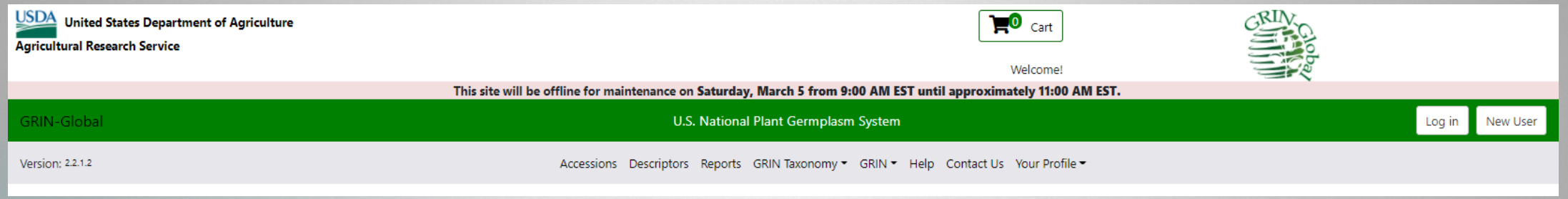
2022 Crop Germplasm Committee Chairs
Virtual Meeting
March 3, 2022

Welcome! While people are congregating, here are some CGC business reminders:

- The CGC page on GRIN contains useful information including: roles and responsibilities documents, CVS suggested template, past meeting presentations, and CGC-specific documents.
- Please send any new or revised content to Gary.
- Membership rosters can be updated by downloading, updating, and sending to Gary. We recognize that comfort levels with publicly sharing detailed information have evolved, so feel free to omit fields such as phone number and physical address, if you prefer.
- Please let Gary know when the committee chair is changing. We want to keep the Outlook group accurate and updated for email communications.

Thanks to all our CGC Chairs and members. We need and appreciate your support.

- Notice the banner space on the GRIN-Global search page. Announcements and information about significant recent changes will be found here.



- If you want to know even more, check out the project page at https://www.grin-global.org/.

- Finally, let us know if your committee would like a personalized demo on some of the Public Website features and approaches. We think the site is reasonably intuitive, but there are tips and suggestions we can highlight.

The National Plant Germplasm System: 2022 Status, Prospects, and Challenges

Peter Bretting

USDA/ARS Office of National Programs

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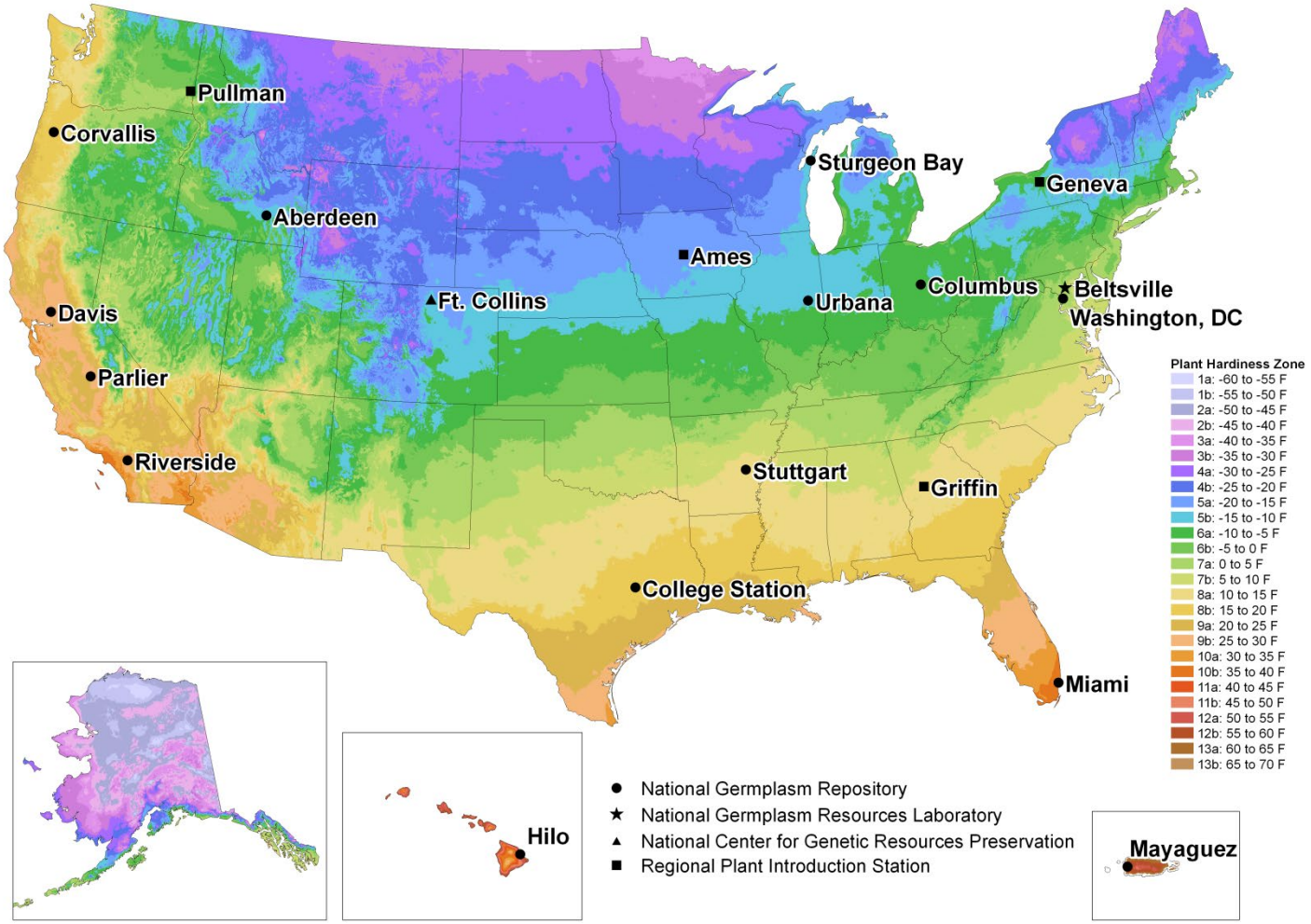
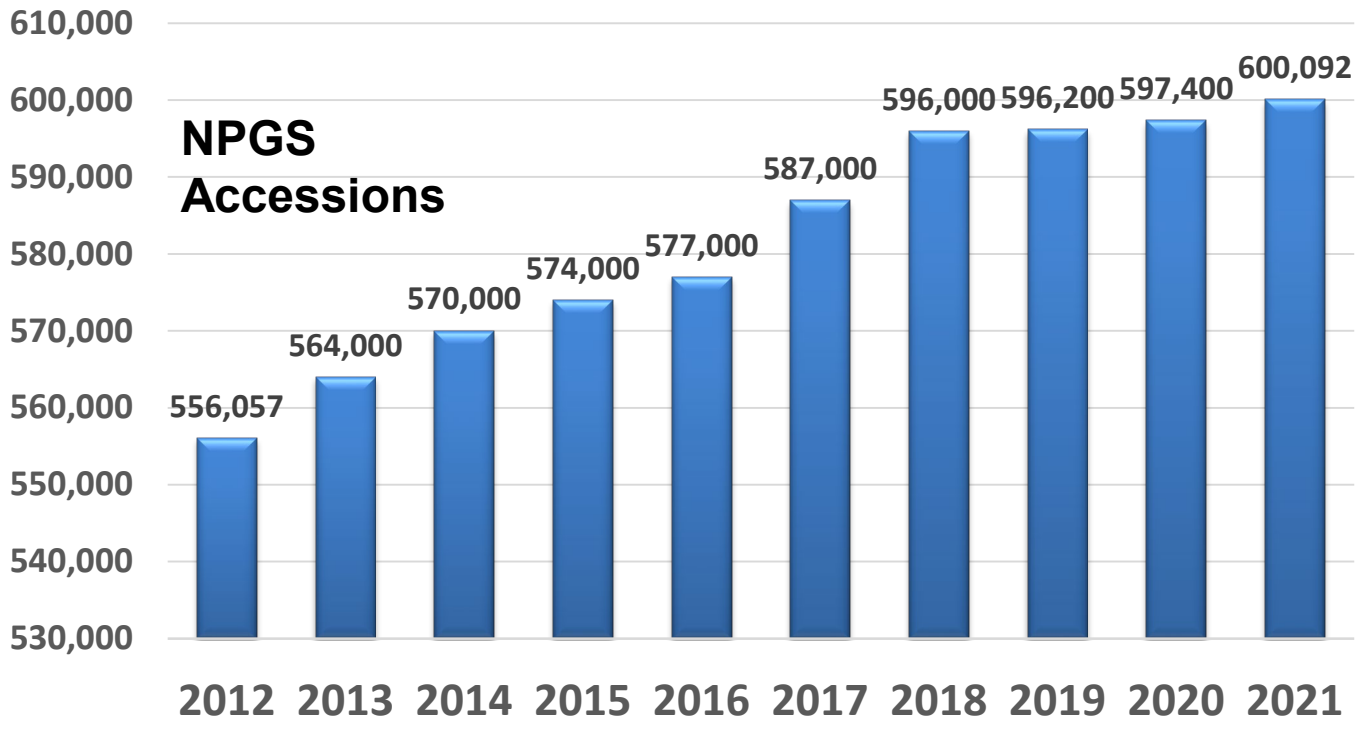
Cell: 1.240.447.9983

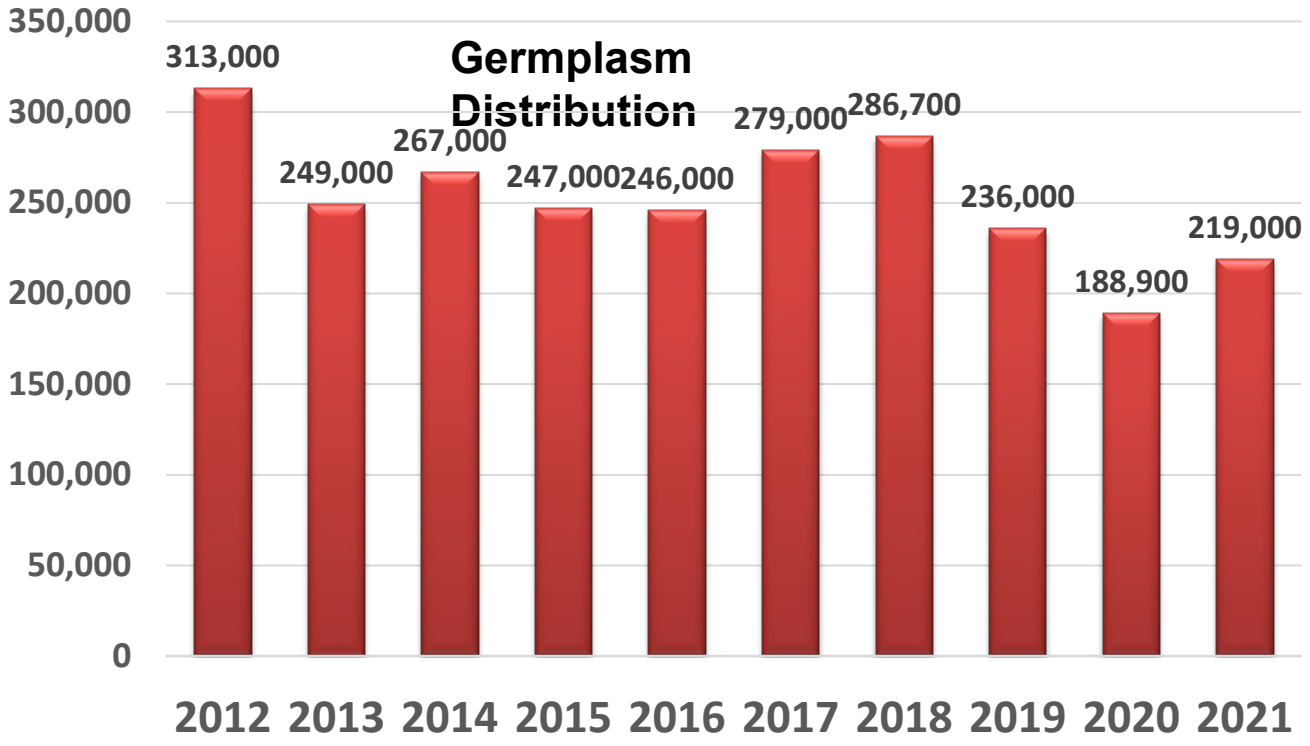
USDA National Plant Germplasm System (NPGS)



Number of NPGS Accessions 2012-2021



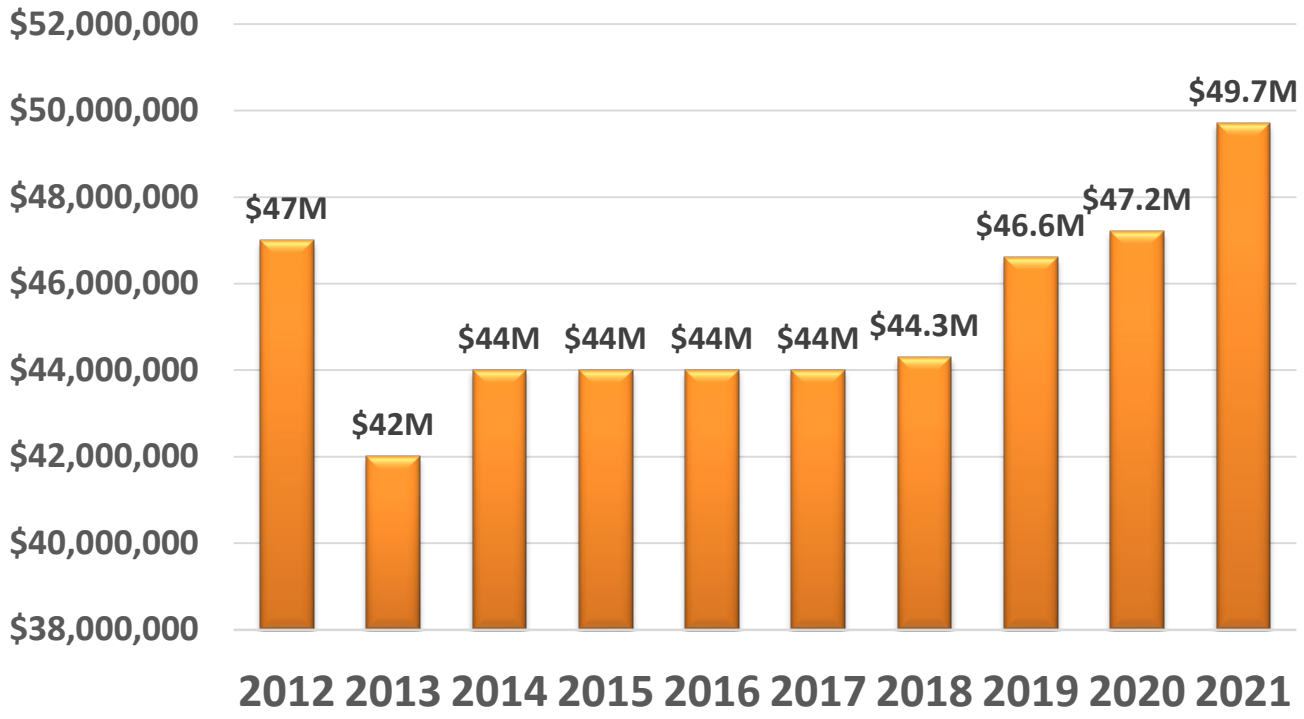
Demand for NPGS Germplasm
2012-2021



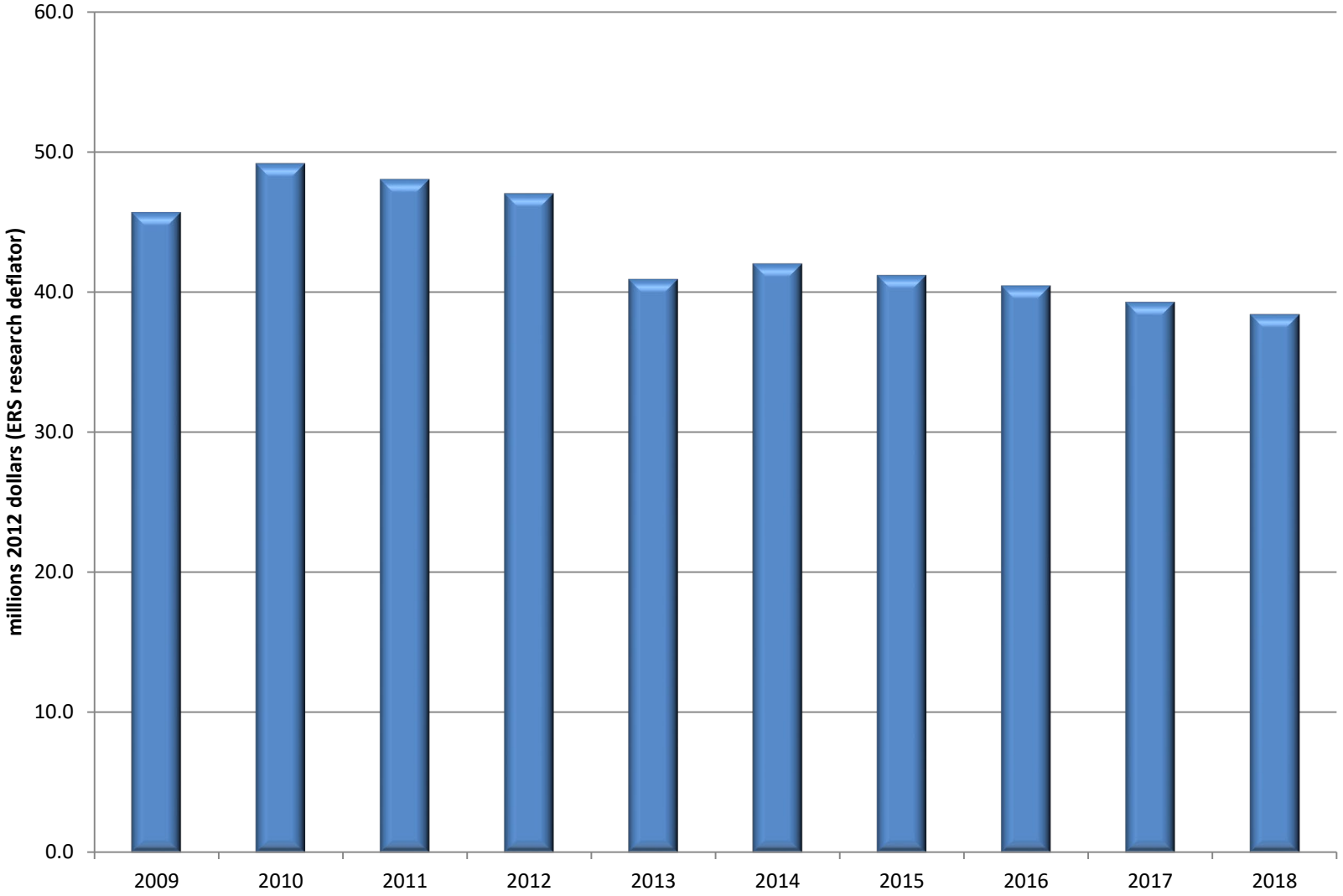
Effects of CoVID-19 as of February 2022

- **All NPGS genebanks are shipping germplasm (PGR).**
- **# of samples distributed fell by ca. 20% in 2020. The distribution rate in 2021 increased substantially in 2021.**
- **Operational status at genebanks ranges from fully to 50% operational. Some genebanks can hire temp (often student) labor, some can hire fewer than usual, and others cannot hire at all. Most genebanks have planted regeneration plots in the field or GH. Some cannot yet resume normal indoor laboratory or seed processing operations.**
- **During the pandemic, some genebanks accomplished more information management tasks than in prior years, whereas others didn't.**
- **GRIN-Global has functioned normally throughout.**

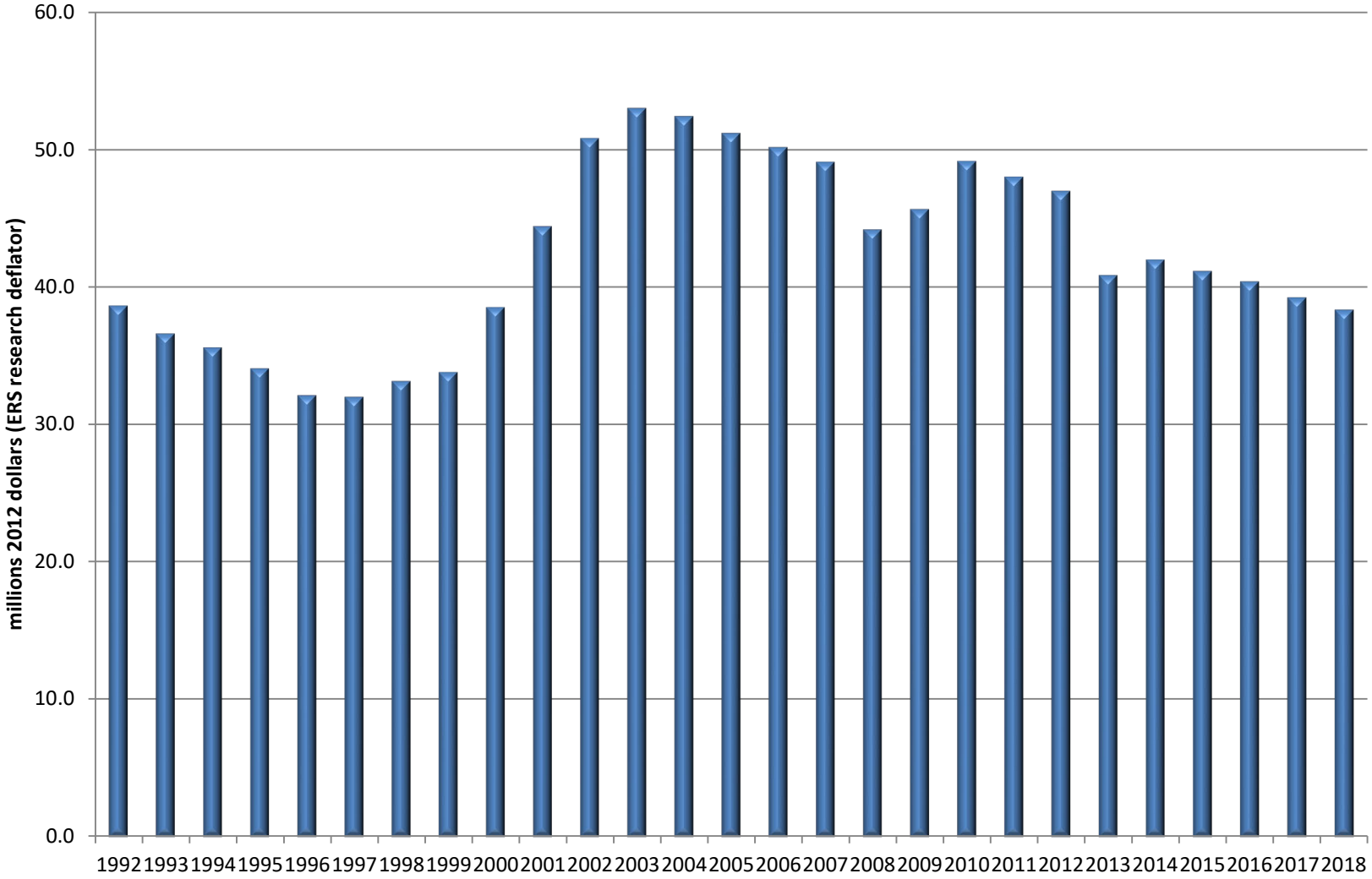
ARS National Plant Germplasm System
Budget
2012-2021



ARS NPGS real (deflated) budget, 2009-2018



ARS NPGS real (deflated) budget, 1992-2018



Some key challenges for the NPGS

- **Expanding the NPGS operational capacity and infrastructure to reduce PGR management backlogs and meet increased demand for PGR and associated information.**
- **Recent and upcoming NPGS personnel retirements; hiring and training new staff.**
- **Developing and applying cryopreservation and/or in vitro conservation methods for clonal and some seed PGR.**
- **BMPs and procedures for managing accessions (and breeding stocks) with GE traits and the occurrence of adventitious presence (AP).**
- **Acquiring and conserving additional PGR, especially of crop wild relatives.**

PGR Management Priorities: Foundations for Crop Innovation

- Acquisition
- Maintenance
- Regeneration
- Documentation and Data Management
- Distribution

- Characterization
- Evaluation
- Enhancement
- Research in support of the preceding priorities

Personnel Changes

- **Farewell and best wishes to Joanne Labate, Vegetable Curator (ARS-Geneva); and Max Martin, Research Program Manager (UWisconsin, Sturgeon Bay).**
- **Welcome and best wishes to Dave Peters, RL, and Colleen Warfield, Plant Pathologist (ARS-Ames); Jeff Gustin, Maize Genetic Stock Curator (ARS-Urbana); Adam Mahan, Soybean Curator (ARS-Urbana); Zach Stansell, Hemp and Vegetable Curator and Erin Galarneau, Grape Curator (ARS-Geneva); Madhugiri Nageswara-Rao, Tropical Ornamental Curator (ARS-Miami) and Gul Shad Ali, Tropical Crops Curator (ARS-Miami), Lauri Reinhold, Curator (ARS-Corvallis) , Anne Frances, Botanist (ARS-Beltsville), and Marilyn Warburton, RL (ARS-Pullman).**
- **We are recruiting staff at Davis, CA; Riverside, CA; and Geneva, NY.**

PGR Management Training Initiative

- **Numerous NPGS PGR managers have retired recently; no formal, comprehensive program existed for training new PGR managers.**
- **G. Volk (ARS-Ft. Collins) and P. Byrne (CSU-Ft. C.) lead a project, supported by ARS and a NIFA grant, to design and develop a training program for PGR management to be delivered primarily through distance-learning.**
- **The effort has culminated in a new 1-credit Colorado State online course Plant Genetic Resources: Genomes, Genebanks, and Growers, offered for the first time in Aug.-Sept. 2021. http://pgrcourse.colostate.edu/**
- **PGR training/educational materials are freely accessible from GRIN-Global at https://grin-u.org/**
- **Infographic posters for PGR, genebanks and conservation, and PGR and food security in 6 languages; download at http://genebanktraining.colostate.edu/trainingmaterials.html**

FY 20-21 ARS NPGS Budgetary Increases

- **Small grains PGR ($190,000): Aberdeen, ID.**
- ***Vaccinium* PGR ($150,000): Corvallis, OR.**
- **Hemp PGR ($1.35 million): Geneva, NY.**
- **Pecan PGR ($400,000): College Station**

NPGS Video

- **Pullman, Griffin, Ames, Corvallis, and Geneva staff developed a new tactic for discouraging "non-research requests" for germplasm by communicating that the NPGS benefits everyone by ensuring global food security through research and breeding, not by providing seeds for home gardens.**
- **Led by Barbara Hellier at Pullman, the NPGS genebanks and USDA Communications filmed a video of NPGS operations accessible from the ARS YouTube site at: https://youtu.be/uHOclGNELuw**
- **Feel free to post this link on your websites, and share it with customers/stakeholders, colleagues, family, and friends.**

USDA, ARS National Laboratory for Genetic Resources Preservation

Fort Collins, Colorado

Agricultural Genetic Resources Preservation Research Unit

Research Leader- Dr. Daren Harmel

Plant (seed, clonal), Microbe

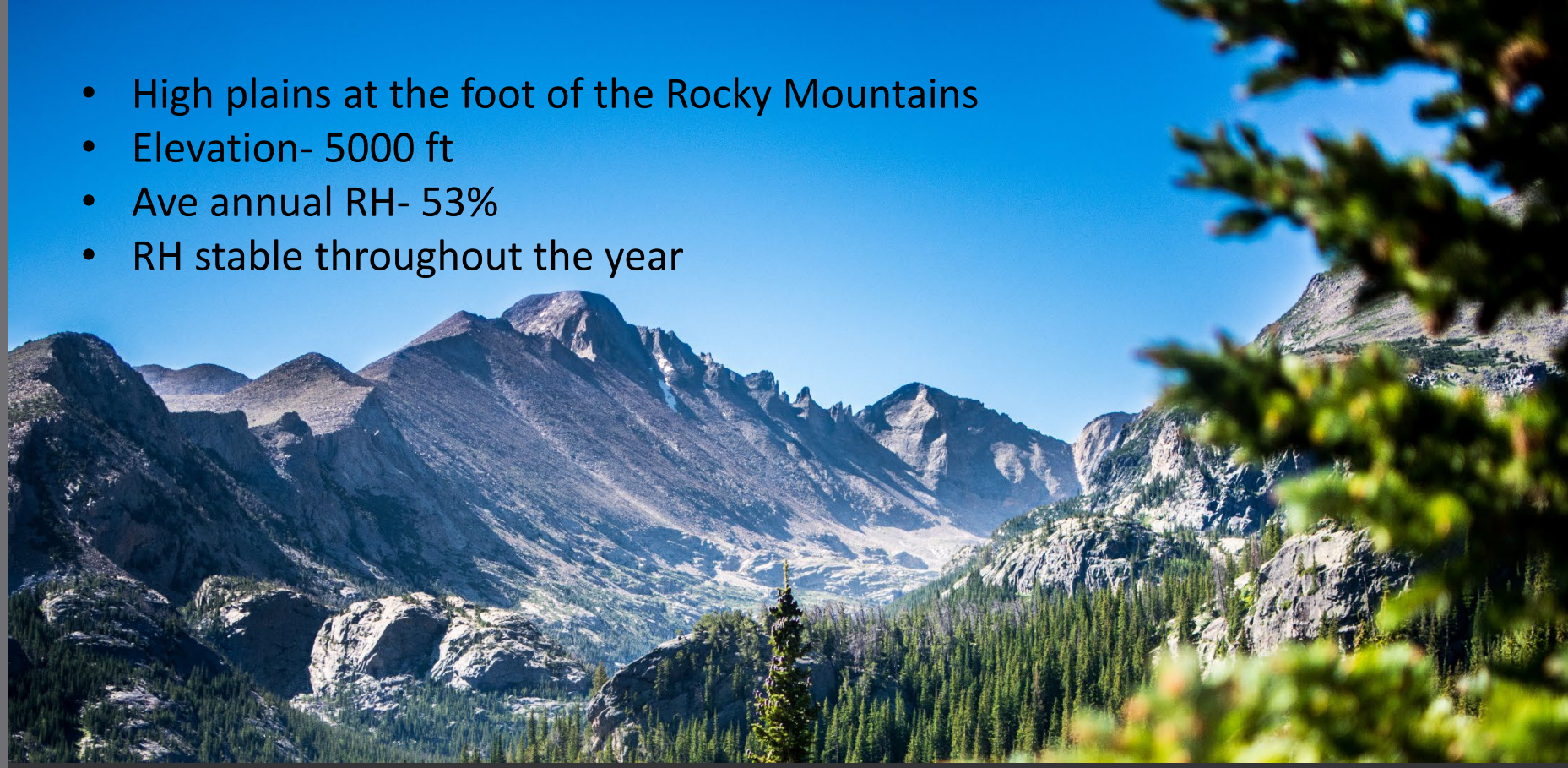
- Dr. Christina Walters (Lead Scientist)
- Dr. Gayle Volk
- Dr. Chris Richards
- Dr. Stephanie Greene
- Dr. Maria Jenderek

Animal (National Animal Germplasm Program)

- Dr. Harvey Blackburn (Lead Scientist)
- Dr. Phil Purdy

Technical Staff

- Forty talented folks



Good ambient conditions for seed storage

1958- Opened to preserve valuable seed germplasm
1992- Ten-fold expansion of storage space, cryo preservation of clonal germplasm
1999- National Animal Germplasm Program
2007- Microbe preservation

NLGRP Collection

Source	Accessions
NPGS-seed	438,995 (81%)
NPGS-clonal	5030 (12%)
NLGRP only	10,522
PVP/JPR	9,747
Blackbox	468,175
Microbe	113,567
Total	1,046,036

Long Term Preservation

Seed

- -18° C
- LN2 vapor

Microbes

- LN2 vapor

Clonal Propagules

- LN2 liquid

Seed Crops

- Check-in (GRIN Global)
- Drying
- Germination Testing
- Packaging
- Storage

Clonal Crops

Check in (GG) → Processing for cryo storage (dormant buds, shoot tips) → Viability Assessment → Long term storage

Svalbard Global Seed Vault

- NLGRP coordinates NPGS deposits
- > 120,000 samples
- Next deposit: September 2022

Developing Training Materials for Plant Genetic Resources Management and Use

- ~30% of NPGS staff will retire during the next few years
- Training content for current staff and future generations
- NIFA Grant: CSU, ISU, USDA

For more information contact:
Gayle Volk:
Gayle.Volk@usda.gov
Pat Byrne:
Patrick.Byrne@colostate.edu

GRIN-U.org


GRIN-U
Online learning for plant genetic resources conservation and use
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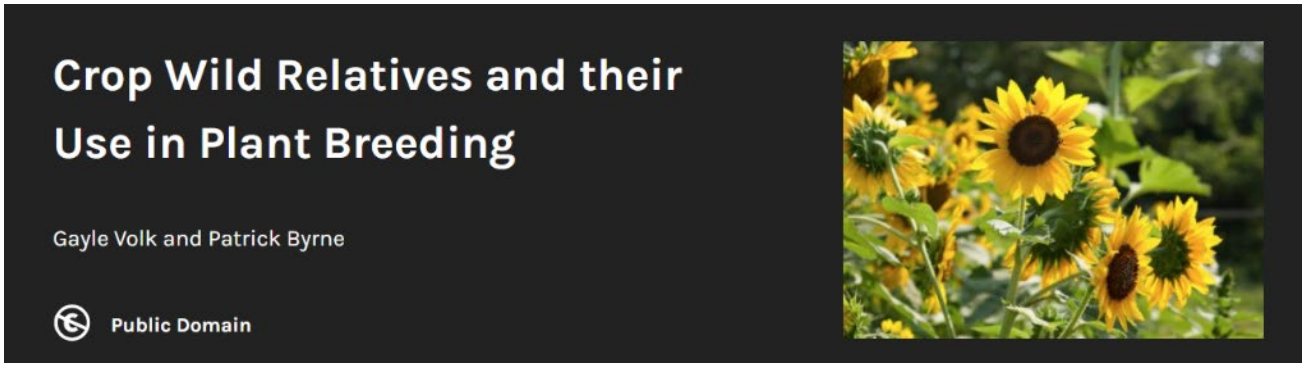
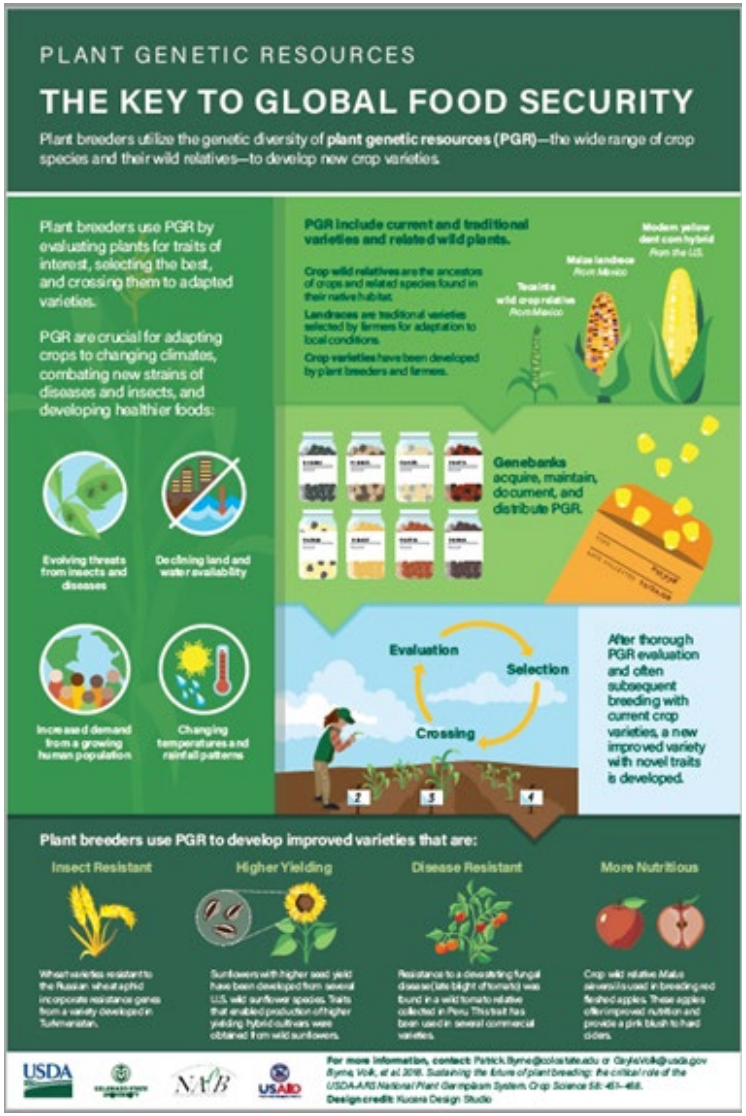
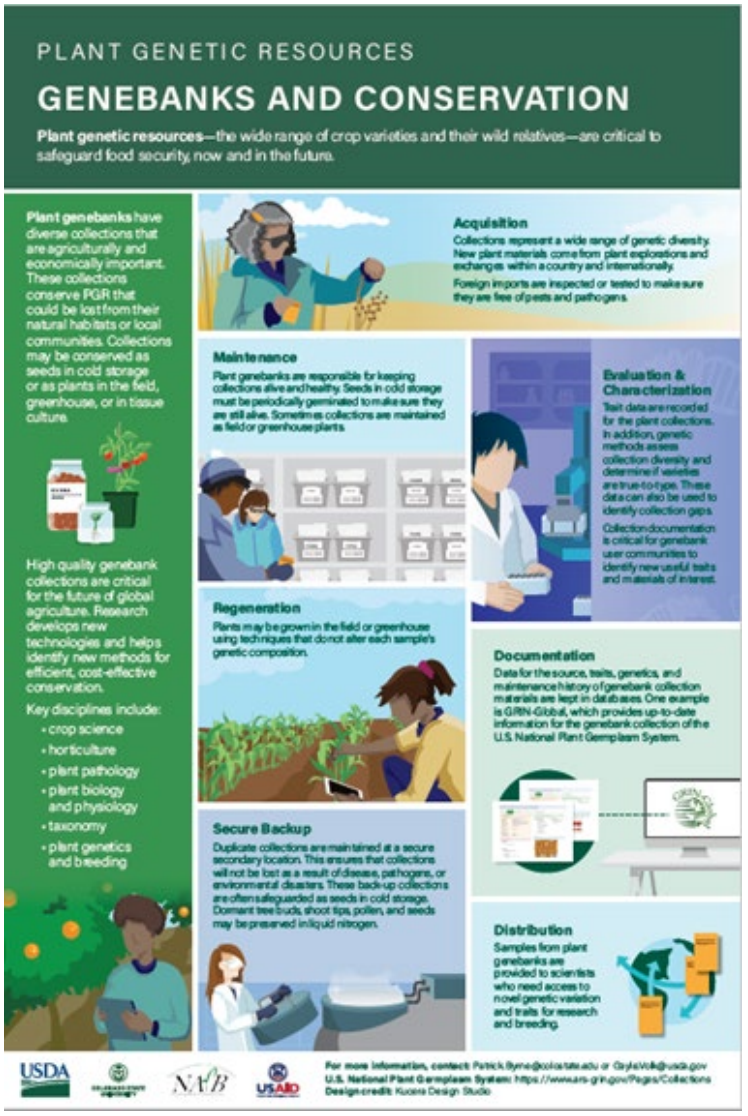
Public Ebooks on GRIN-U.org



- Fundamentals of Plant Genebanking
- Applications of Plant Pathology

Infographics on GRIN-U (poster size or one-page handouts)





English, French, Spanish, Arabic, Chinese, Portuguese

BOTANIC GARDENS

AND THEIR VALUABLE ROLE IN CONSERVING PLANT GENETIC RESOURCES

Botanic gardens and arboreta mobilize scientific, collaborative, and strategic approaches to conserve valuable **plant genetic resources (PGR)**—the wide range of wild and cultivated plants.

Botanic gardens maintain PGR in a variety of forms:

Living collections

Seed collections

Plant records

Herbarium collections

Functions of botanic gardens

The role of botanic gardens continually evolves. Rapid decline of biodiversity has increased the need for action. Botanic gardens use diverse strategies to advance local and global conservation efforts.

Regional and global networks coordinate conservation efforts

Botanic gardens and agricultural genebanks are the leading conservation repositories—facilities that conserve PGR as collections.

- Agricultural genebanks typically preserve PGR for food and agriculture at locations suited to each crop.
  North America has **1** international (CIMMYT, Mexico) and **33** national genebanking facilities
- Botanic gardens vary in scope and resources, but tend to conserve diverse PGR with cultural and ecological value
  North America has **>1,030** botanic gardens

BGCI GardenSearch (Canada, Mexico, US & US territories), Earl, HDRC, May 2021

There are at least **3,038** botanic gardens worldwide
BGCI GardenSearch, May 2021

Botanic gardens collectively manage **>107,000** species in their living plant collections
State of the World's Plants and Fungi 2020

this is equal to approximately **31%** of all vascular plants

Botanic gardens attract an estimated **500 million** visitors each year
BGCI Log, May 2021

For additional resources on botanic gardens, visit bgci.org and publicgardens.org

Contacts: SeradaKrishnan@botanicgardens.org or TaraMoreau@ubc.ca
Design credit: Katheryn Chen

USDA is an equal opportunity provider, employer, and lender
Partial funding by USDA-NIFA-Higher Education Challenge Grant Program (2020-70003-303930)

USDA | Botanical Garden | DENVER BOTANIC GARDENS

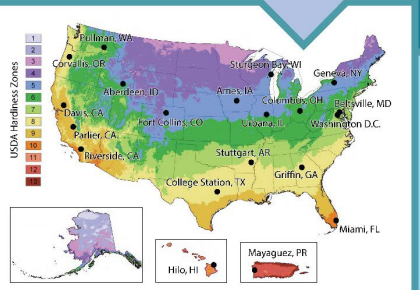
National Plant Germplasm System

CONSERVING CROP GENETIC RESOURCES IN THE U.S.

The National Plant Germplasm System (NPGS) is the network of USDA genebanks that safeguards our nation's precious plant germplasm (also termed genetic resources)—living material from which plants are grown.

NPGS conserves world-class collections of plant genetic resources

Collections include approximately 200 crops and their wild relatives. These are maintained across the country at 20+ locations suited to the biological and environmental needs of each crop.



Diverse collections are key to agricultural security

Genetic diversity can be used to improve crop quality, yield, pest and disease resistance, tolerance to environmental extremes, and more.

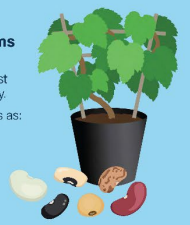
NPGS distributes living plant material to researchers and plant breeders working to develop and improve crops for a growing population and changing climate.

Plant germplasm is conserved in many forms

Curators must balance ease of maintenance, protection against loss, longevity, and accessibility.

They maintain living collections as:

- Plants growing in the field, greenhouse, screenhouse, or tissue culture
- Seeds or frozen tissue in cold storage



Watch a video overview of the **NPGS**

NPGS conserves germplasm from **16,000+** plant species

NPGS distributes **200,000+** items for research each year

NPGS safeguards **601,000+** unique kinds of germplasm

NPGS conserves the crops that sustain our everyday lives. These plants are essential to the future of global agriculture.

Food and Beverage
Most of NPGS's collections are food crops. This includes fruits and nuts, vegetables, grains, oilseeds, herbs, beverage crops, and more.

Fiber
Certain crops are cultivated for fiber, such as cotton, hemp, and flax.

Industrial and Medicinal
Some crops have industrial applications and are used in biofuels, lubricants, cosmetics, and medicines.

Feed
A variety of crops are used for feeding livestock such as cattle, pigs, and poultry.

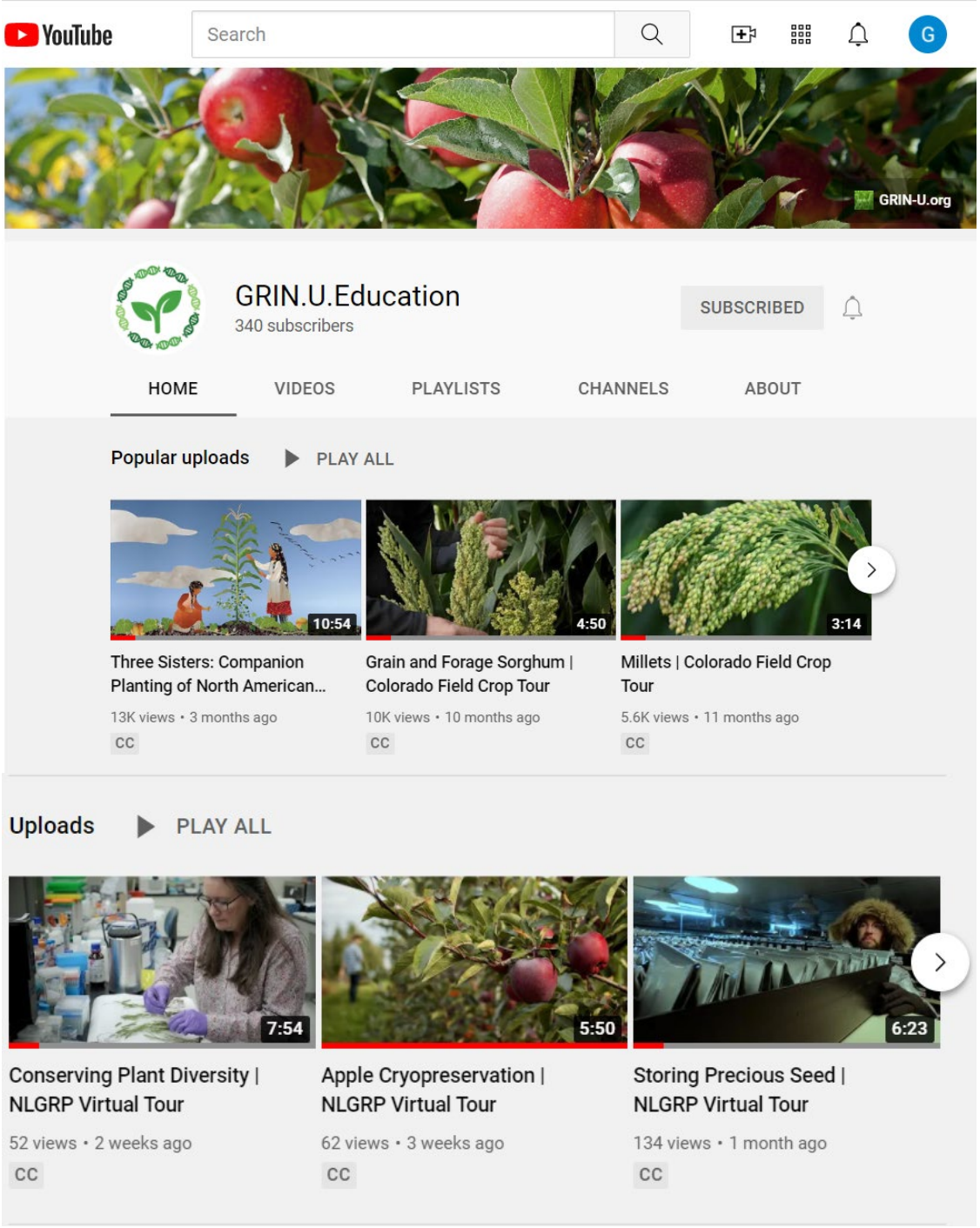
Ornamental
Some plants are grown for their aesthetic interest and role in environmental quality.

Contacts: PeterBretting@usda.gov
Design credit: Katheryn Chen (March 2022)

Funding by USDA-ARS and the USDA-NIFA-Higher Education Challenge Grant Program (2020-70003-303930), with support from Colorado State University. USDA is an equal opportunity provider, employer, and lender.

USDA | GRIN-Global

To learn more about plant genetic resources, visit GRIN-U.org



GRIN.U.Education YouTube Channel

Videos, webinars, virtual tours

New NLGRP Virtual tour videos (3 of 6 are released)

CGCs can submit Genebanking and Breeding Success Stories!

Use fillable template
We will:

- Convert to PDF
- Release as chapters in eBooks
- Approved/credited to authors

Plant Genetic Resources Success Story Submission Template

Documenting Success Stories

Documenting success stories and making them available to the public are important for ensuring continued su plant genetic resources conservation and plant breeding efforts. Our goal is to document successes, broadly d relate to plant genetic resources conservation and use, and crop improvement activities.

To ensure this information is accessible to the broadest possible audience, please keep content concise, minin jargon and acronyms, and write with a general audience in mind. It is the contributors' responsibility to seek p share success stories from other researchers and breeders.

Once completed, email this form and 1-3 high-quality images to PGRSuccesses@gmail.com. Content may be e formatted before being posted on the public GRIN-U website and/or the National Association of Plant Breede edits will be shared with the contributor for final approval before posting to websites.

For questions or comments, please contact Pat Byrne (Patrick.byrne@colostate.edu) or Gayle Volk (Gayle.Volk

*Required fields

Contributor Information

***Contributor(s) name:** Author1 and Author2

***Contributor email:** email@colostate.edu

***Contributor address:** Institution and address

Success Story Overview

Development of Rice Variety IR36

International Rice Research Institute

In the 1980's, rice variety IR36 was the most widespread variety in rice lands throughout Asia, due to its resistance to multiple diseases and pests that were causing significant yield loss. The development of IR36 was led by the International Rice Research Institute (IRRI), known for its long history of rice breeding and breakthrough success with IR8—a key variety of the green revolution. To improve rice beyond the success of IR8, IRRI expanded its germplasm collection with the goal of developing rice varieties with multiple disease and pest resistance.

IR36 improved rice variety grown in IRRI field plot

"IR 36" by IRRI Images is licensed under CC BY-NC-SA 2.0

PROJECT GOALS

- ✓ Create improved rice variety resistant to main diseases and pests
- ✓ Reduce yield fluctuations due to high disease and pest pressure

Problem

Throughout the 1950's and 1960's the threat of famine from lack of food production loomed over many Asian regions. To advert famine, a focus was placed on increasing rice productivity. The International Rice Research Institute (IRRI) released improved rice varieties that doubled the yield potential of tropical rice; however, thier widespread use led to a decrease in rice genetic diversity. Lack of diversity and increased cropping intensity left rice more susceptible to a wide array diseases and pests. As a result , the yield of improved rice varieties were wildly inconsistent.

Solution

The development of disease resistant rice varieties helped stabilize rice production and protected farmers from economic losses. While IRRI gradually released various disease resistant varieties, IR36 had the most success as it possessed possessed the most comprehensive resistance. IR36 would prove itself to be valuable not only to farmers, but to IRRI as well. Five years after its release, a quinquennial review team would note that the development of IR36 alone justifies the original investment in IRRI 21 years prior.

Success Story written by: Stephen Gray, A.A. Mahama, Candice Gardner

To learn more about this and other success stories, visit GRIN-U.org

Questions?

stephanie.greene@usda.gov

Plant Exchange Office
National Germplasm Resources Lab

Karen A. Williams
Karen.Williams@usda.gov

CGC Chairs Webinar
March 3, 2022

Plant Exchange Office
National Germplasm Resources Lab
Beltsville, Maryland

- Plant exploration\exchange program
  (Karen Williams, Anne Frances)
- GRIN Taxonomy
  (Melanie Schori)
- Crop Wild Relative Conservation in the US
  (Karen Williams, Anne Frances)
- Facilitation of import and export of germplasm for the NPGS
  (Jennifer Friedman)

NPGS Plant Exploration/Exchange Program

- Gap filling for the NPGS (gaps should be identified in the CGC Crop Vulnerability Statement)
- Supports both explorations and exchanges
- Proposal guidelines distributed to CGC Chairs
- Proposals accepted yearly by NGRL- PEO for explorations the next fiscal year
- Proposals for 2023 due July 29, 2022
- Supports travel expenses
- CGCs and curators must endorse proposals

NPGS Plant Explorations

FY 2020

Lupinus polyphyllus
United States (WA)

Helianthus spp.
United States (CA)

FY 2021

Salix caprea
Georgia

Aronia spp.
United States (IL)

Postponed Plant Explorations

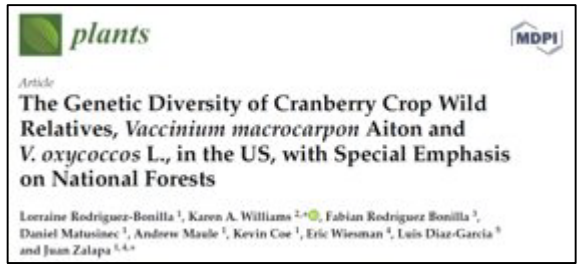
Fraxinus cuspidata	United States (AZ)
Monarda lindheimeri	United States (TX)
Grindelia squarrosa	United States (CA, ID, NV)
Phaseolus polystachios	United States (GA, FL)
Fruit and nut species	Georgia
Daucus and *Allium* spp.	Jordan
Malus doumeri	Vietnam
Camelina spp.	France
Vicia faba landraces	Morocco

Access and Benefit Sharing for International Explorations

- NPGS explorations abide by the CBD* principle of national sovereignty over genetic resources
- Prior informed consent (PIC) for access obtained from national authority
- PIC may be in the form of a letter, permit, MTA, etc.
- PIC includes agreement on the sharing of benefits
- Acceptable benefits are “in-kind” (training, equipment purchase, increase projects, etc.)
- PEO obtains PIC
- SMTA provides terms for some explorations

*Convention on Biological Diversity https://www.cbd.int/convention/

Crop Wild Relatives in the US


plants

MDPI

Article

The Genetic Diversity of Cranberry Crop Wild Relatives, *Vaccinium macrocarpon* Aiton and *V. oxycoccos* L., in the US, with Special Emphasis on National Forests

Lorraine Rodriguez-Bonilla [1], Karen A. Williams [2,*], Fabian Rodriguez Bonilla [3], Daniel Matusinec [1], Andrew Maule [1], Kevin Coe [1], Eric Wiesman [4], Luis Diaz-Garcia [5] and Juan Zalapa [1,4,*]


Crop wild relatives of the United States require urgent conservation action

Colin K. Khoury, Daniel Carver, Stephanie L. Greene, Karen A. Williams, Harold A. Achicanoy, Melanie Schori, Blanca León, John H. Wiersema, and Anne Frances

Edited by Peter S. Ozias, Oak Spring Garden Foundation, Upperville, VA, and approved November 11, 2020 (received for review April 13, 2020)

The contributions of crop wild relatives (CWR) to food security depend on their conservation and accessibility for use. The United States contains a diverse native flora of CWR, including those of important cereal, fruit, nut, oil, pulse, root and tuber, and vegetable crops, which may be threatened in their natural habitats and underrepresented in plant conservation repositories. To determine conservation priorities for these plants, we developed a national inventory, compiled occurrence information, modeled potential distributions, and conducted threat assessments and conservation gap analyses for 600 native taxa. We found that 7.5% of the taxa may be critically endangered in their natural habitats, 50% may be endangered, and 28% may be vulnerable. We categorized 58.8% of the taxa as of urgent priority for further action, 37% as high priority, and 4.2% as medium priority. Major ex situ conservation gaps were identified for 93.3% of the wild relatives (categorized as urgent or high priority), with 83 taxa absent from conservation repositories, while 93.1% of the plants were equivalently prioritized for further habitat protection. Various taxonomic richness hotspots across the US represent focal regions for further conservation action. Related needs include facilitating greater access to and characterization of these cultural-genetic-natural resources and raising public awareness of their existence, value, and plight.

biodiversity conservation | crop diversity | culturally significant plants | food security | plant genetic resources

Significance

This study provides conservation assessments for 600 US native plants that are wild relatives of important agricultural crops. We found that more than one-half of the species may be endangered in their natural habitats, and that the great majority require further conservation action, both as ex situ (in gene banks and botanical gardens) and in situ (in protected areas). Diversity hotspots across the nation represent focal regions for further collecting for ex situ conservation as well as for enhanced habitat protection. Wider collaborations, as well as greater awareness, access to, and information about these resources are needed to bolster their conservation and use.

PNAS | December 29, 2020 | vol. 117 | no. 52 | 33051–33057


Stephanie L. Greene
Karen A. Williams · Colin K. Khoury
Michael B. Kantar · Laura F. Marek
Editors

North American Crop Wild Relatives, Volume 1

Conservation Strategies

Springer

Stephanie L. Greene
Karen A. Williams · Colin K. Khoury
Michael B. Kantar · Laura F. Marek
Editors

North American Crop Wild Relatives, Volume 2

Important Species

Springer

- NPGS has significant gaps in the collections of US crop wild relatives
- Many sources of information on crop wild relatives in the US
- PEO is available to assist with planning and executing plant explorations
- 2020 national inventory provides potential distributions for 600 taxa, preliminary threat assessments and conservation gap analyses


BioOne COMPLETE

Toward Integrated Conservation of North America's Crop Wild Relatives

Authors: Khoury, Colin K., Greene, Stephanie L., Krishnan, Sarada, Miller, Allison J., Moreau, Tara, et al.

Source: Natural Areas Journal, 40(1) : 96-100

Published By: Natural Areas Association

URL: https://doi.org/10.3375/043.040.0111

Conserving Crop Wild Relatives: Tools to Guide Plant Explorations

Crop Germplasm Committee Chair Meeting
March 3, 2022

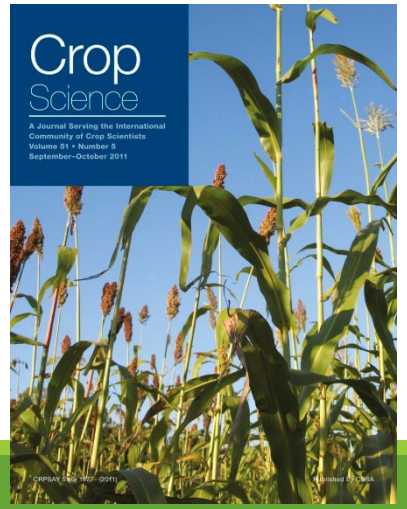
ANNE FRANCES

PLANT EXCHANGE OFFICE, NGRL

ANNE.FRANCES@USDA.GOV

Road Map for North America's CWR

1. Document, assess threats, and determine conservation status
2. Protect threatened species in their natural habitats
3. Collect and conserve prioritized species *ex situ*
4. Make their diversity accessible for use, research, and education
5. Raise public awareness of their value and the threats to their persistence



Crop wild relatives of the United States require urgent conservation action

Colin K. Khoury[a,b,c,1,2], Daniel Carver[a,d,1], Stephanie L. Greene[a], Karen A. Williams[e], Harold A. Achicanoy[b], Melanie Schori[e], Blanca León[f,g], John H. Wiersema[h], and Anne Frances[i]

Proceedings of the National Academy of Sciences 117.52 (2020): 33351-33357

"Taxa … of urgent conservation priority are wild genetic resources of **cereal, fiber, fruit, nut, oil, pulse, root/tuber, spice, sugar, and vegetable crops** that collectively generate more than **$116 billion** in annual US agricultural production value."

National Conservation Analysis for CWR

Data

- Inventory: Updated and Prioritized
- Conservation Gap Analysis: Ex situ & In situ
- Spatial Data: Occurrences and Modeled Distributions

Tools

- Downloadable Datasets
- Web-based Species Data
- Interactive Maps

Crop Germplasm Committees with Native CWR in the US

Apple	Phaseolus
Carya	Potato
Cotton	Prunus
Cucurbit	Root & Bulb
Forage & Turf Grass	Small Fruits
Grape	Specialty Nuts
Herbaceous Ornamental	Sunflower
Juglans	Sweetpotato
Medicinal	Tropical Fruit & Nut
Peppers	Woody Landscape Plant

Helianthus paradoxus
Pecos Sunflower
Imperiled (G2)
Occurs only in NM & TX

Updated and Prioritized Inventory

Starting Point ~4,600 taxa

- Initial Inventory
- Geographic scope widened

Priority ~821 taxa

- Created 3 categories
- 1 (Priority, Important Crops)
- 2 (Less Important Crops) & 3 (Restoration/Other)

Analysis for ~600 taxa

- 1A: Primary, secondary, graftstock (~285)
- 1B: Tertiary
- 1C: Same genus but unknown relationship

285 Taxa in Priority Category (1A)

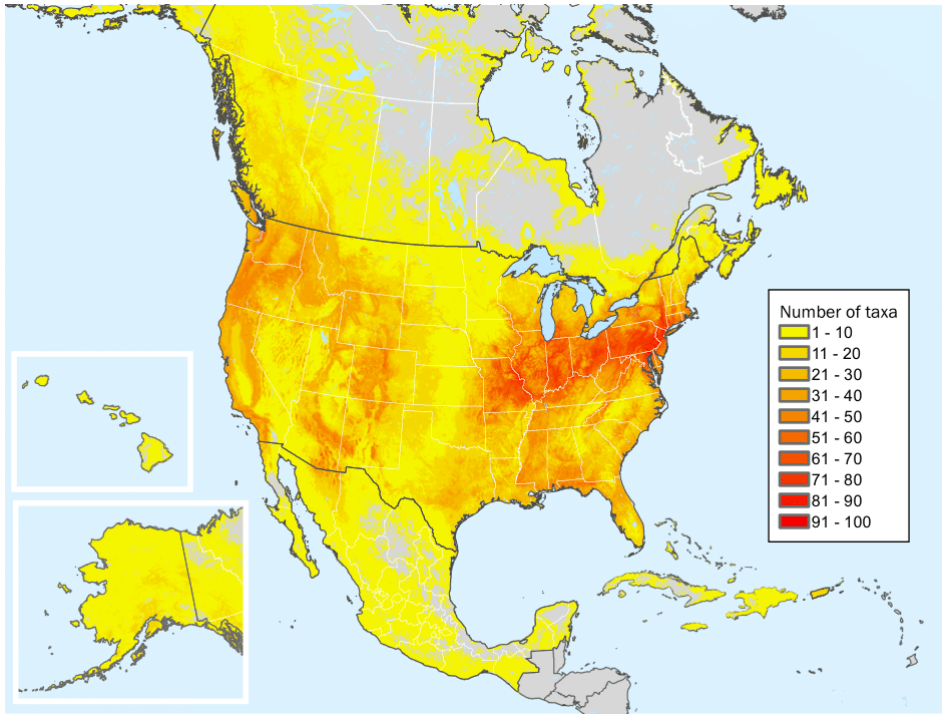
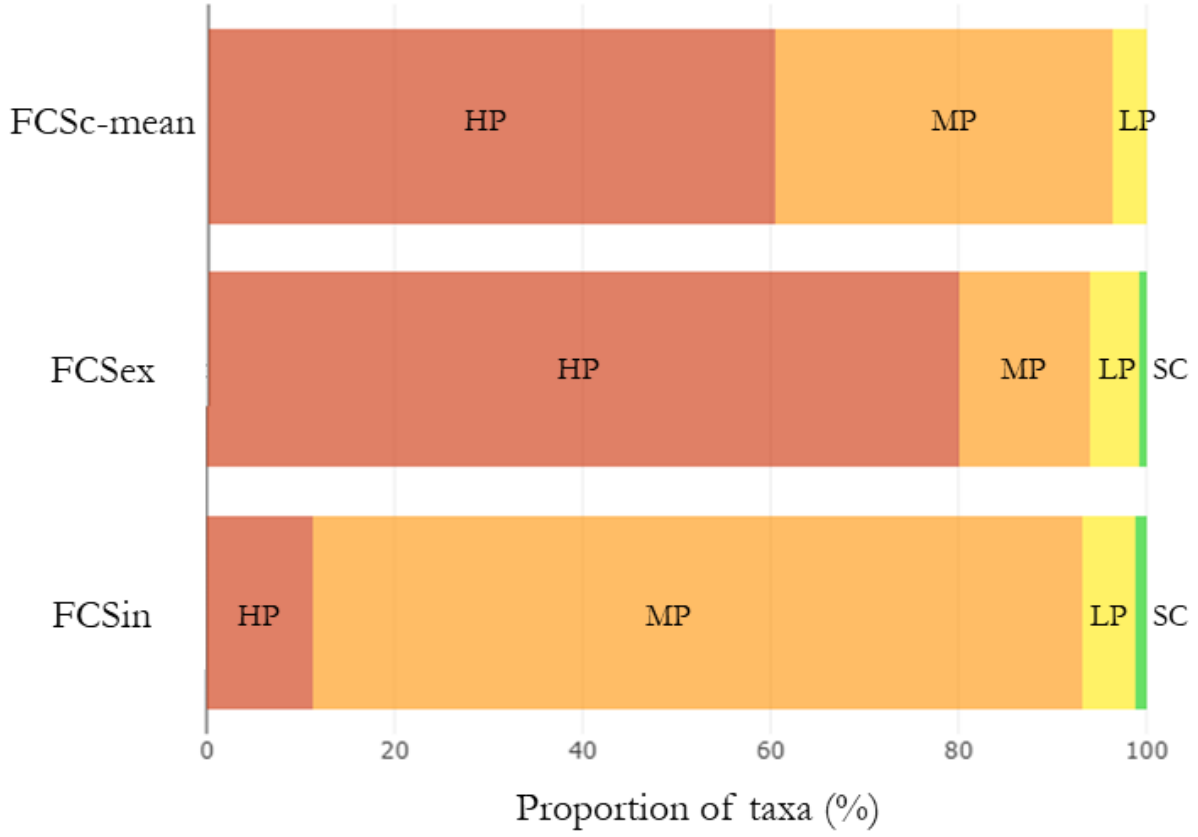


Fig. S1. Predicted taxonomic richness map for assessed U.S. crop wild relatives and wild food plants per assessed category (1A, 1B, and 1C).

Scope: Mainland US, Alaska, Hawaii, and major US Territories

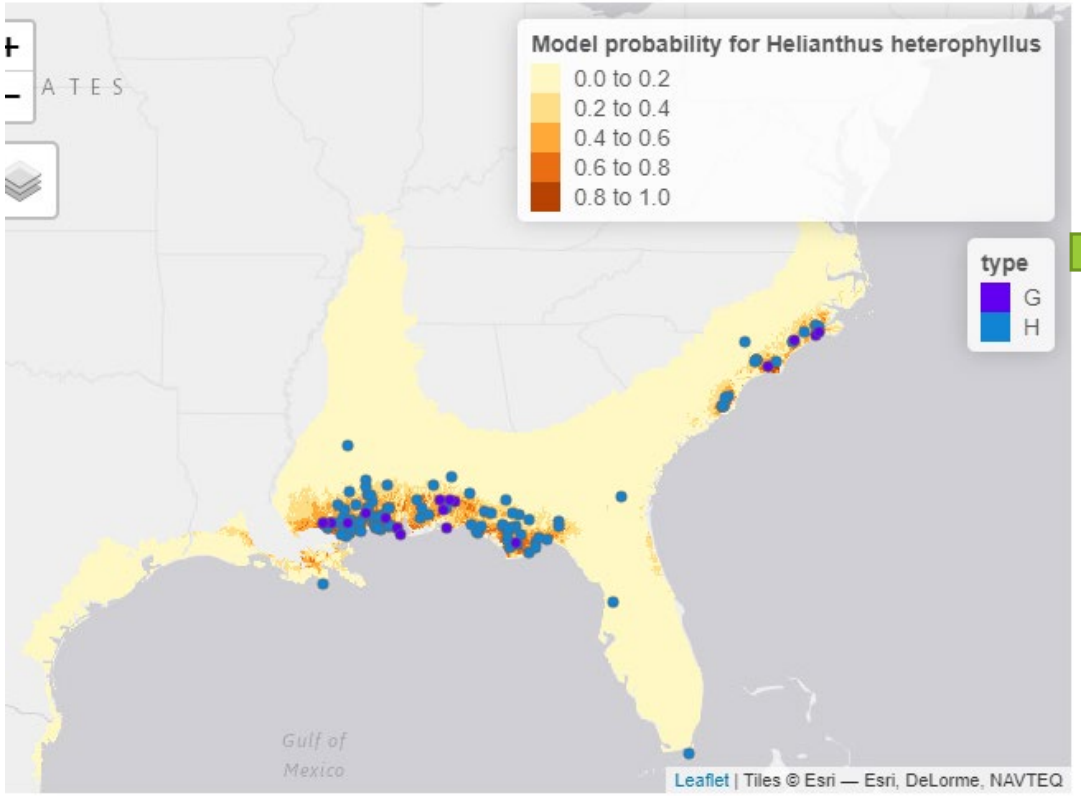
Conservation Gap Analysis

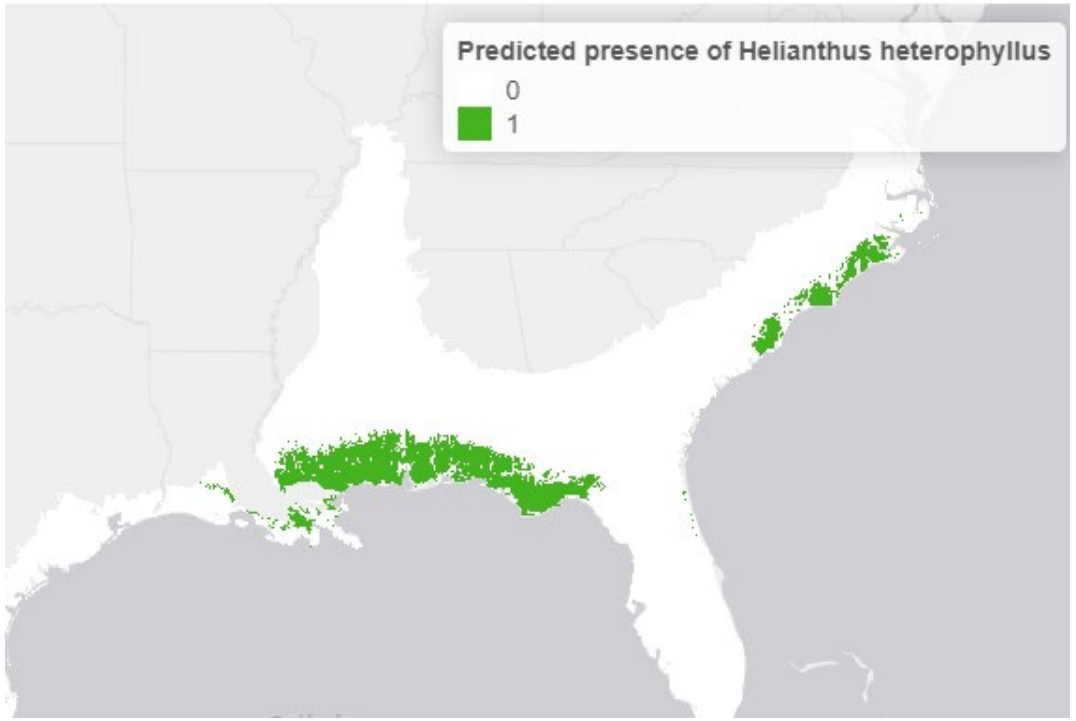


FCS Final Conservation Score
FCSc Final Conservation Score, combined
Ex Ex Situ
In In Situ

HP High Priority
MP Medium Priority
LP Low Priority

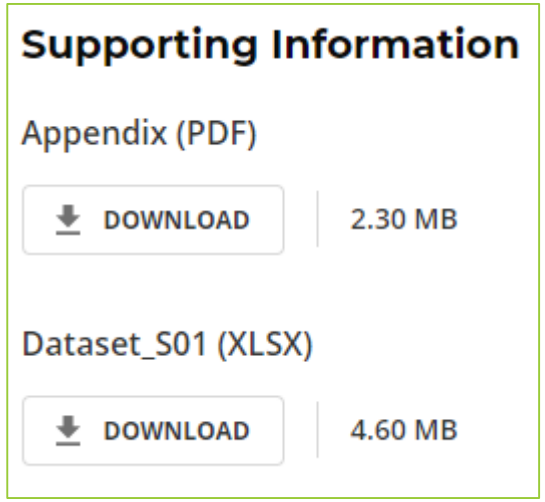
Spatial Data



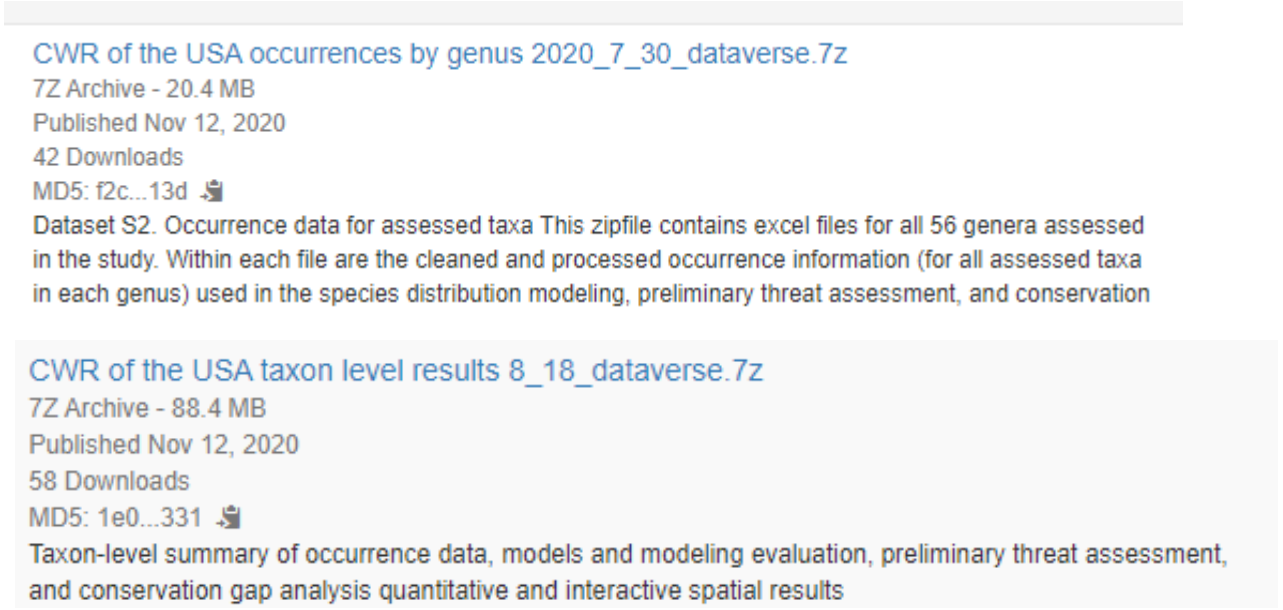


Accessing Available Data

Supplemental data
from published article



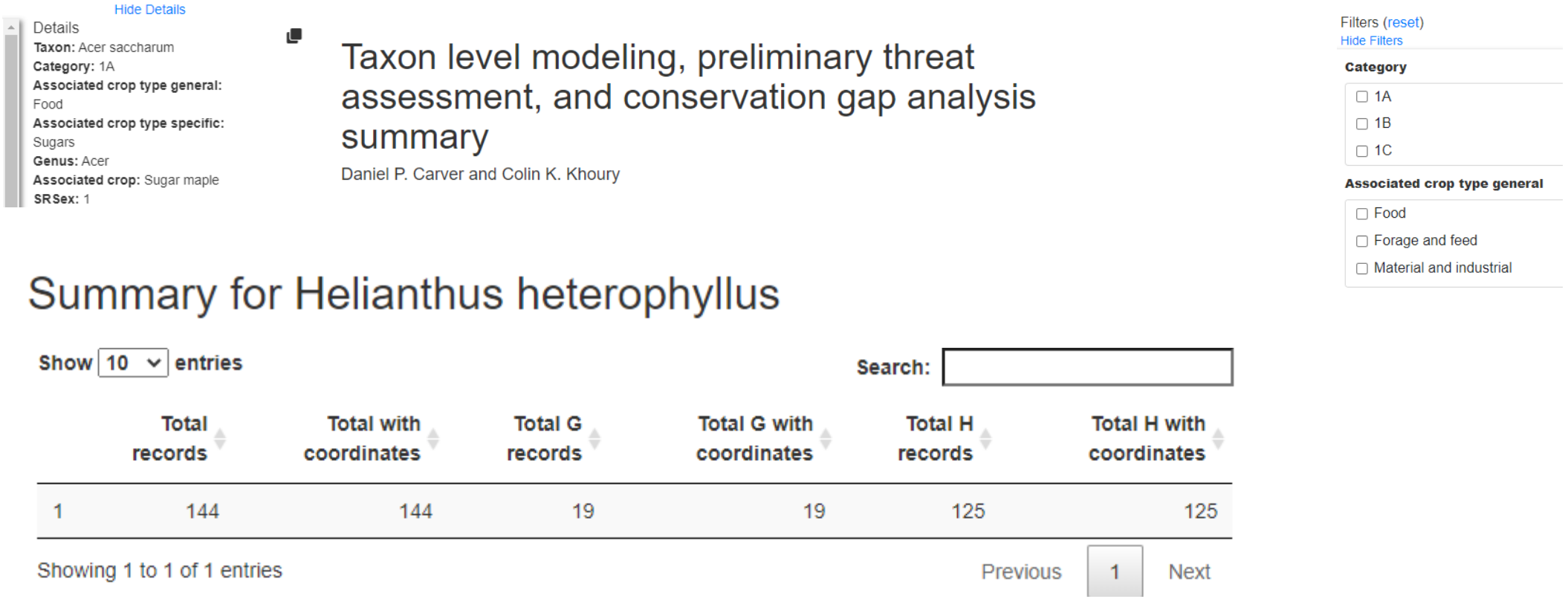
Available from Dataverse repository
Dataverse.Harvard.edu



https://www.pnas.org/doi/10.1073/pnas.2007029117#supplementary-materials

https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/BV4I06

Genus and Species-Specific Data



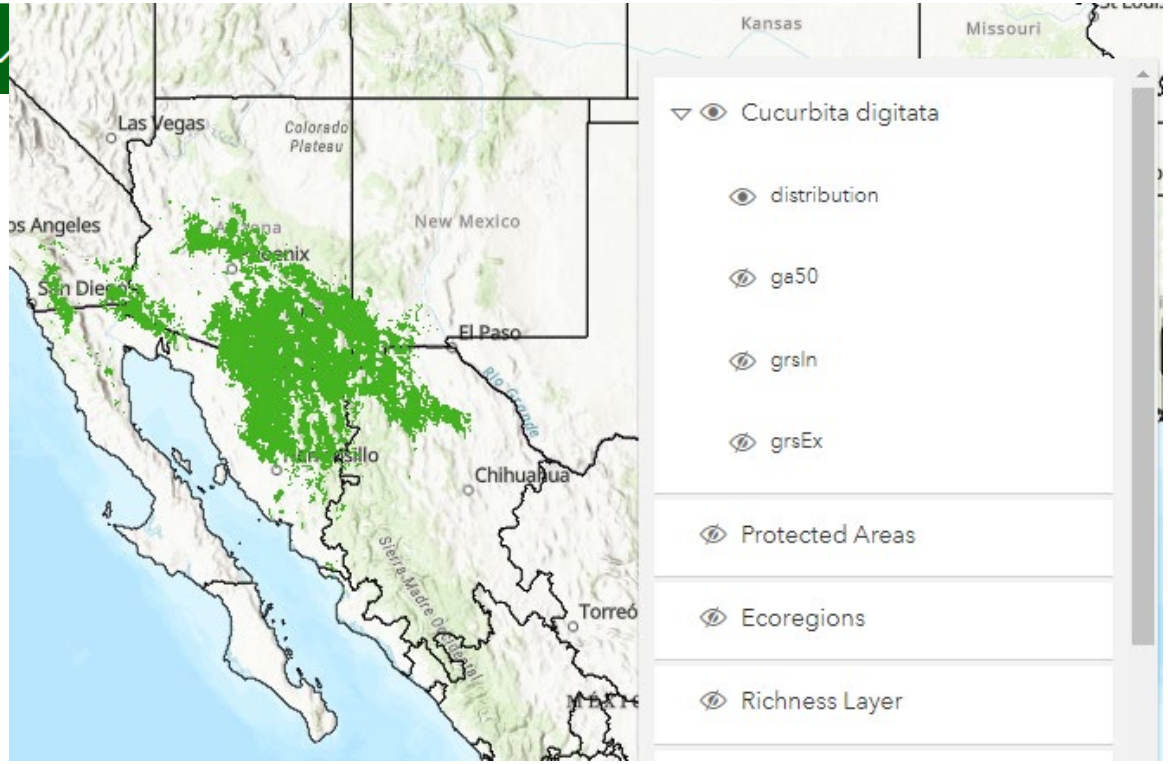
https://dcarver1.github.io/cwrUSA_maps/?p=0

Interactive Map Tool: In Development

USDA Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE

Taxonomy Filter | Conservation Priority Filter | Geography Filter

Crop Wild Relatives



The Partnerships for Data Innovations (PDI): Facilitating data stewardship and catalyzing research engagement in the digital age

R. Daren Harmel, Peter Kleinman, Marlen Eve, James A. Ippolito, Sarah Beebout, Jorge Delgado, Bruce Vandenberg, Mike Buser

First published: 07 October 2021 | https://doi.org/10.1002/ael2.20055

Summary

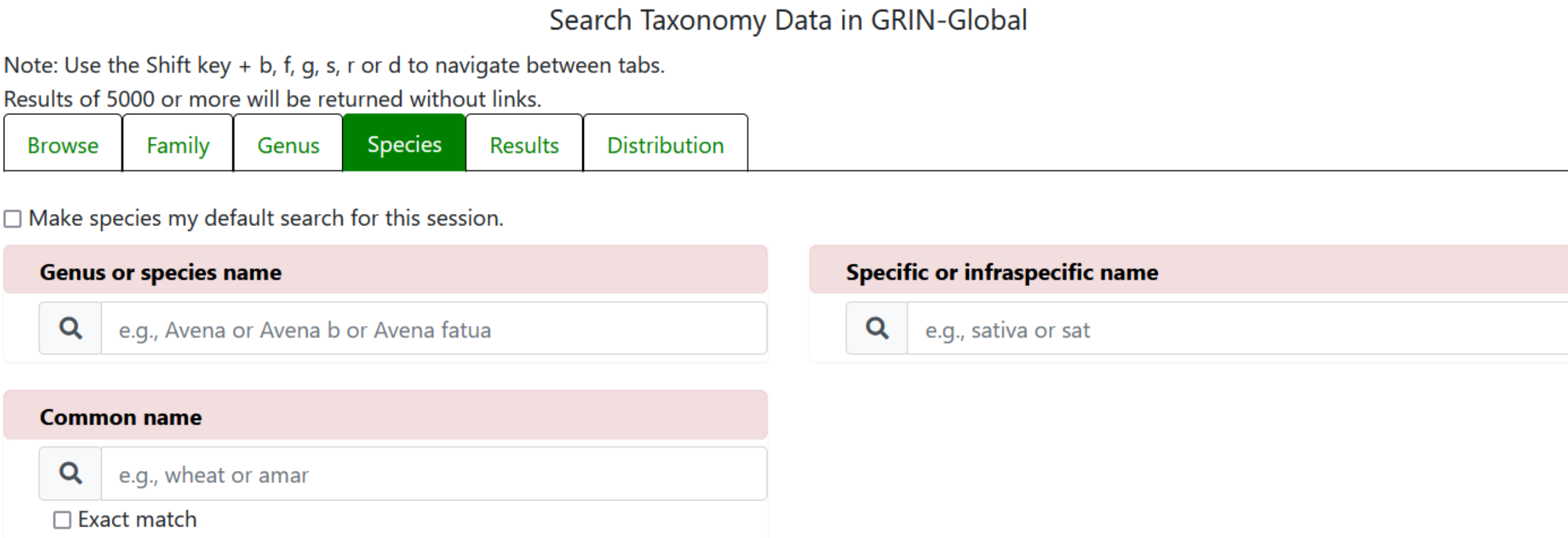
New information and tools fill critical gaps by:

- Identifying taxa most in need of germplasm collection
- Providing information on priority areas to collect germplasm
- Making information more accessible
- Supporting applicants and reviewers of PEO exploration proposals

Please contact us with questions and for additional information on tailoring results to your CGC.

Thank you!

Taxonomy search pages



Browse

Search Taxonomy Data in GRIN-Global

Note: Use the Shift key + b, f, g, s, r or d to navigate between tabs.

Results of 5000 or more will be returned without links.

Browse | Family | Genus | Species | Results | Distribution

Family

e.g., Rosaceae or Rosa

Genus (no hybrid symbols)

e.g., Rubus or Rub

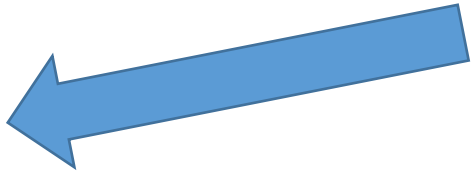
Species

e.g., Daucus carota or Daucus

Common name (genus or species results only)

e.g., lilac or lil

☐ Exact match



Return results that include:

☐ Family ☐ Genus ☑ Species

Results

Browse | Family | Genus | Species | **Results** | Distribution

Click to display query parameters.

Genus Results

- ○ All
- ◉ Accepted Names
- ☐ Exclude infrageneric names

Show 100 rows | Excel | CSV

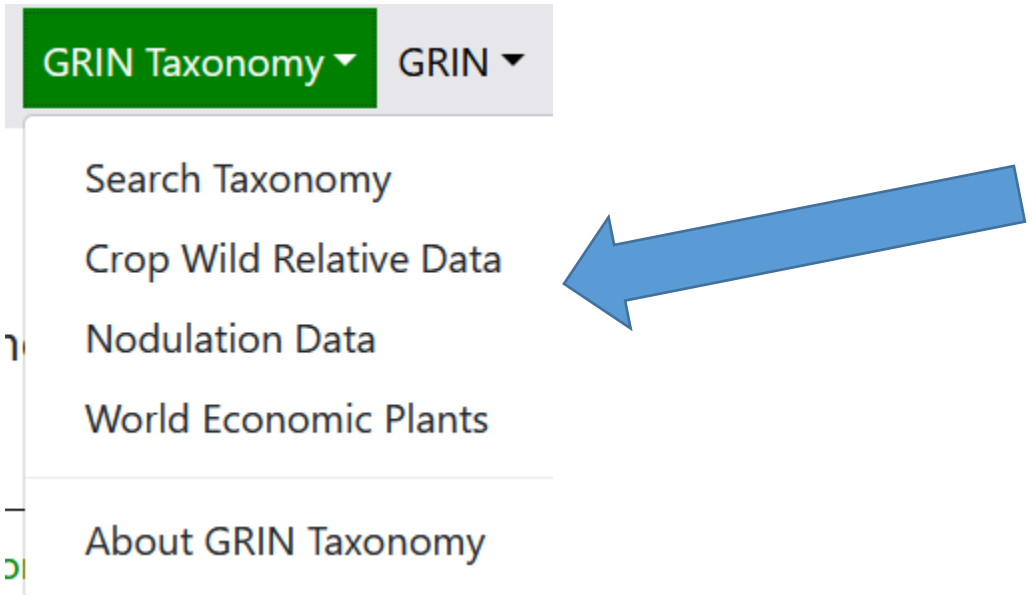
Search: cereus

Showing 1 to 38 of 38 entries (filtered from 441 total entries)

Name	Synonym of	Family
Acanthocereus **(Engelm. ex A. Berger) Britton & Rose**		Cactaceae
Armatocereus **Backeb.**		Cactaceae
Arthrocereus **A. Berger**		Cactaceae
Brachycereus **Britton & Rose**		Cactaceae

Other searches

- Crop Wild Relative Data
- Nodulation Data (no accession information)



Regulatory data

- *Ribes nigrum*

Availability

Form	Quantity	Note	Cart
Seed	25 count		

Restrictions

Plant material may be subject to additional regulations

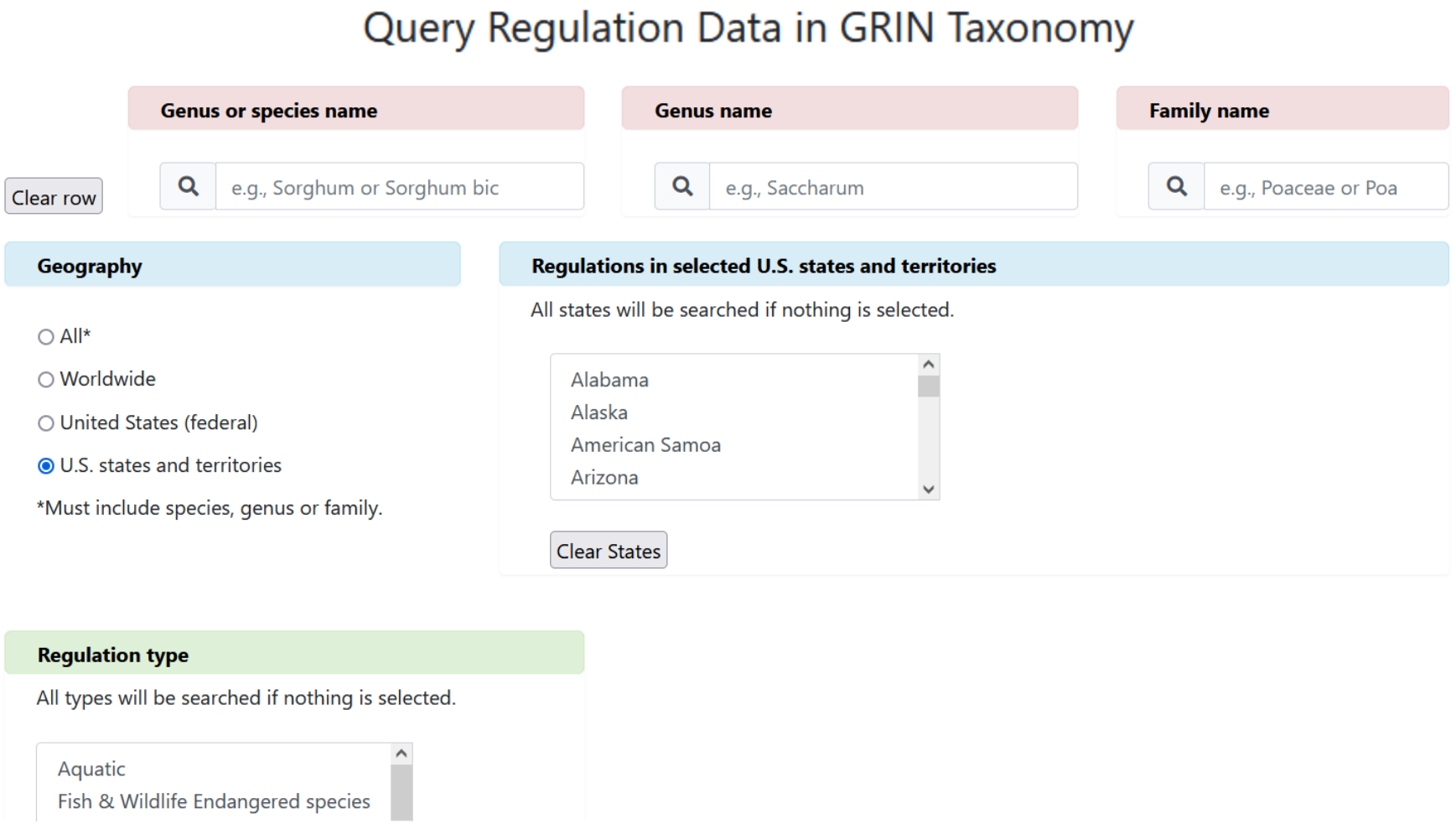
https://nationalplantboard.org/wp-content/uploads/docs/summaries/delaware.pdf

- USA – Delaware (See state regulations: Certification of Currant Plants.)

https://nationalplantboard.org/wp-content/uploads/docs/summaries/maine.pdf

- USA – Maine (See state regulations: White Pine Blister Rust Quarantine.)

Search coming soon



World Economic Plants search