

The National Plant Germplasm System: 2021 Status, Prospects, and Challenges

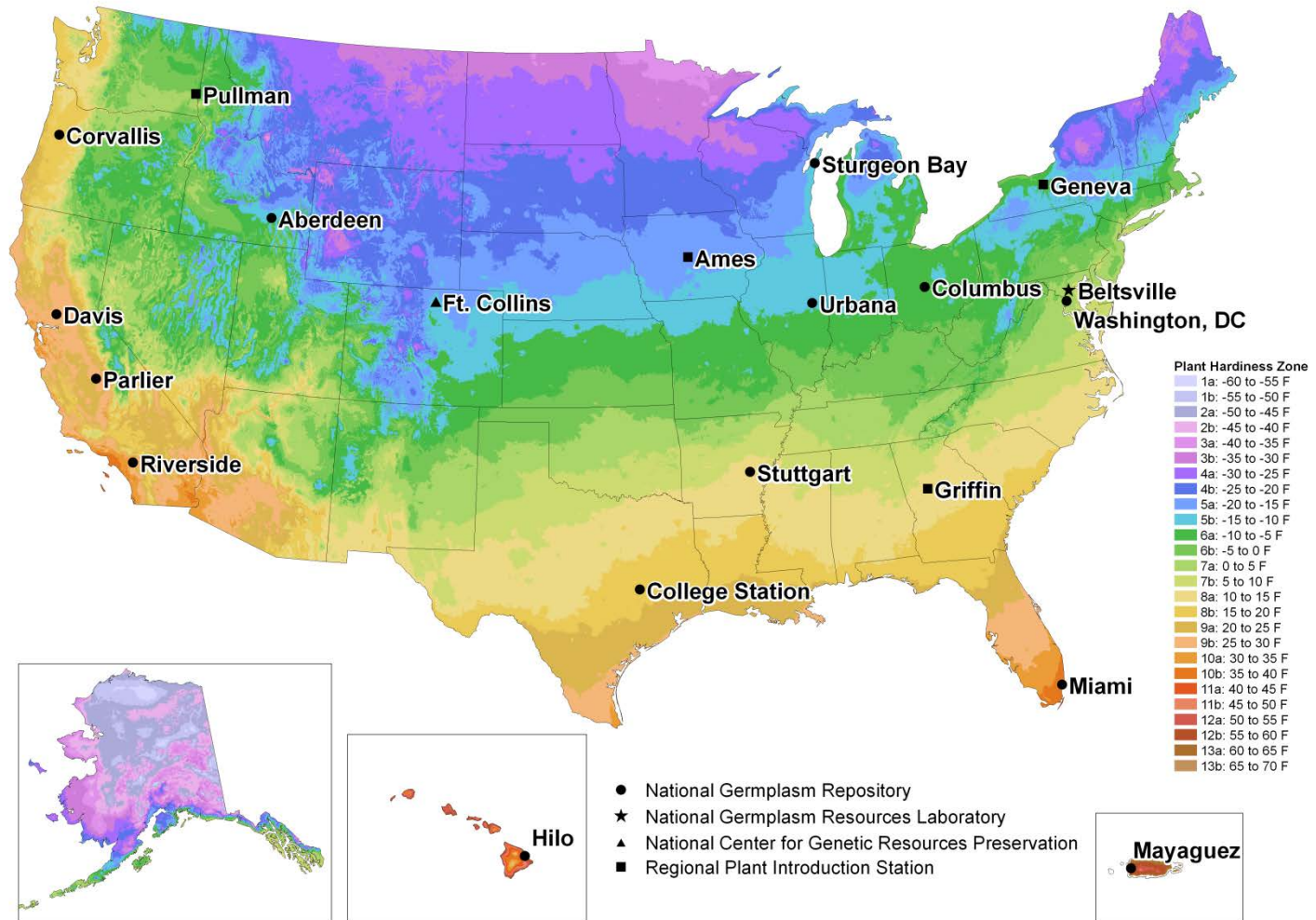
Peter Bretting

USDA/ARS Office of National Programs

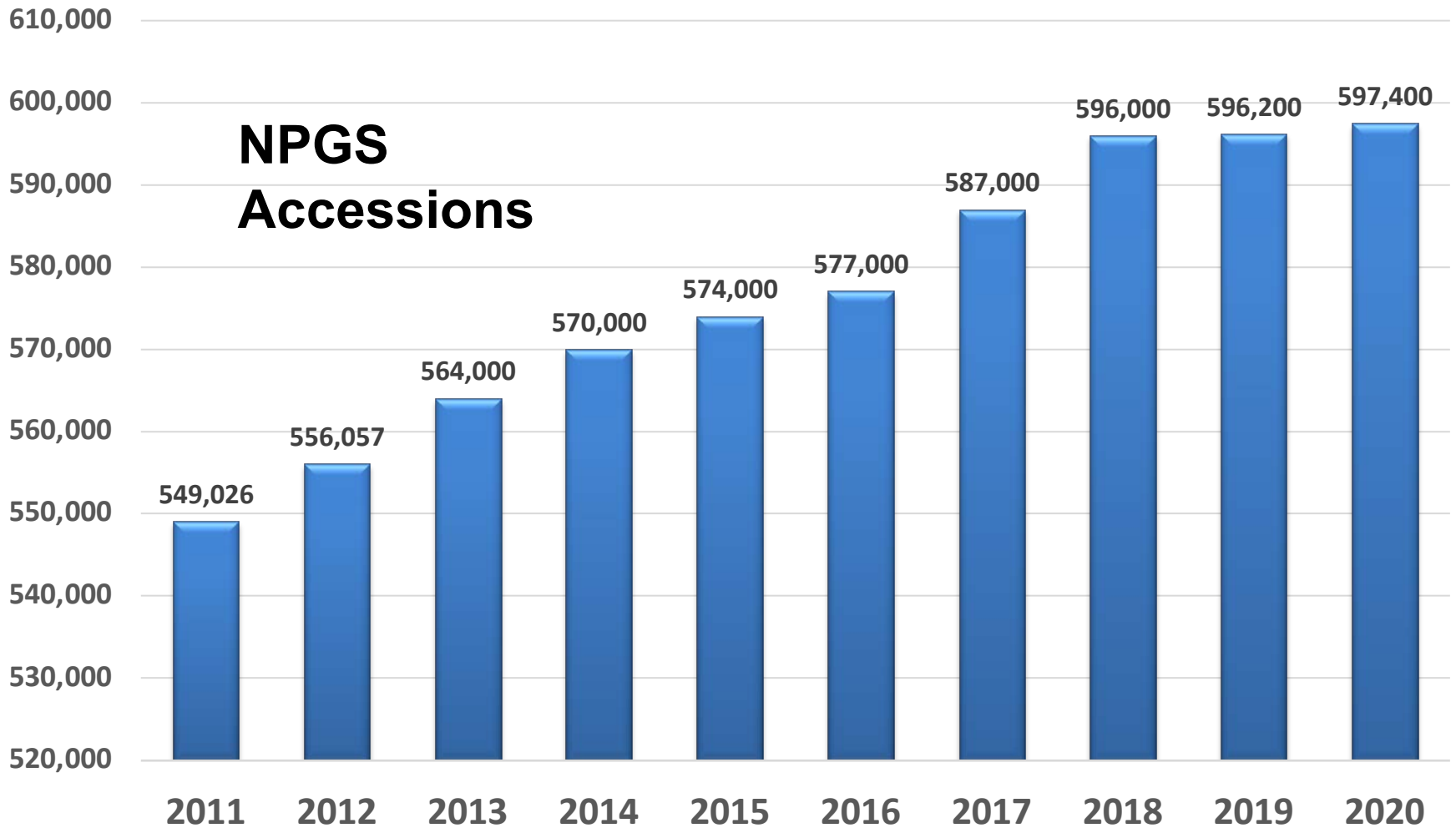
Peter.bretting@usda.gov

Cell: 1.240.447.9983

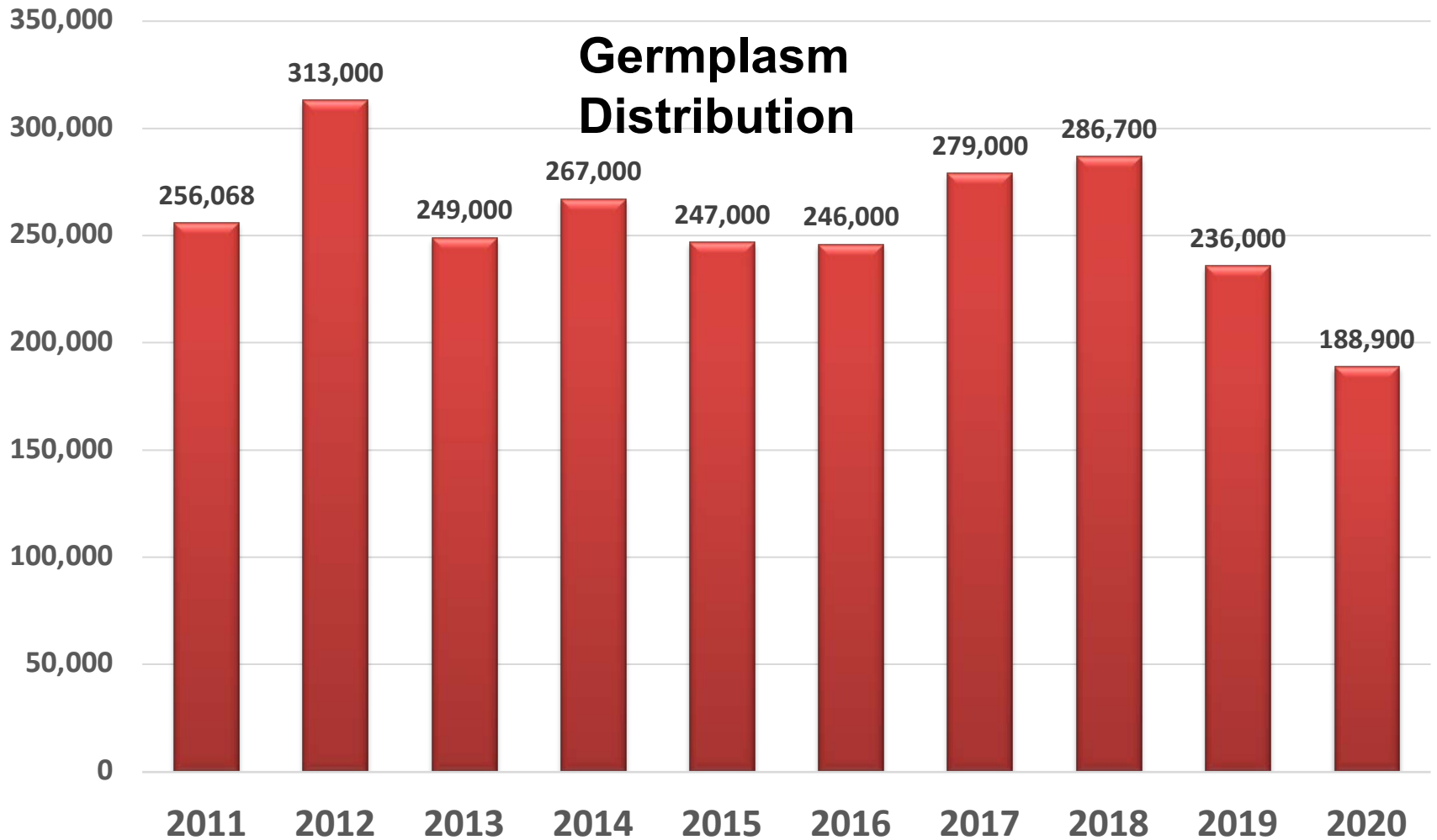
USDA National Plant Germplasm System (NPGS)



NUMBER OF NPGS ACCESSIONS 2011-2020



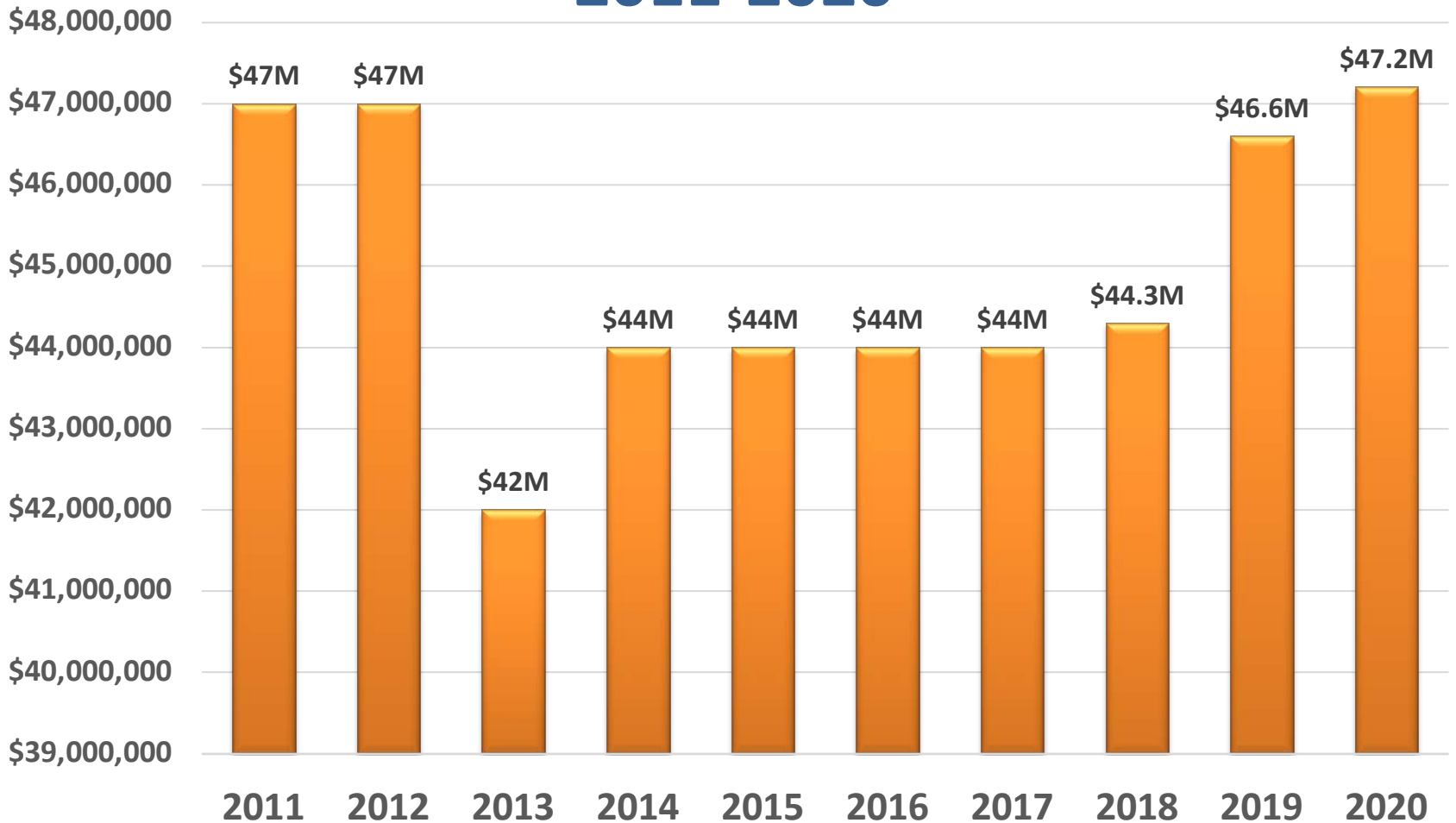
DEMAND FOR NPGS GERMPLASM 2011-2020



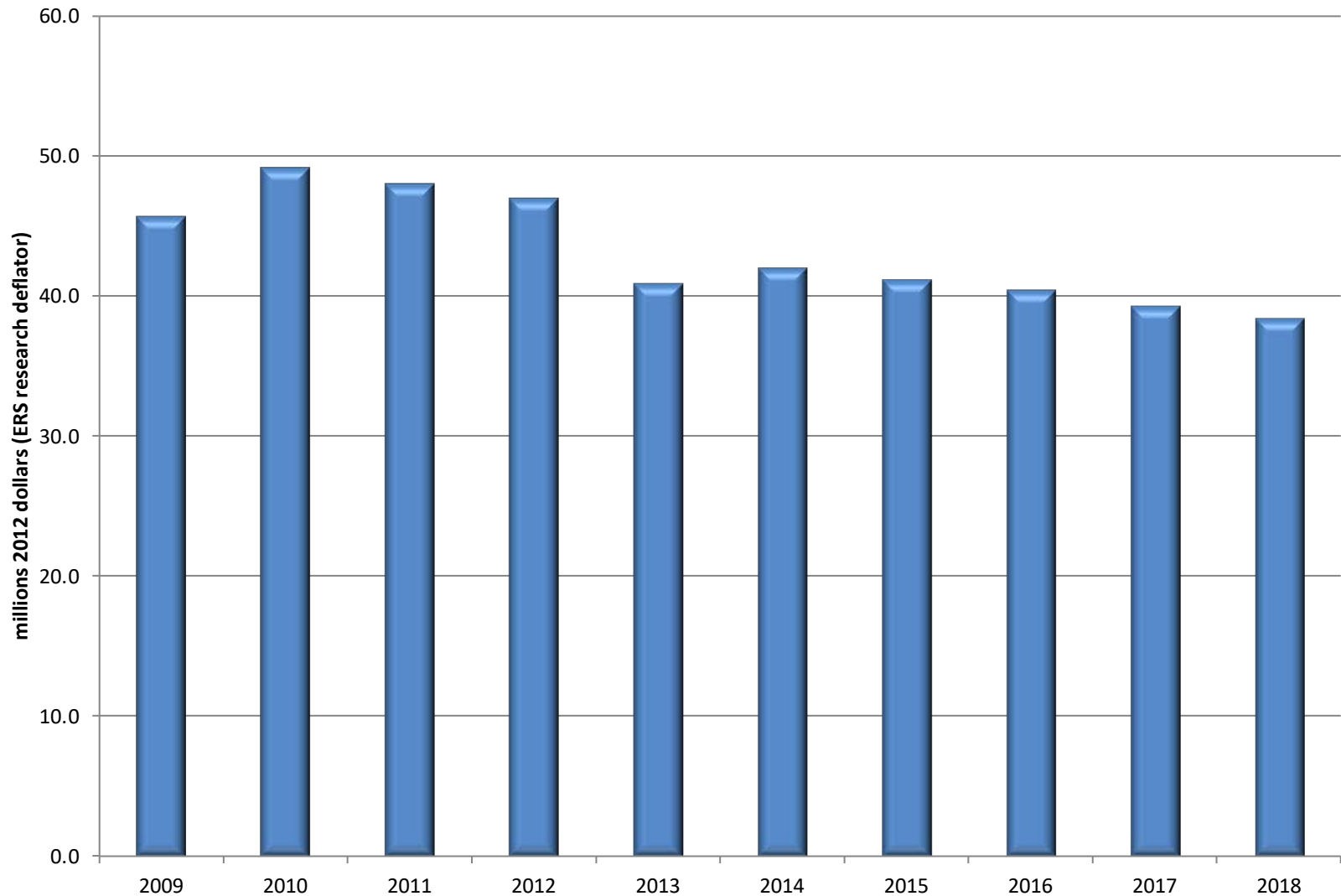
Effects of CoVID-19 as of 2 June 21

- **All NPGS genebanks are shipping germplasm (PGR).**
- **# of samples distributed fell by ca. 20% in 2020. The distribution rate in 2021 is slightly to significantly reduced.**
- **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.**

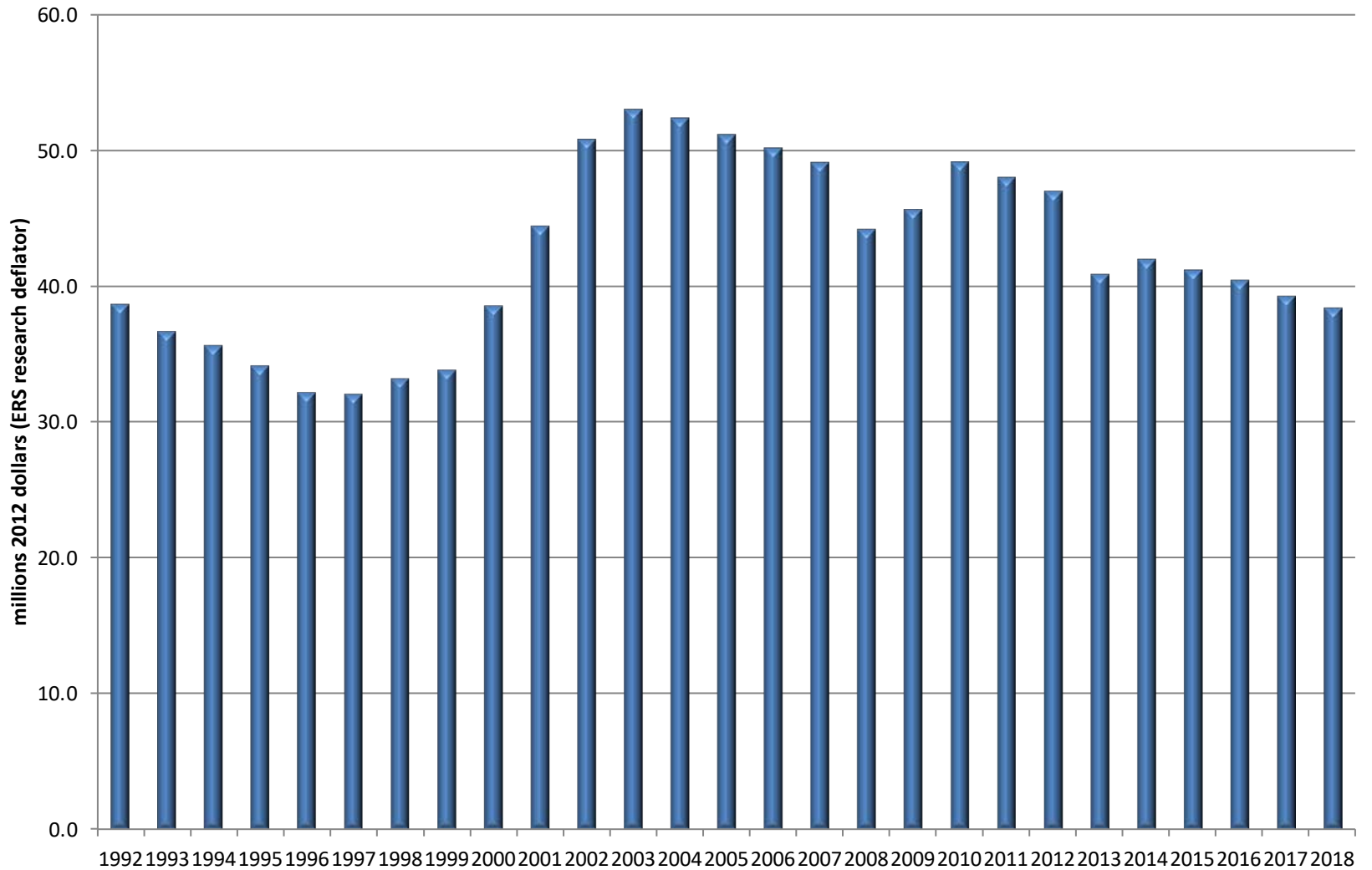
ARS NATIONAL PLANT GERMPLASM SYSTEM BUDGET 2011-2020



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 Candice Gardner, RL (ARS-Ames); John Preece, RL (ARS-Davis and Parlier); Esther Peregrine, Soybean Assistant Curator, (ARS-Urbana); 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 (ARS-Geneva); U. Reddy, Temperate Grass and Safflower Curator (ARS-Pullman); Anne Frances, Botanist (ARS-Beltsville); Madhugiri Nageswara-Rao, Tropical Ornamental Curator (ARS-Miami); and Gul Shad Ali, Tropical Crops Curator (ARS-Miami).
- We are recruiting leadership and curatorial staff at Davis, CA; Hilo, HI; Pullman, WA; College Station, TX; Corvallis, OR; Riverside, CA; Geneva, NY; and Miami, FL.

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 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/>
- Infographic posters for PGR, genebanks and conservation, and PGR and food security have been produced 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.**

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.