
ARS Funding	2,080,896 (80%)	1,770,511 (91%)	503,500 (77%)	2,180,481 (85%)	2,147,351 (86%)
Total Funding	2,603,876 (100%)	1,946,511 (100%)	653,500 (100%)	2,587,689 (100%)	2,502,911 (100%)

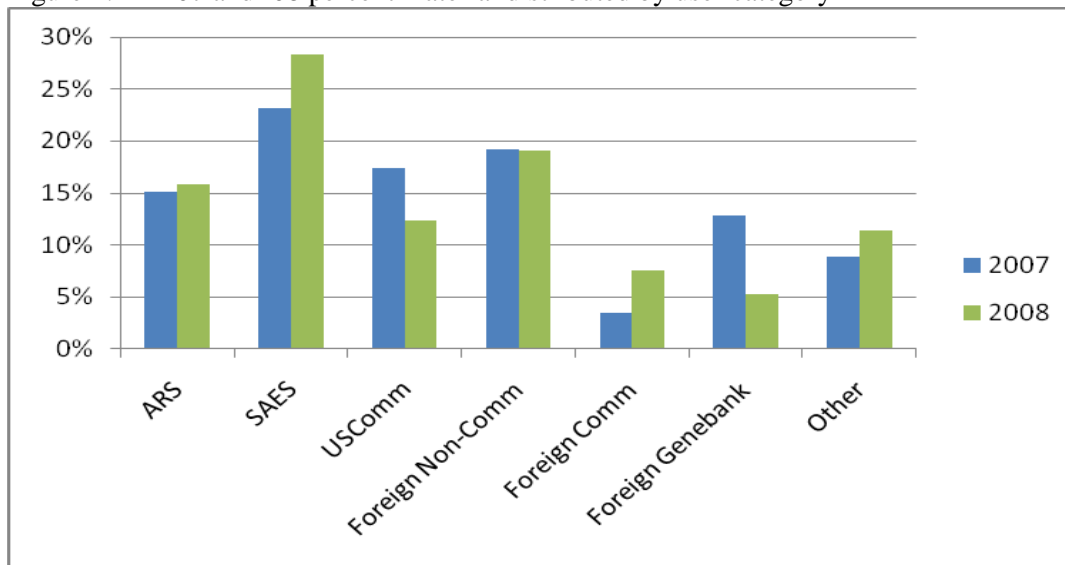
Recently, the value and demand for RPIS and NRSP-6 germplasm have increased significantly as sources of genes for enhanced crop productivity, resistance to rapidly-emerging diseases and pests, and improved nutritional and product quality. In fact, SAES scientists are major users of NPGS germplasm, which is available to them free-of-charge and restriction, whereas access to other germplasm is increasingly problematic due to deteriorating natural habitats and institutional capacities, intellectual property rights, and access legislation or policies.

As noted above, the four regional germplasm centers (NE-9, S-9, W-6 and NC-7) receive a proportion of their funding (approximately 20%) from an annual off the top allocation from the appropriate regional association. The remaining funding for each of the regional germplasm centers comes from a USDA-ARS commitment to the NPGS, individual station in-kind support and to a lesser degree minimal grant and contractual support. This arrangement has, for the most part, been successful, however funding from the regional associations has been flat for several years and reflects the lack of growth in the Hatch appropriation. Suffice it to say, the five germplasm centers operate with limited budgets that increasingly fail to cover the substantial costs of such large, complicated facilities and operations due in part to the highly diverse nature of collection material.

The NPGCC highlights the following factors for the Experiment Station Director’s consideration:

1. The university community of scientists is the largest single user of the materials held in these collections (Figure 1).

Figure 1: FY '07 and '08 percent material distributed by user category



2. Approximately 40% of the collections within the NPGS is managed by the four regional centers located on land-grant university campuses.
3. Approximately 60% of the germplasm that is distributed annually is material from the four regional centers.
4. Fiscal commitment of off-the top funds to the four regional centers constitutes less than 20% of the budget required to keep this activity functioning, with USDA-ARS being the largest single contributor to the success of this program.
5. Capacity of our SAES system to respond to future challenges depends on access to plant germplasm maintained in the NPGS.

Additionally, the NPGCC was charged to look at the funding of one National Research Support Project (NRSP-6, *Inter-Regional Potato Introduction Project*), that plays a significant role in the germplasm system and that has been funded through off the top funding from the Experiment Station System via a recommendation from the NRSP Review Committee. Of late, the directors have recommended that NRSP's become less dependent on off the top allocations, and find other appropriate sources of funds to support their activities, to the degree possible. Notably, the potato germplasm center partially supported by NRSP-6 receives most of its funding (approx. 77%) from USDA-ARS and important in-kind contributions from the University of Wisconsin. Some Hatch-funded staff positions at this site can no longer be supported and will be terminated in the next few months.

What is the rationale for off-the top funding of NRSP-6? Some states have more direct involvement in potato research or breeding, and some states have larger acreages devoted to potato production. All regions are actively using NRSP-6 stocks. As documented in the NRSP-6 proposal, a total of 36 states and the DC received germplasm in the past project term (NC -11 states; NE - 8 states; S - 7 states; and W - 11 states). Potato breeding and research programs in these states make important contributions to the states' economies, University programs and agricultural competitiveness. SAES programs pursuing progressive breeding and research using exotic germplasm (some in each region) often depend on NRSP-6 as the *only* practical source of the materials necessary for their work.

Furthermore, the benefits of NRSP-6 activities to potato states by no means stay within their borders. *Every* state at least has a significant and direct involvement in marketing, transportation and consumption of potato as a major part of the diet of its population. Citizens of *every* state have an interest in the influence potato is making on world food policy, considering how closely political stability is tied to economic and nutritional stability. Thus every state has a significant interest in potato improvement and should accept responsibility for paying a part of the cost.

A convincing case for continuing NRSP-6 support can be based on national needs and potential for significant impact including:

- The major vegetable. Most widely grown and consumed vegetable in the US and world, being among the most palatable and versatile of foods, thus perhaps the most practical hope of delivering improved nutrition to the nation and world.
- Significant production problems to be solved. Very high requirements for quality, which translates into very high inputs of pesticides, water and fertilizer with the associated production costs and risks of food residues and environmental impact.
- Great genetic opportunities. A narrow genetic base in US cultivars compared to the genetic breadth in exotics forms. More exotics germplasm is available than for any other major crops. Almost all modern varieties have exotic germplasm in their pedigrees. Past investments in this crop's germplasm have now built the world's premier collection of stocks and infrastructure within the US.
- Potential for economic impact. Among the greatest potential for market expansion. Very high potential for value-added profit in processed forms. Great differential between average and demonstrated optimum yield. Among the greatest diversity of cultivation in countries, latitudes and altitudes.
- Expertise and infrastructure needed. Germplasm maintenance requires special knowledge, technology and facilities for seed and clonal preservation, exclusion of systemic diseases, and prevention of genetic erosion in seed populations.

Based on the above justifications, the NPGCC recommends that the SAES directors continue to fund the four regional germplasm centers through the traditional regional funding mechanism and maintain level funding for the Potato Introduction Project through the NRSP mechanism.