



# PBCC

- Project renewal submitted for 2020-2025
- **Objectives:**
  1. Collect, analyze, and disseminate information about the U.S. plant breeding effort in both public and private sectors, to include human capacity and access to enabling knowledge, technologies, germplasm, and infrastructure.
  2. Promote the conservation, characterization, and utilization of plant genetic resources and access to those resources for plant breeding.
  3. Identify Best Management Practices for public sector intellectual property protection to encourage the creation and distribution of improved crops for a broad range of needs and opportunities.
  4. Optimize opportunities for public-private collaboration in plant breeding research and education, including continuing education for plant breeders.
  5. Foster communication among public plant breeders and federal agencies on public policy issues, including alerts to existing and emerging threats to agricultural security that are relevant to plant breeding.
- Survey of public plant breeding capacity concluded and in press in Crop Science Journal
- Activity will be renewed every few years to keep the track on changes

## eBook on Crop Wild Relatives


<https://colostate.pressbooks.pub/cropwildrelatives/>

 Colorado State University


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# Crop Wild Relatives and their Use in Plant Breeding

Gayle Volk and Patrick Byrne

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Partial funding provided by PROCINORTE, a collaboration among the germplasm systems of Canada, Mexico and the U.S.

## 1) Use of PGR in plant breeding (nearly complete)



# Two Infographics on Plant Genetic Resources (drafts)

## Funding provided by PBCC/NAPB

## 2) Conservation of PGR (still in design phase)

### PLANT GENETIC RESOURCES GENEBANKS AND CONSERVATION

**Plant genetic resources (PGR)**—the wide range of plant varieties and their wild relatives—are important to safeguard food security, both now and in the future.

#### WHAT ARE PLANT GENE BANKS?

**Plant Genebanks** conserve genetic diversity outside of plants' natural habitats. Collections are often maintained as seeds, but may also be conserved in the field, greenhouse, or cold storage as growing plants, bulbs, tubers, or tissue cultures.



Genebanks do more than simply collect genetic materials—they're actively engaged in research and documentation.

#### IMPACT

XYZ PARAGRAPH

#### Acquisition

New plant materials may come from plant explorations, university researchers, botanical gardens and arboreta, companies, and private individuals, both within the country and internationally. All new materials are received with mandatory permits and international imports are tested for the presence of pathogens prior to release.



#### Characterization

Genetic and genomic methods are used to assess collection diversity and determine if specific accession are true to type. These methods also reveal genes that may be of interest for breeding programs.

#### Evaluation & Documentation

Plant collections are evaluated to document traits. This can be field or greenhouse trials. Data for each accession are maintained in databases to record single information, as well as maintenance, evaluation results, characteristics, and distribution. One example of a genebank database is GRIIS Global.

#### Maintenance

Vegetation is not, selected by collector at, commonly see, some, Quisque id, except, and, plant, et, ipsum, et, in, porta, tempus, et, vitae, risus. Aliquam, fermentum, nibh, in, tortor, Integer, et, nisi, sed, neque, suspendisse.

#### Regeneration

Active collections are maintained by rotation teams at primary sites for the distribution, evaluation, characterization, and documentation of genebank accessions. Plant collections may be maintained as seeds or growing plants in the field, greenhouse, or in vitro culture. As needed, accessions may be regenerated to produce additional seeds (for distribution or backup).

Active collections are secured in secondary back-up collections that may be at another location. These collections maintain collections as seeds, pollen, or clonal propagules.


#### Secure Backup

Test seed bank cold storage, nitrogen.

#### Distribution

Materials in genebanks are distributed to research and breeding programs.



**USDA**  
Agricultural  
Research  
Service

**NAB**  
National  
Arboreal  
Bank

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CREDITS + Other References?

# **Enhancing Educational Outcomes for Plant Genetic Resources Conservation and Use**

## **USDA-NIFA Higher Education Challenge Grant Program**

Colorado State University, Iowa State University, and  
USDA-ARS (Fort Collins, Ames, Beltsville)

\$749,000 for 3 years (2020-2023)

### **Objectives:**

- Develop an organized series of learning resources (videos, ebook chapters, images, etc.) covering priority PGR topics.
- Establish an online repository to host, organize, and track usage of the developed content.
- Develop and offer three 1-credit graduate-level online course modules at CSU.
- Disseminate the developed materials broadly to communities of interest.