MINUTES

POTATO CGC 2022_APRIL

Potato Crop Germplasm Committee Meeting

Virtual Zoom Meeting --- 11 AM (PST), April 15, 2022

Participants: Anglin, Bamberg, Bethke, Bretting, Collins, del Rio (Secretary), De Jong, Douches (Vice-Chair), Feldman, Fenstemaker, French, Han Tan, Holm, Kinard, Lundeen, Munyaneza, Navarre, Novy, Palta, Parsons, Porter, Sathuvalli (Chair), Shannon, Thompson, Vales, Walker, Whitworth.

Potato Crop Germplasm Committee Meeting - APRIL

April 15 11:00 AM-12:30PM (PST)

https://oregonstate.zoom.us/j/98892629726?pwd=SEZObmZWU25YYWdXZGw4clhwRHYrdz09

Agenda (attached) had been distributed earlier.

1. A short introduction was given by each of the participants.
2. General overview of Potato Crop Germplasm Committee (PCGC) was given by Bamberg. He offered a summary of the CGC program and its history, its role in potato and, how CGC connects to the US Potato Genebank (USPG).
3. Bretting gave an update of the status of the USDA/ARS NPGS NPL. Of particular interest was the current situation of the NPGS Genebanks after COVID-19 and, future challenges facing NPGS like improving conservation strategies, the need of hiring and training new staff because recent/upcoming NPGS personnel retirements.
4. A report by Kinard on The National Germplasm Resources Laboratory (NGRL) is attached here.
5. Palta reported the results of his CGC grant aimed to screening for heat stress tolerance. Preliminary results showed variation in the expression of heat tolerance and acclimation capacity among genotypes and species. He also reported the development of a lab benchtop. rapid screening to determine levels of heat stress tolerance in leaf tissue. Some discussion by Vales was centered in the need of broadening this to testing cultivated germplasm for heat tolerance since those materials, unlike wild species, can have immediate use in breeding.
6. PIs of FY22 proposals presented their plans. Palta requested a new grant to expand the assessment of heat stress tolerance in more germplasm and to evaluate effects in tuber yield/quality. Douches proposed an in vitro method to measure heat and drought stress and their impact in tuberization. Fenstemaker proposed morphological evaluation and genotyping for a set of ~90 germplasm units which are described as “unknown” because they have not been assigned to a species group. This could allow curators at the USPG to organize these materials and breeders to use them in trait evaluations.
7. Bamberg elaborated about the need of identifying experts in the group to be point people for CGC advisory to the USPG. A call for volunteering resulted in the following colleagues committing for these topics:

a. Vulnerability Statement updating: Jonathan Whitworth.
b. Pathology/Phytosanitary protocols at USPG: Ron French.
c. Rationalizing TC and Seed Collections: Noelle Anglin and Sean Fenstemaker.

8. Interested in being members or to propose members for the CGC were advised to review the GRIN website. Bamberg also indicated that he can be contacted at the USPG to assist in becoming part of the CGC group.
9. Future CGC Meeting is expected to be at the Annual PAA meeting at Missoula, Montana in July 2022. Bamberg advised to contact section leadership at the PAA meeting to check with them what type of representation they would expect from the CGC. Vales asked if the meeting was expected to be virtual, Chair Sathuvalli indicated that a remote option will be added so participants not traveling to Montana can join the meeting.

   Chair Sathuvalli requested members to review the CGC Proposals and proposed sending an online ranking/voting survey to determine what proposal would be supported by CGC. An email with that link was sent to the members on April 15, 2022. Update (April 21, 2022) -- Chair Sathuvalli received your votes with the following results: Twenty members voted. Sum of ranks was Fenstemaker = 34; Douches = 36 and Palta = 50. Fenstemaker got the low total as well as the great majority of #1 ranks (=11). Fenstemaker proposal was emailed to HQ yesterday and confirmation of receipt came back.

Adjourned at 12:45 PM (PST).

Respectfully submitted,

Alfonso del Rio

POTATO CGC 2022

AGENDA

Potato Crop Germplasm Committee Meeting

April 15 11:00 AM-12:30PM (PST)

https://oregonstate.zoom.us/j/98892629726?pwd=SEZObmZWU25YYWdXZGw4clhwRHYrdz09

Chair: Sagar Sathuvalli

Vice Chair: Dave Douches

Secretary: Alfonso Del Rio

Agenda

1. Introductions
2. Overview of Potato Crop Germplasm Committee (PCGC) – Dr. John Bamberg
3. Administrative Report – Dr. Peter Bretting
4. National Germplasm Resources Laboratory – Report -Dr. Gary Kinard
5. Report from PI of last evaluation grant recipient – Dr. Jiwan Palta
6. PIs of FY22 proposals present their plan and have questions & group discussion
7. PCGC identifies a separate subcommittee chair to organize CGC advice for curator on these three topics:
    a. Vulnerability Statement update.
    b. Phytosanitary protocols at the genebank.
    c. Assessing relative value and priorities of items in the TC and seed collections.
8. Review of membership and potential additions / retirements
9. Progression of PCGC leadership, plan for future meetings, etc.

USDA-ARS
National Germplasm Resources Laboratory
Beltsville, Maryland
2022 Report to PGOC, RTACs, and CGCs

The National Germplasm Resources Laboratory (NGRL) supports the acquisition, introduction, documentation, evaluation, and distribution of germplasm by the National Plant Germplasm System (NPGS) and other components of the U.S. National Genetic Resources Program (NGRP). The Laboratory is comprised of the Plant Exchange Office (PEO), the Database Management Unit (DBMU), and the Plant Disease Research Unit (PDRU).

Dr. Dimitre Mollov transferred to the ARS Horticultural Crops Research Unit in Corvallis, OR, in June 2021. NGRL hopes to fill this vacant Plant Pathologist position in 2022.

Dr. Anne Frances joined NGRL as a Botanist in August 2021. Anne comes to ARS and NGRL after serving as the Lead Botanist for NatureServe, a conservation science-based NGO, for ten years. Anne is a scientist in the Plant Exchange Office project.

Plant Exchange Office

Plant Exploration and Exchange Program:

- The PEO supports the collection of germplasm for the NPGS through the management of the Plant Exploration and Exchange Program. Guidelines for developing plant exploration and exchange proposals will be distributed to CGC chairs in February 2022. Proposals must be endorsed by the appropriate CGC or other crop experts to be considered for funding.
- Most explorations approved for funding in FY 2020 and FY 2021 were postponed due to the pandemic. It is unclear at this writing (January 2022) whether the postponed explorations and any new ones approved for FY 2022 will be able to proceed this year. Due to funding constraints imposed by proposals already approved, it may not be possible to approve new exploration or exchange proposals for funding in FY 2023. Please consult with PEO before developing proposals for FY 2023.
- Two explorations were conducted in FY 2021. One international exploration was conducted in the country of Georgia for *Salix* by in-country scientists. One domestic exploration was conducted in Illinois for *Aronia* species, deciduous shrubs used as ornamental landscape plants and as an edible fruit crop. All postponed explorations will be rescheduled when pandemic-related travel restrictions are lifted and conditions are considered safe.
- All foreign explorations supported by PEO must comply with the principles in the Convention on Biological Diversity covering access and benefit sharing related to genetic resources. Prior informed consent to collect genetic resources is obtained from the host country before the

exploration. The PEO is involved in most requests to foreign governments for permission to collect and negotiates the terms of agreements when necessary.

Collaboration on Crop Wild Relatives in the U.S.:

The NGRL is collaborating with NatureServe, the US Botanic Garden, and other partners on the conservation of *Vitis* species native to North America, which are crop wild relatives and used as rootstock for the cultivated grapevine (*Vitis vinifera*). Conservation status assessments are being completed and an invitational workshop is planned for fall of 2022.

GRIN Taxonomy for Plants:

- GRIN Taxonomy, available through GRIN-Global (https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearch), provides online current and accurate scientific names and other taxonomic data for the NPGS and other worldwide users. This standard set of plant names is essential for effective management of ARS plant germplasm collections, which now represent ca. 16,300 taxa. A broad range of economically important plants is supported by GRIN nomenclature, including food, spice, timber, fiber, drug, forage, soil-building or erosion-control, genetic resource, poisonous, weedy, and ornamental plants. The search page (excluding the World Economic Plants search) was rewritten in 2021 to allow a broader range of searches and provide the option to export most search results.
- GRIN Taxonomy includes scientific names for 27,931 genera (14,715 accepted) and 1,422 infra-genera (1,355 accepted) and 125,758 species or infra-species (69,125 accepted), with over 67,798 common names, geographical distributions for 61,212 taxa, 510,559 literature references, and 32,468 economic importance records. These numbers increase regularly.
- Since 2008, a project to provide thorough coverage of wild relatives of all major and minor crops in GRIN Taxonomy has been underway. We have completed our initial work on 386 major and minor crops from 174 genera, and CWR from 4,295 taxa have been mapped to these crops and others under progress. An interface to query these data is available (https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomysearchcwr.aspx). We invite feedback from NPGS curators and CGC members for those CWR classifications already developed.

Facilitation of Germplasm Exchange:

The PEO helps expedite the distribution of germplasm from the NPGS to foreign scientists and international genebanks through a long-standing collaboration with USDA-APHIS at Building 580, BARC-East in Beltsville. The pandemic caused a backlog in shipment of orders in 2020. Although the backlog was significantly reduced in 2021, international shipments remain challenging. Only one APHIS inspector is currently available to inspect NPGS outgoing shipments, and logistical delays related to global shipping are continuing.

In 2021, 735 public orders containing a total of 48,196 samples of NPGS accessions were shipped from Beltsville to individuals in 72 countries for research and education. This is more orders than have been shipped from Beltsville in any previous year. In addition, PEO facilitated the agricultural inspection of arriving germplasm shipments containing accessions from numerous foreign countries for researchers and curators at NPGS sites.

Crop Germplasm Committees:

- Many committees continue to meet regularly and are active, although the second year of the pandemic continued to create challenges, especially for committees that typically meet in person. Committees are urged to meet at least annually, and especially to update their Crop Vulnerability Statements. Several CGCs recently completed new versions. The NPGS has been fortunate to fill numerous vacant positions in the last 1–1.5 years, and we hope more will be filled in 2022. These new staff would especially benefit from active and supportive CGCs.
- A virtual meeting/web conference for CGC Chairs is scheduled for March 3, 2022. The 2021 CGC Chairs meeting was held February 21, 2021, and the presentations are archived on the CGC page at https://www.ars-grin.gov/CGC.
- NGRL has a Zoom conferencing account that is available to the CGCs to use for hosting virtual meetings.
- Please send updates to the individual crop committees of the CGC page on GRIN (https://www.ars-grin.gov/CGC) to Gary Kinard.

Database Management Unit

GRIN and GRIN-Global:

- At the time of this report, the GRIN-Global plant database included the following:

  600,495 active accessions representing 16,308 species and 2,568 genera
  3,506,531 inventory records
  2,147,592 seed germination/viability testing records
  9,126,834 characteristic/evaluation records
  1,404,683 attachment files, primarily digital images

  These numbers increase regularly, some almost daily.

- Incremental improvements were made in the GRIN-Global applications throughout 2021. One of the major enhancements was in GRIN Taxonomy, which received a major redesign. Search pages, especially for nodulation data, received a new interface, a browse feature was added with family, genus, species, and common name search options, and the capability to perform species-level searches on geographical distribution was improved. In June 2021, a major enhancement was made to allow for public display and ordering, if the curator implements it, of multiple inventories or propagule forms of single accession. This is particularly relevant for clonal collections that may curate both asexual (whole plant with cuttings, stolons, etc. distributed) and sexual (seeds, pollen, fruit) forms of a single accession This also assists with requesting

cuttings from a specific gender of dioecious accessions where both male and female plants are curated. Another feature added in 2021 was implementation of a tool to filter automatically incoming orders that have characteristics potentially indicative of illegitimate requests, which we call Non-Research Requests (NRR). This NRR Tool allows staff to manage efficiently and consistently such requests NPGS-wide, including using system-generated emails to communicate decisions about submitted orders.

- Current information about the project, including user documentation and release notes from each version of the software, can be found on the project website at https://www.grin-global.org/.

Plant Disease Research Unit

The PDRU conducts research on pathogens that infect clonally propagated prohibited genus (i.e., quarantine) plant germplasm, including their etiology, detection, and elimination by therapeutic procedures. This project provides direct support to the APHIS Plant Germplasm Quarantine Program and helps facilitate the safe introduction, conservation, and international exchange of valuable plant germplasm. PDRU also collaborates on virus related problems with NPGS germplasm repositories, state departments of agriculture, and university scientists. Additional updates will be provided for those committees whose crops are within the scope this project's research.

Key NGRL Contacts

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