Report of NPGS Germplasm Distribution

Washington

Representative: Per McCord

2021 Report

Overview

- Number of requestors: **95**
- Number of orders: **184**
- Number of items: **5037**
- Number of responders: **42** (44%)- Reminder email helps
    - Bad email addresses: **12**
- Representation:
    - US State agencies and all universities: **25** (X responses)
    - Federal: **20** (X responses)
    - US Commercial Company: **17** (X responses)
    - Individual/non-profit: **31** (X responses)
- Total publications: **7** (several pending)

PI: Abigail Attavar/Jenna Price

Representation: Sakata Seeds

Species: *Beta vulgaris*

Quality of materials received:

Use: Screening for sterility and *Rhizomania* disease resistance.

Public Plant Releases: None

Data/Publications: Screening data submitted to state representative. Accessions dropped from the program.

Suggestions/Feedback: None

PI: Karen Bates-Earnest

Representation: Earnest Elderberries

Species: *Sambucus mexicana, S. nigra*

Quality of materials received: Not received

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback:

PI: Antonio Chaparro

Representation: University of Washington

Species: *Brassica napus* subsp. *napus*

Quality of materials received: Good

Use: Plants grown for RNA libraries under different conditions

Public Plant Releases: None

Data/Publications: None

Suggestions/Feedback: None

PI: Ryan Christian/Noel Hathaway

Representation: Yakima Chief Ranches

Species: *Humulus lupulus* vars. *cordifolius*, *lupuloides*, *lupulus, neomexicanus*

Quality of materials received: Variable germination

Use: Evaluation for male/female, vigor, disease susceptibility

Public Plant Releases: None

Data/Publications: Data generated, willing to share with NPGS

Suggestions/Feedback:

PI: John Cochran

Representation: PNW Community College/Private individual

Species: *Allium cernuum*, *Citrullus lanatus*, *Cucurbita moschata*, *Fragaria nipponica*, *Ixora* spp., *Phaseolus lunatus*, *P. vulgaris*, *Rubus occidentalis*, *Sambucus canadensis*, *S. nigra*, *S. nigra* subsp. *nigra*, *S. racemosa*

Quality of materials received: Some or all items were not received

Use: Intended for proprietary climate research

Public Plant Releases: None

Data/Publications: None

Suggestions/Feedback: Found it difficult to request materials, was denied on more than one occasion even though the request was for research.

PI: Rodney Cooper

Representation: USDA-ARS

Species: *Cuscuta indecora*, *C. pentagona*, *Elymus elymoides* subsp. *elymoides*, *E. multisetus*, *Ericoma hymenoides*, *Helianthus annuus*, *Pyrus communis*

Quality of materials received: Good

Use: Pear scion (*Pyrus*) was used to assess whether pear psylla resistance is systemic. Experiments concluded that it was not, at least for the accessions tested. Grasses (*Cuscuta*, *Elymus*, *Ericoma*) were used to test the longevity of *Colladonus* leafhoppers, vectors of the x-disease pathogen, on grasses. *Helianthus* was used for research on predatory mites.

Public Plant Releases: None

Data/Publications: None

Suggestions/Feedback: None

PI: Alex Cornwall

Representation: USDA-ARS

Species: *Lactuca aculeata*, *L. altaica*, *L. biennis*, *L. canadensis*, *L. dregeanai, L. floridana*, *L. georgica*, *L. indica*, *L. inermis*, *L. ludoviciana*, *L. orientalis, L. perennis*, *L. quercina* subsp. *quercina*, *L. saligna*, *L. tatarica*, *L. undulata*, *L. virosa*

Quality of materials received: Material was fairly good quality. Much of it was original seed from collection trips so the quality was lacking there.

Use: I used the material in a Hybrid-Exome Capture project for my dissertation. It provided data for a robust phylogeny that helped resolve some confusion within the genus Lactuca. It also allowed me to phenotype many species at once and create a global identification key for most of the common Lactuca species. I was also able to extract barcoding regions for the species for use with improving the accuracy of germplasm collections.

Public Plant Releases: None.

Data/Publications: Dissertation publications pending (end of 2025/early 2026).

Suggestions/Feedback: Believes curators are doing the best they can.

PI: Clarice Coyne

Representation: USDA-ARS

Species: *Helianthus annuus*, *Lens culinaris* subsp. *culinaris*, *Lolium perenne*, *Pisum sativum*, *Triticum aestivum* subsp. *aestivum*, *Zea mays* subsp. *mays*

Quality of materials received: Good germination.

Use: Used for field trial, GWAS of seed protein concentration.

Public Plant Releases: None planned.

Data/Publications: Lentil publication expected in 2025.

Suggestions/Feedback: NPGS Strategic Plan should be fully funded.

PI: Robert Dash

Representation: Orcas Island School District

Species: *Glycine soja*

Quality of materials received: Excellent.

Use: I took samples to a scanning electron microscope, and made images to add to my book.

Public Plant Releases: None.

Data/Publications: Dash, R. Food planet future: the art of turning food and climate perils into possibilities. Papadakis, 2024.

Suggestions/Feedback: It's a wonderful resource which needs to remain viable.

PI: Brett Despain

Representation: Highland Specialty Grains

Species: *Chenopodium berlandieri* subsp. *nuttalliae*, *C. pallidicaule*, *C. pratericola*, *C. quinoa*, *Fagopyrum esculentum*

Quality of materials received: Quality was acceptable. No germ problems were noted.

Use: Screening germplasm for potential use in plant breeding.

Public Plant Releases: None

Data/Publications: None.

Suggestions/Feedback: I don't have any suggestions from improvement. The system seems to work pretty well.

PI: Veronica Di Stilio

Representation: University of Washington

Species: *Pisum sativum* subsp. *sativum*

Quality of materials received: Excellent, very high germination rate.
Use: For teaching, in a lab class for seniors in the biology major at University of Washington, Biology.

Public Plant Releases: None.

Data/Publications: None (teaching only)

Suggestions/Feedback: This is a great resource, only thing is to improve communication between orders placed via GRIN system and local source, a couple times my order was not received by WSU, I had to email them every time to alert them.

PI: Max Feldman

Representation: USDA-ARS

Species: *Solanum tuberosum*, *S. tuberosum* subsp. *andigenum*, *S. tuberosum* subsp. *tuberosum*, *S. berthaultii*, *S. boliviense*, *S. acaule*, *S. brevicaule*, *S. candolleanum*, *S. chacoense*, *S. jamesii*, *S. demissum*, *S. dolichocremastrum*, *S. infundibuliforme*, *S. kurtzianum*, *S. lesteri*, *S. microdontum*, *S. clarum*, *S. malmeanum*, *S. laxissimum*, *S. multiinterruptum*, *S. okadae*, *S. polyadenium*, *S.*

sogarandinum, *S.* spp., *S. necoardenasii*, *S. raphanifolium*, *S. medians*, *S. pinnatisectum*, *S. stoloniferum*, *S. albornozii*, *S. andreanum*, *S. cardiophyllum*, *S. chomatiphilum*, *S. commersonii*, *S. ehrenbergii*, *S. immite*, *S. lesteri*, *S. longiconicum*, *S. morelliforme*, *S. sogarandinum*, *stipuloideum*, *S. trifidum*, *S. vernei*, *S. verrucosum*

Quality of materials received: Very good. We received 10 seed tubers per clone requested. These were of adequate size and quality for planting the same year received.

Use: This was used to evaluate germplasm diversity in small plots (5-hill, 2X replication). Each clone was planted 5-hill plots in a fumigated section of our field at Pear Acres (WSU-IAREC), hand harvested, and evaluated using a machine vision approach. We used the resulting images to help build a deep learning model to identify potato tubers from images which is the basis of our potato grading platform. We have utilized several of the clones Barbara (PI 661982), Reiche (PI 661982), and Sarpo Mira (PI 676260) as breeding parents to advance disease resistance (PVY immunity, PLRV and late blight resistance) in tetraploid germplasm and have also used Skagit Valley Gold (AV 79) as a yellow skin and fleshed parent in the generation of self-compatible diploid germplasm.

Public Plant Releases: No. We have several breeding families segregating for resistance loci derived from Barbara (PI 661982). We have evaluated these families for 2 field seasons and anticipate advancing a few selections as breeding parents.

Data/Publications: No publications currently.

Suggestions/Feedback: Very grateful for the continued efforts of NPGS.

PI: Brian Irish

Representation: USDA-ARS

Species: *Eriocoma hymenoides*, *Hesperostipa comata* subsp. *comata*, *Leymus cinereus*, *Medicago sativa* subsp. *sativa*, *Pseudoroegneria spicata*, *Trifolium ambiguum*, *T. canescens*, *T. caucasicum*, *T. isthmocarpum*, *T. medium*, *T. medium* var. *sarosiense*, *T. ochroleucon*, *T.* spp., *T. thalii*

Quality of materials received: Most are of great quality. Some, admittedly, have lower germination and viability and that is on us to try to improve.

Use: In many ways. Genotyping and phenotyping predominantly. Developing marker panels and platforms. Testing these maker panels for efficiency in related taxa/species for population genetics and germplasm management. Collecting simply inherited characterization traits, and more in-depth agronomic traits (e.g., multisite, multiyear yield). Research on best ways to manage non-agricultural species including best ways to germinate and regenerate seed with

pollinators. Evaluating germplasm for disease resistance and developing improved germplasm in pre-breeding collaborative programs.

Public Plant Releases: Not yet, but soon (maybe 2025 or 2026). Disease resistant and higher yielding alfalfa (Medicago sativa) germplasm.

Data/Publications:

Lim, S., Park, S., Baek, I., Botkin, J., Jang, JH., Hong, S.M., **Irish, B.M.,** Kim,S.M., Meinhardt, L.W., Curtin, S.J., Ahn. 2025. Integrative analysis of seed morphology, geographic origin, and genetic structure in *Medicago* with implications for breeding and conservation. BMC Plant Biol **25**, 274.https://doi.org/10.1186/s12870-025-06304-4

Medina, C.A. Lin, M., Zhao, D., Sapkota, M., Sandercock, A.M., Beil, C.T.,Sheehan, M.J. **Irish, B.M.,** Yu, L-X, Poudel, H., Claessens, A., Moore, V.,Crawford, J., Hansen, J., Viands, D., Smith, K.P., Peel, M., Tilhou, N. Riday,R., Brummer, C.E. and Zhanyou Xu. 2025. Pre-breeding in alfalfa germplasm develops highly differentiated populations, as revealed by genome-wide microhaplotype markers. Scientific Reports https://doi.org/10.1038/s41598-024-84262-x

Hallwachs, B., Martin, E., Hellier, B. and **Irish, B**.* 2025. Optimizing regeneration protocols for USDA ARS National Plant Germplasm System native Seeds of Success-collected *Astragalus spp*. genetic resources. Native Plants Journal. 25: 179-191. https://doi:10.3368/npj.25.3.179

Suggestions/Feedback: Keep up the good work!

PI: Jeremy Jewell

Representation: Washington State University

Species: *Solanum americanum*, *S. chacoense*, *S. nigrum*, *S. retroflexum*, *S. sarrachoides*, *S. scabrum*, *S. tuberosum* subsp. *andigenum*, *S. villosum*

Quality of materials received: Good germination.

Use: Tried as alternate hosts for *Spongospora subterranea* in tissue culture. Unfortunately, I did not see any better infection than with potato in tissue culture. Nothing was published from my work with them.

Public Plant Releases: None

Data/Publications: None

Suggestions/Feedback: It's a great service.

PI: Alexandra Johnson

Representation: Washington State University

Species: *Prunus avium*, *P. cerasus*, *P. domestica*, *P. fruticosa*, *Prunus* hybr., *P. incana*, *P. lannesiana*, P*. laurocerasus*, *P. maackii*, *P. mahaleb*, *P. microcarpa*, *P. padus*, *P. pseudocerasus*, *P. pumila* var. *susquehanae*, *P. serotina*, *P.* spp., *P. tomentosa*, *P. virginiana* var. *demissa*, *P.* x *eminens*, *P.* x *gonduinii*, *P.* x *schmittii*, *P.* x *yedoensis*

Quality of materials received: The quality was great. The material was healthy, there was sufficient volume to work with, and it was well labeled and packaged.

Use: It was used in mildew and canker biological assays as well as genotyping.

Public Plant Releases: None.

Data/Publications: No publications to report at this time (there will be one forthcoming that will include the NPGS germplasm and give respective credit).

Suggestions/Feedback: No feedback at this time other than to please continue the excellent work.

PI: August Kersten

Representation: Xeric Horticulture

Species: *Mentha aquatica* var. *citrata*, *M. arvensis*, *M. canadensis*, *M. cervina*, *M. longifolia* subsp. *capensis*, *M. suavolens* subsp. *suavolens*, *M.* x *verticillata*

Quality of materials received: Excellent

Use: Research on essential oil yields.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: My only suggestion would be for NPGS to get more funding and expand into other crops, it's a public benefit and cost effective in my opinion.

PI: Steven Lee

Representation: USDA

Species: *Vicia faba*

Quality of materials received: Good quality.

Use: Used in germplasm development.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: None.

PI: Ryan Lynch

Representation: Sakata Seeds

Species: *Eruca vesicaria* subsp. *pinnatifida*, *Eruca vesicaria* subsp. *sativa*

Quality of materials received: The quality of the material received was excellent - germination rates were good, and seeds produced healthy plants. Seed lots were pure and free of foreign material/seeds.

Use: The overarching use of the material was for breeding purposes. The PI Lines were evaluated for unique horticultural traits and used for developmental crosses to target horticultural and disease resistance traits to widen the breeding pool.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: Asked how to share data back with NPGS.

PI: Jane Mansfield Martin

Representation: Jane's Garden

Species: *Fragaria* × *ananassa*

Quality of materials received: Plants arrived in good shape and were planted promptly.

Use: Plants grew well, but were killed by a late frost in spring 2023.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: I cannot think of anything you could have done better. I appreciate your sharing the germplasm

PI: Cassandra McConell

Representation: Pioneer Clinic

Species: *Vaccinium corymbosum*, *Fragaria* X *ananassa*

Quality of materials received: Materials not received.

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback:

PI: Per McCord

Representation: Washington State University

Species: *Prunus avium*, *P. cerasus*, *P. domestica*, *P.* spp., *P. tomentosa*

Quality of materials received: Budwood arrived in good condition.

Use: My intent was to use these accessions to broaden the WSU stone fruit breeding germplasm pool. However, several buds did not take when grafted, and most if not all survivors tested positive for *Prune dwarf virus* and/or *Prunus necrotic ringspot virus*.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: It would be great to have an easier means of maintaining disease-free accessions for clonal collections.

PI: Brian McCulloch

Representation: Mountain Shadow Nursery

Species: *Ficus carica*

Quality of materials received: Very good. Cuttings rooted successfully.

Use: We had planned to propagate and sell these selections to some new fig customers we had.

Public Plant Releases: We have not used the material which was received in 2021 because the two customers who were interested went out of business. We may end up selling them in the future and we are holding them as stock plants.

Data/Publications: None.

Suggestions/Feedback: None at this time.

PI: Phil Miklas

Representation: USDA-ARS

Species: *Phaseolus lunatus, P. vulgaris*

Quality of materials received: The materials received were in good shape and had excellent germination.
Use: We have been using NPGS materials in Diversity Panels, to generate breeding populations, and to examine candidate gene haplotypes.

Public Plant Releases: No 2024 releases with NPGS materials.

Data/Publications:
Sadohara, R., K. Cichy, D. Fourie, S. N. Msolla, Q. Song, P. N. Miklas, and T. Porch. 2024. Andean common bean bulk breeding lines selected on multiple continents exhibit broad genetic diversity and stress adaptation. Crop Science 64: 2801-2822. https://doi.org/10.1002/csc2.21309

Soler-Garzón, A., M. Mulube, K. Kamfwa, D. M. Lungu, S.Hamabwe, J. Roy, V. Salegua, D. Fourie, T. G. Porch, P. E.McClean, and P. N. Miklas. 2024. GWAS of resistance to three bacterial diseases in the Andean common bean diversity panel. Frontiers in Plant Sci. 15: 1469381. doi:10.3389/fpls.2024.1469381

Kachapulula, J S., K. Kuwabo, S. M. Hamabwe, M. Nkandela, C.Mukuma, A. Soler-Garzón, P. N. Miklas, and K. Kamfwa. 2025. Quantitative trait loci analysis for anthracnose resistance in apopulation derived from Andean varieties Bukoba and Kijivu of common bean (*Phaseolus vulgaris* L.). Plant Breeding, 0:1-8,https://doi.org/10.1111/pbr.13264

Suggestions/Feedback: Just keep up the excellent job!

PI: Carol Miles

Representation: Washington State University

Species: *Ipomoea batatas* var. *batatas*

Quality of materials received: Request was not completed, and so did not receive any of the listed accessions.

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback: Thanks so much to NPGS, it is an invaluable resource to researchers such as myself.

PI: Niall Millar

Representation: Washington State University

Species: *Glycine max*, *G. soja*

Quality of materials received: Good condition.

Use: I used them in a pilot experiment; I was trying to get some fluorescent rhizobia to work with soybean, but it didn't work out. I got the rhizobia to fluoresce in vitro, but for some reason the nodules didn't glow. We tried this again at a later date and got the same result.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: None.

PI: Robin Morgan

Representation: Washington State University

Species: *Agropyron cristatum*, *A. cristatum* subsp. *pectinatum*, *A. cristatum* unranked *imbricatum*, *A. mongolicum*, *Psathyrostachys juncea*, *Pseudoregneria spicata*, *Secale strictum*, *S. strictum* subsp. *africanum*, *S. strictum* subsp. *anatolicum*, *S. strictum* subsp. *ciliatoglume*, *S. strictum* subsp. *kuprijanovii*, *S. strictum* subsp. *strictum*, *Thinopyrum bessarabicum*, *T. elongatum*, *T. ponticum*, *Triticum aestivum* subsp. *aestivum*

Quality of materials received: The quality of the plant materials I received (seeds) was excellent.

Use: The material was used as a contribution to the development of a perennial grain crop. In particular the material was screened to asses its suitability for being used as parent in future crossing schemes.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: The NPGS system is an extraordinary resource for plant breeders and the broader society, and I always mention it in my outreach engagements to increase public awareness of its importance. Thank you very much for what you do.

PI: Lindsey Neville

Representation: New Dawns Farms

Species: *Rubus idaeus* subsp. *strigosus*, *R. idaeus* subsp. *idaeus*

Quality of materials received: I never received these items. I was told that my project could not be accommodated back in 2021.

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback:

PI: Nickisha Pierre-Pierre

Representation: Washington State University

Species: *Glycine max*, *Pisum sativum*, *P. sativum* subsp. *sativum*

Quality of materials received: The material was in great shape. Seed quality was good.

Use: I planted the seeds and used the leaves in detached leaf assays to test the virulence of *Sclerotinia sclerotiorum*.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: None currently.

PI: Lyndon Porter

Representation: USDA-ARS

Species: *Lens culinaris* subsp. *culinaris*, *Pisum abyssinicum*, *P. fulvum*, *P. sativum*, *P. sativum* subsp. *asiaticum*, *P. sativum* subsp. *elatius*, *P. sativum* subsp. *sativum*, *P. sativum* subsp. *trancaucasicum*, *P. sativum* var. *arvense*, *P. sativum* var. *pumilio*, *P. sativum* var. *sativum*

Quality of materials received: Excellent.

Use: Lentils were used and screened for resistance to *Fusarium oxysporum* and the peas were screened for resistance to *Bean leafroll virus*.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: Nothing at this time.

PI: Stephanie Porter

Representation: Washington State University

Species: *Arachis hypogea*, *Cicer reticulatum*, *Medicago sativa* subsp. *caerulea*, *Trifolium subterraneum*

Quality of materials received: Excellent.

Use: Research on plant-microbe interactions.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: This system has been invaluable for research and indispensable for my research in particular. It is critical for maintaining agricultural innovation and improvement.

PI: Roland Radtke

Representation: Radtke Research

Species: *Humulus lupulus* var. *lupuloides*, *H. lupulus* var. *lupulus*, *H. lupulus* var. *neomexicanus*, *H. lupulus* var. *pubescens*

Quality of materials received: The plant materials arrived in great condition, all were initially viable (Thank you!).

Use: Materials were grown into fully mature plants with an intent to hybridize through crosspollination. Unfortunately, all male plants failed, thus the experiment was unsuccessful.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: Only my sincere appreciation: The NPGS system is an amazing resource and enabler for research.

PI: John Reardon

Representation: Private individual

Species: *Pyrus pyrifolia*

Quality of materials received: Good quality.

Use: Tree grafting/planting.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: All websites can use better methods to search for materials.

PI: Dee Riley

Representation: Mt. Sinai Senior Center

Species: *Nicotiana* hybr.

Quality of materials received: None received, probably because it was a non-research related request.

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback:

PI: Laurie Rowell

Representation: Sound Volumes

Species: *Pyrus communis*

Quality of materials received: Excellent.

Use: For the last 7 years I have been experimenting with my second pot-grown orchard. I am trying to determine best practices for growing pome fruit in this manner, and that includes testing types that are not grown commercially, but would offer the backyard, patio, or balcony grower good tree fruit with a minimum of fuss.

Public Plant Releases: None**.**

Data/Publications: The work-in-progress, which I hope is helpful, will be released as an affordable e-book, which I trust can (1) inspire people to grow some of their own fruit and (2) present a simple path for the inexperienced and/or busy grower to be successful on the first try. In this regard, my results for pears have been hampered by extremely limited options for rootstock suitable for growing pears in pots.

Suggestions/Feedback: I certainly appreciate the help the NPGS gave me by providing scionwood.

PI: Travis Ruff

Representation: USDA-ARS

Species: *Triticum aestivum* subsp. *aestivum*

Quality of materials received: High quality, all samples germinated.

Use: These samples were used to verify a new marker for wheat bread making quality.

Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: Your group is doing a fine job and appreciate all of your efforts.

PI: Srijana Shrestha

Representation: Washington State University

Species: *Glycine soja*

Quality of materials received: Request was made, but seeds were intended for someone else. No further information.

Use:

Public Plant Releases:

Data/Publications:

Suggestions/Feedback:

PI: Andrei Smertenko

Representation: Washington State University

Species: *Triticum monococcum* subsp. *monococcum*

Quality of materials received: We received seeds. All were clean, free from infection, and showed good germination efficiency. We did not calculate the efficiency though.

Use: The seeds were used to grow seedlings and use them for isolation of total RNA and total protein.

Public Plant Releases: None.

Data/Publications: Sahin, Y., Nazarov, T., Ünlü, E. S., Smertenko, A. & Zencrici, N. (2024) GABA promotes peroxisome proliferation in *Triticum monoco*ccum leaves. Plant Direct 8: e70007, doi:10.1002/pld3.70007.

Suggestions/Feedback: The service is excellent, and I can only wish you sufficient resources to maintain the service at the same level. Thank you for sharing the seeds with use - it was very important for our research program.

PI: Ryan Wheeler

Representation: Peasant Seed

Species: *Fagopyrum tataricum*

Quality of materials received: Generally great, with only one or two accessions being older and having lower germination.

Use: Breeding purposes, looking for local potential for oilseed crops for small farmers and gardeners.

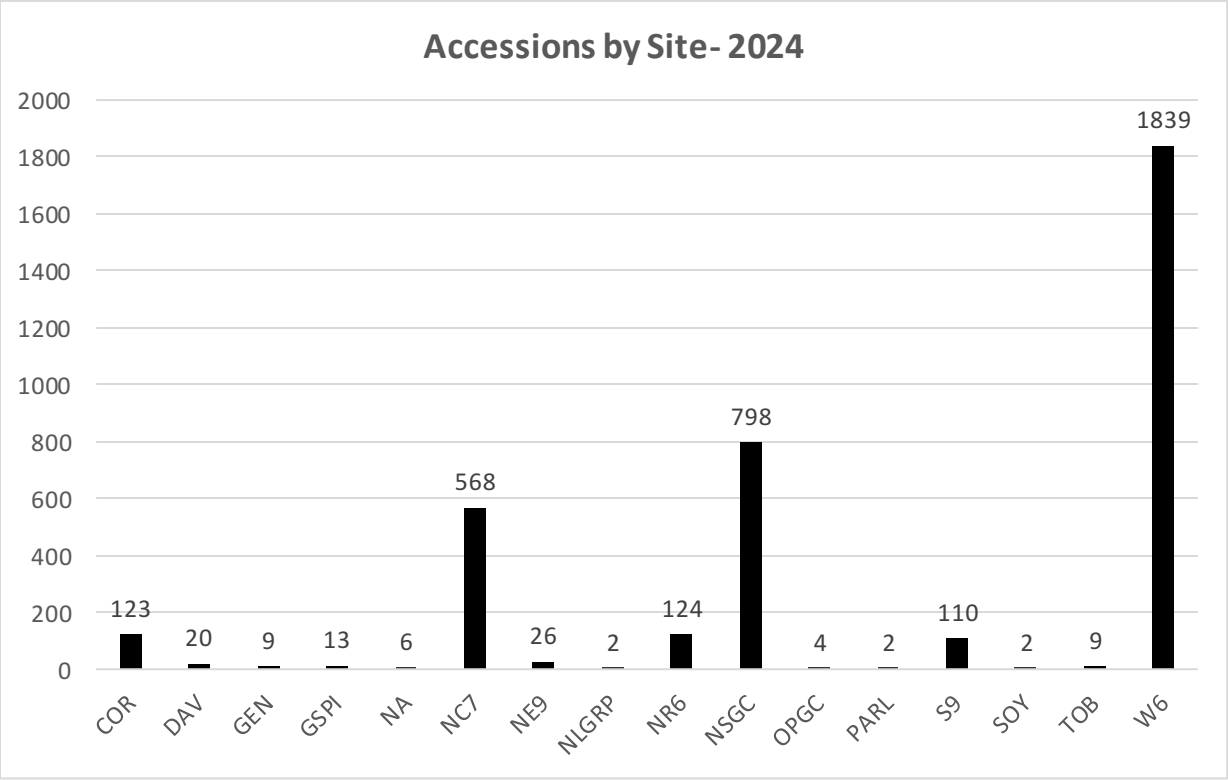
Public Plant Releases: None.

Data/Publications: None.

Suggestions/Feedback: I think this is a great resource, and I don't have any suggestions for improvement at the moment.

2024 Report

- Number of requestors: **61**
- Number of orders: **118**
- Number of items: **3685**
- Representation:
    - US State agencies and all universities: **27**
    - Federal: **13** (USDA-ARS)
    - US Commercial Company: **15**
    - Individual/Non-profit: **6**



Germplasm Requested

Taxon	Total accessions
Achillea alpina	8
Achillea asiatica	1
Achillea bibersteinii	5
Achillea conferta	1
Achillea falcata	1
Achillea magnifica	1
Achillea millefolium	121
Achillea nobilis	1
Achillea pseudopectinata	1
Achillea ptarmica	1
Achillea ptarmicifolia	1
Achillea santolina	5
Achillea setacea	3
Achillea spp.	2
Achillea tenuifolia	1
Achillea vermicularis	1
Actinidia arguta	2
Actinidia callosa	1
Actinidia chinensis	8
Actinidia deliciosa	3
Actinidia melanandra	1
Agropyron fragile	1
Amelanchier alnifolia	1
Amsinckia lycopsoides	1
Angelica lucida	1
Astrebla lappacea	1
Avena sativa	2
Avena strigosa	51
Baptisia aberrans	1
Baptisia bracteata	2
Bewsia biflora	1
Bouteloua aristidoides	1
Bouteloua barbata var. *barbata*	1
Bouteloua breviseta	1
Bouteloua curtipendula	1
Bouteloua eriopoda	1
Bouteloua megapotamica	1
Bouteloua radicosa	1

Bouteloua rigidiseta	1
Bouteloua trifida	1
Bouteloua warnockii	1
Brassica oleracea var. *viridis*	2
Camassia quamash	1
Camelina alyssum	1
Camelina hispida var. *grandiflora*	1
Camelina laxa	8
Camelina microcarpa	45
Camelina neglecta	1
Camelina rumelica	1
Camelina rumelica subsp. *transcaspica*	2
Camelina sativa	46
Camelina spp.	9
Cannabis sativa	5
Capsicum annuum	2
Carex saxatilis	3
Cicer arietinum	281
Cicer bijugum	5
Cicer echinospermum	5
Cicer reticulatum	9
Clarkia purpurea subsp. *purpurea*	1
Cleistogenes serotina	1
Cleistogenes songorica	1
Cleistogenes squarrosa	1
Clematis ligusticifolia	1
Coriandrum sativum	12
Cucurbita pepo	3
Cucurbita pepo var. *ovifera*	1
Cydonia oblonga	4
Cynodon aethiopicus	1
Cynodon barberi	3
Cynodon convergens	2
Cynodon dactylon var. *coursii*	1
Cynodon dactylon var. *dactylon*	21
Cynodon dactylon var. *polevansii*	1
Cynodon hybr.	2

Cynodon incompletus var. *hirsutus*	2
Cynodon incompletus var. *incompletus*	1
Cynodon nlemfuensis var. *nlemfuensis*	3
Cynodon plectostachyus	3
Cynodon radiatus	3
Cynodon spp.	2
Cynodon transvaalensis	7
Cynodon x *magennisii*	2
Dactyloctenium aegyptium	1
Dactyloctenium australe	1
Dactyloctenium giganteum	1
Dactyloctenium radulans	1
Dinebra retroflexa	1
Diospyros kaki	5
Distichlis spicata	1
Echinochloa crus-galli	2
Eleusine africana	1
Eleusine coracana	1
Eleusine floccifolia	1
Eleusine multiflora	1
Eleusine tristachya	1
Empetrum nigrum	1
Enneapogon desvauxii	1
Eragrostis curvula	1
Ericameria laricifolia	1
Ericameria nauseosa	12
Ericameria nauseosa subsp. *consimilis*	2
Ericameria nauseosa subsp. *nauseosa*	2
Ericameria nauseosa var. *bigelovii*	1
Ericameria nauseosa var. *hololeuca*	1
Ericameria nauseosa var. *mohavensis*	1
Ericameria nauseosa var. *nauseosa*	1
Ericameria nauseosa var. *oreophila*	1
Eruca vesicaria subsp. *sativa*	7

Eryngium alismifolium	1
Eryngium armatum	1
Eryngium articulatum	1
Eryngium caeruleum	1
Eryngium castrense	1
Eryngium dorae	1
Eryngium foetidum	2
Eryngium heterophyllum	1
Eryngium hookeri	1
Eryngium leavenworthii	1
Eryngium planum	3
Eryngium tenue	1
Eryngium yuccifolium	1
Eupatorium hyssopifolium	1
Eupatorium perfoliatum	1
Eupatorium serotinum	1
Eupatorium spp.	1
Eustachys uliginosa	1
Fallugia paradoxa	1
Festuca idahoensis	66
Glycine max	2
Gouinia latifolia	1
Helianthus annuus	1
Heuchera cylindrica	1
Hordeum vulgare subsp. *vulgare*	9
Humulus lupulus	1
Humulus lupulus var. *lupulus*	17
Iberis amara	3
Indigofera suffruticosa	1
Ipomoea batatas var. *batatas*	7
Juglans cinerea	12
Lens culinaris subsp. *culinaris*	103
Ligusticum scoticum subsp. *hultenii*	2
Limnanthes alba subsp. *alba*	1
Lupinus albus	184
Lupinus albus var. *albus*	24
Lupinus angustifolius	1
Madia elegans	1
Madia gracilis	1
Magnolia biondii	1
Magnolia kobus	1

Magnolia tamaulipana	1
Malus domestica	9
Medicago sativa subsp. sativa	3
Medicago sativa var. *viscosa*	1
Mespilus germanica	6
Microchloa *afra*	1
Muhlenbergia frondosa	1
Muhlenbergia pungens	1
Muhlenbergia reverchonii	1
Muhlenbergia wrightii	1
Nicotiana benthamiana	1
Nicotiana langsdorffii	1
Nicotiana tabacum	6
Nicotiana tomentosa	1
Noccaea perfoliata	4
Oryza sativa	1
Panicum virgatum	1
Pappophorum vaginatum	1
Phaseolus acutifolius	142
Phaseolus acutifolius var. *acutifolius*	39
Phaseolus acutifolius var. *tenuifolius*	50
Phaseolus coccineus	213
Phaseolus coccineus var. *coccineus*	1
Phaseolus hybr.	73
Phaseolus lunatus	16
Phaseolus polystachios	4
Phaseolus vulgaris	227
Phleum pratense	29
Physaria fendleri	1
Pisum fulvum	58
Pisum sativum subsp. *elatius*	37
Pisum sativum subsp. *sativum*	13
Pisum sativum var. *elatius*	3
Pyrus communis	36
Pyrus hybr.	7
Pyrus pyrifolia	6
Pyrus ussuriensis	1
Pyrus x *bretschneideri*	2
Pyrus x *sinkiangensis*	2
Rhododendron arborescens	1

Ribes uva-crispa	1
Rubus arcticus	1
Rubus chamaemorus	1
Rubus hawaiensis	1
Rubus idaeus subsp. *idaeus*	2
Rubus idaeus subsp. *strigosus*	3
Rubus innominatus	1
Rubus leucodermis	2
Rubus niveus	1
Rubus parviflorus	1
Rubus rosifolius	1
Rubus spectabilis	3
Schizachyrium scoparium	3
Secale strictum	28
Secale strictum subsp. *anatolicum*	3
Secale strictum subsp. *kuprijanovii*	3
Setaria pumila	1
Setaria viridis	1
Setaria viridis var. *viridis*	1
Sidalcea oregana	1
Solanum lycopersicum	19
Solanum spp.	150
Solanum tuberosum subsp. andigenum	2
Solanum verrucosum	2
Solidago nemoralis	1
Solidago patula	1
Solidago riddellii	1
Solidago simplex var. simplex	1
Solidago uliginosa	1
Spartina alterniflora	1
Spartina cynosuroides	1
Spartina patens	1
Spinacia hybr.	1
Spinacia oleracea	304
Sporobolus africanus	1
Sporobolus arenicola	1
Sporobolus compositus	1
Sporobolus flexuosus	2
Sporobolus giganteus	1
Sporobolus heterolepis	1

Sporobolus ioclados	1
Sporobolus nealleyi	1
Sporobolus pyramidalis	1
Sporobolus rigidus var. rigidus	1
Sporobolus wrightii	1
Stapfochloa elata	1
Steinchisma hians	1
Symphyotrichum lanceolatum	1
Symphyotrichum puniceum	1
Thlaspi arvense	80
Tridens albescens	1
Tridens brasiliensis	1
Tridens strictus	1
Trifolium badium	1
Trifolium batmanicum	1
Trifolium campestre	1
Trifolium cernuum	1
Trifolium diffusum	1
Trifolium isthmocarpum	1
Trifolium lappaceum	1
Trifolium longidentatum	1
Trifolium lupinaster	1
Trifolium pallescens	2
Trifolium patulum	1
Trifolium retusum	1
Trifolium stellatum	1
Trifolium striatum	1
Trifolium subterraneum	1
Trifolium suffocatum	1
Trifolium thalii	1
Trifolium uniflorum	1
Trifolium velebiticum	1
Trifolium virginicum	1
Triticum aestivum subsp. aestivum	486
Triticum aestivum subsp. spelta	1
Triticum timopheevii subsp. timopheevii	1
Triticum turgidum subsp. dicoccon	94
Triticum turgidum subsp. durum	116

Triticum turgidum subsp. turgidum	3
Vaccinium floribundum	1
Vaccinium hybr.	1
Vaccinium ovalifolium	1
Vaccinium ovatum	6
Verbesina encelioides	1
Vicia faba	28
Vicia faba var. faba	1
Vicia faba var. minuta	3
Vicia spp.	1
Vicia villosa	2
Zea mays subsp. mays	9
Zea mays subsp. mexicana	1
Zinnia elegans	1

Total: 3685