

The National Plant Germplasm System: 2011 Status and Prospects

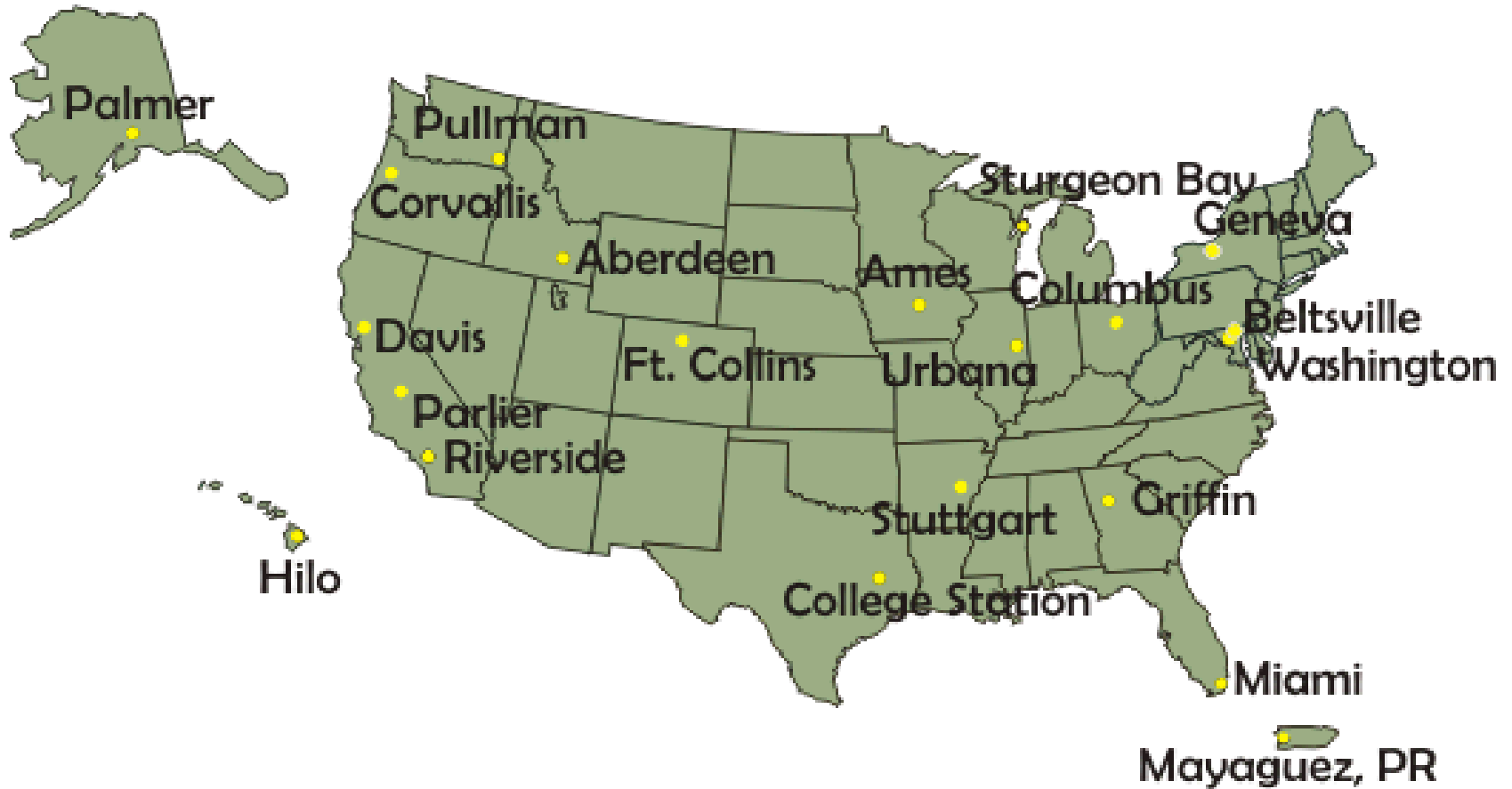
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The USDA/ARS National Plant Germplasm System (NPGS)

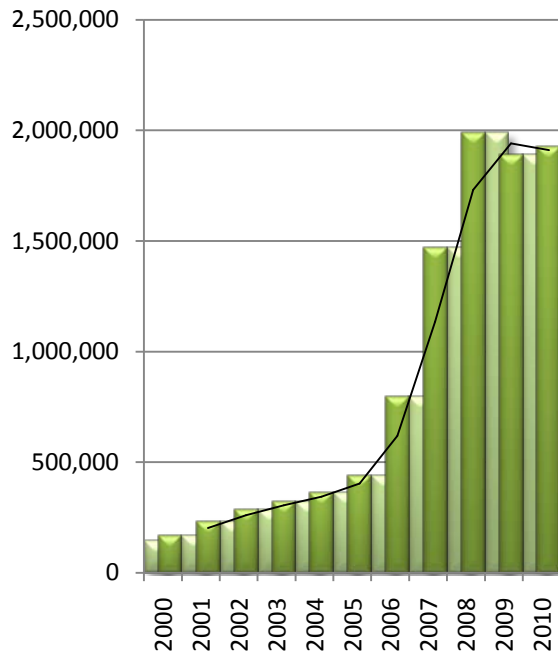
- One of the largest national genebank systems.
- More than 541,000 samples of more than 13,400 plant species.
- Large collections of the major staple crops important to U. S. and world agriculture.
- Large holdings of crops without major collections at international agricultural research centers, e.g., cotton, soybean, various horticultural and “specialty” crops.
- Germplasm Resources Information Network (GRIN): an international standard.

USDA National Plant Germplasm System (NPGS)

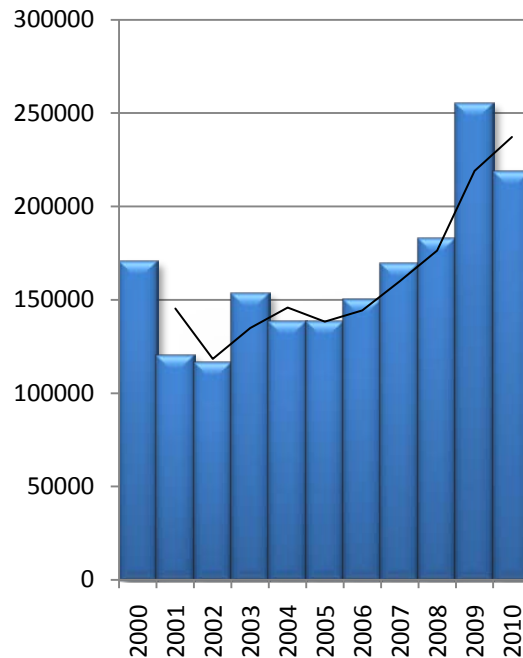


Demand for NPGS germplasm and information vs. NPGS budget

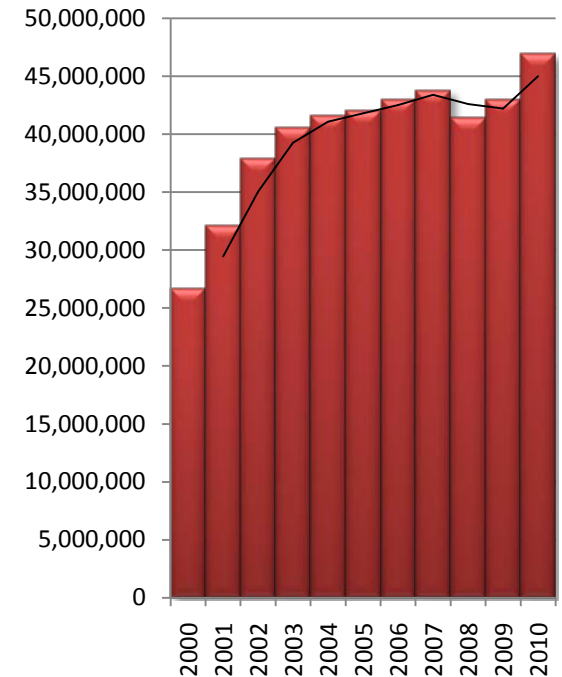
NPGS Web Page Access



Germplasm Distributions



NPGS Budget



FY 2011 and FY 2012 Budgets

- **The Federal FY 11 budget was enacted in April 2011. As a result of the loss to ARS of earmarked projects, and budget rescissions, the overall budget of the NPGS was reduced by about \$700,000 from the FY 10 funding level.**
- **The President's FY 12 budget proposes a substantial increase (\$3.3 million) for the NPGS. Congress will determine whether to appropriate those funds during the House and Senate "mark-ups" of the President's FY 12 budget and the subsequent Conference Committee budget reconciliation. The House mark-up of the FY 12 budget occurred in May 2011, and it would reduce ARS's budget by more than 12%. The timing for the Senate mark-up is uncertain.**

Deregulation of RR alfalfa by USDA in January 2011

- **Pollination cages for alfalfa at the NPGS site in Prosser, WA are being upgraded.**
- **Additional research on gene flow in alfalfa is underway at Prosser and elsewhere.**
- **Should adequate funding become available, the alfalfa germplasm program might be relocated to the isolated site at Central Ferry, WA.**
- **Re-establishment of AC 21 and National Genetic Resources Advisory Council (NGRAC).**

Central Ferry site

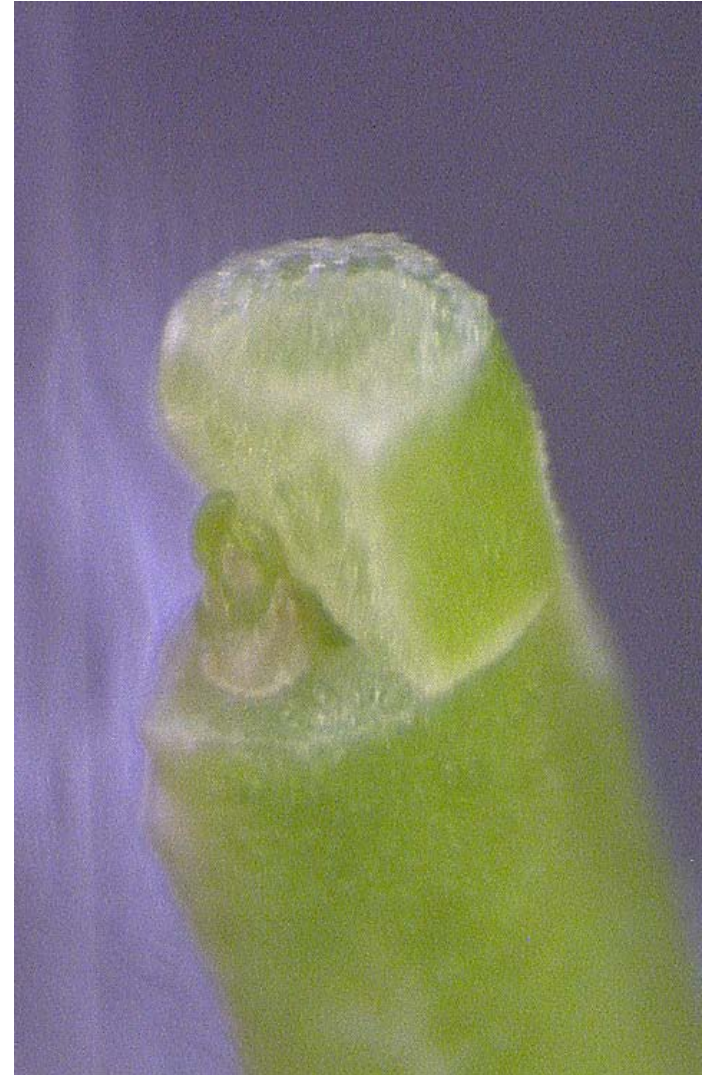


GRIN-Global

- **GRIN = Germplasm Resources Information Network.**
<http://www.ars-grin.gov/> The genebank information management system for the NPGS, and for Canada's genebank system (GRIN-Canada).
- The Global Crop Diversity Trust asked ARS and Bioversity International (an International Agricultural Research Center) to enhance and expand GRIN to address global germplasm information management needs.
- In 2008, the Global Crop Diversity Trust awarded ARS a 3-year, \$1.4 million grant to develop GRIN-Global; ARS is devoting more than \$1 million of in-kind support to the project.
- The project will conclude on 30 June 2011. GRIN-Global will initially be deployed internationally; deployment within the NPGS will begin either in late 2011 or in 2012.

Cryopreservation of Citrus

- **Field plantings of citrus germplasm are endangered by lethal diseases, pests, and temperature extremes.**
- **To date, long-term cryo-storage of clonal citrus vegetative tissue has been infeasible.**
- **Researchers at the NCGRP-Ft. Collins implemented new “micrografting” recovery methods to enable citrus samples to be stored at temperature of liquid N₂ and successfully re-propagated.**



Cost for phytosanitary certificates

- **Required by some nations for importing germplasm of some crops. To date, the NPGS has paid APHIS directly for issuing such certificates.**
- **APHIS has increased the price of issuing certificates substantially from \$23 three years ago to \$61 now.**
- **NPGS will likely request international recipients to voluntarily reimburse APHIS (via an on-line site) directly. Ultimately, this might become mandatory, with waivers from the NPGS for requests from the poorest nations.**

Retrospective review of USDA/ARS National Program 301: Plant Genetic Resources, Genomics, and Genetic Improvement

- **This second five-year retrospective review will cover overall NP 301 accomplishments from 2006-2011. The NPGS is part of this National Program.**
- **Because of budgetary constraints, nearly all of the review will occur “on-line,” with “virtual” meetings of the review panel.**
- **The review panel will convene on-line in October 2011. An “in-person” customer-stakeholder workshop is envisioned for November 2011, at the GWCC in Beltsville.**

International Treaties

- **On 30 November 2010, during its last Business Meeting of the 111th Congress, the Senate Foreign Relations Committee (SFRC) voted the FAO International Treaty out of committee for consideration by the full Senate. The full Senate adjourned without voting on it, so now the 112th Congress must consider it.**
- **On 29 October 2010, the Convention on Biological Diversity (CBD) adopted the Nagoya Protocol on Access and Benefit-Sharing of Genetic Resources. It is uncertain how this new protocol will affect ABS for plant genetic resources.**

Contributing to global food security: U. S. Congressional delegation presents NPGS germplasm donated to the Global Seed Vault



European Plant Genetic Resources Conference

Wageningen, The Netherlands, April 2011

- **European genebanks distribute nearly all of their samples accompanied by the FAO ITPGRFA SMTA.**
- **Strong emphasis on quality assurance and certification of genebanks, e.g. ISO 9001 for the Dutch genebank. Some European nations would want all EU genebanks certified so that each nation could serve as the European source for the germplasm of certain crops.**
- **Stronger ties with the European seed industry**

Likely Trends for Crop Germplasm and its Management

- **Budgets will likely not increase**
- **Increasing costs for managing germplasm**
- **Larger germplasm collections**
- **Increasing demand for germplasm**

Some (but not all!) Key Challenges for the NPGS

- **Managing and expanding NPGS operational capacity and infrastructure**
- **Fulfilling the demand for additional germplasm characterizations/evaluations**
- **Acquiring and conserving germplasm of wild crop relatives**
- **Managing genetic/genomic seed stocks**
- **Conserving germplasm of crop-associated microbes**

Genetic Resource Management Priorities

- **Acquisition**
- **Maintenance**
- **Regeneration**
- **Documentation and Data Management**
- **Distribution**
- **Characterization**
- **Evaluation**
- **Enhancement**