S-009 Technical Advisory Committee
Minutes of Annual Meeting July 12, 2019
Center for Advanced Science, Innovation and Commerce (CASIC) 109, Auburn University
559 Devall Dr. Auburn, AL 36849

S-009 Members Present:

Administrative Advisor (University of Georgia)	Bob Stougaard bob.stougaard@uga.edu
Alabama (Auburn University)	Charles Chen cyc0002@auburn.edu
Georgia (University of Georgia)	Soraya Bertioli sbertioli@uga.edu
North Carolina (North Carolina State University)	Tom Stalker tom_stalker@ncsu.edu
South Carolina (Clemson University)	Rick Boyles rboyles@clemson.edu
Tennessee (University of Tennessee)	Virginia Sykes vsykes@utk.edu
Virgin Islands (University of the Virgin Islands)	Tom Zimmerman tzimmer@uvi.edu
Virginia (Virginia Polytechnic Institute & State Univ)	Bas Bargmann bastiaan@vt.edu

Plant Genetic Resources Conservation Unit Members Present:
Melanie Harrison melanie.harrison@ars.usda.gov
Shyam Tallury shyam.tallury@ars.usda.gov
Brandon Tonnis brandon.tonnis@ars.usda.gov
Ming Li Wang mingli.wang@ars.usda.gov

Other Attendees

USDA, Office of National Programs*	Peter Bretting peter.bretting@usda.gov
USDA, Office of National Programs	Roy Scott roy.scott@usda.gov

An * indicates individual participated remotely

Business Items

The meeting was called to order on July 12, 2019 at 9:00 am by S-009 Technical Advisory Committee (TAC) Chair Charles Chen. The minutes from the 2018 TAC Annual Meeting were approved with changes (Page 2, Paragraph 1, delete last line; Page 2, Paragraph 3, delete last line; Page 3, Paragraph 1, delete last line) followed by introductions of meeting attendees.

Technical Advisory Committee Officers
Rick Boyles to be promoted from 2019 Secretary to serve as 2020 Chair
Tom Stalker: **motion** Virginia Sykes to serve as 2020 Secretary and 2021 Chair, **seconded** by Charles Chen, **vote** passed.

2020 S-009 TAC Meeting Location and Time

- Plant Germplasm Operating Committee (PGOC) Annual Meeting
    - Suggested by Tom Zimmerman
    - Invitation of S-009 TAC to be determined by Melanie Harrison
- OR Griffin, GA
- Boyles: Depends on the level of attendance to generate a productive meeting
    - Need video conferencing available
- Tom Stalker: **motion** Unless we are invited to Ames, we hold meeting in Griffin, **seconded** by Virginia Sykes, **vote** passed
- Meeting time: Melanie Harrison will follow up once location is determined.

Funding for travel to S-009 meeting

- Question by Melanie Harrison as to whether State Reps receive travel funds from the S-009 Project for attending the annual meeting. Tom Stalker answered that each state receives funds but then determines how those funds will be used. It is not required that they be used for travel to annual meeting.

Debate about the proper function of the S-009 TAC

- Intent of TAC is not to evaluate Griffin USDA facility but to determine if the money being provided to S-009 from individual states is being used appropriately (Bob Stougaard)
- Do not advise on personnel, but rather advise on the curation, distribution, and use of germplasm (Tom Stalker)
    - Reps need to have a better understanding and picture of non-commodity plant species (*e.g.* mungbean)
- Working collections of germplasm so scientists and other desired users can utilize the germplasm when needed (Tom Zimmerman)
    - Is there a previously established mission, vision, and objective document to circulate to the state representatives? More clarity is needed on the goal and objective of the TAC.
- Provide detailed information on technical status such as germination across germplasm (Soraya Bertioli)
- Group decided to ask Peter Bretting for input later in the afternoon.

Welcome to the AU Campus, Henry Fadamiro Associate Dean for Research, College of Agriculture, Auburn University

- Relocation of USDA facility in progress
- Experiment station: competitive seed funding program established to facilitate larger grant funding opportunities
    - Value stakeholders and collaborations
    - Develop of kiwi varieties, and advancing the peanut variety development program (Chen)
    - Animal development - fish (*i.e.* catfish)
    - Efficient poultry housing

Report from SAAESD & National Plant Germplasm Coordinating Committee, Bob Stougaard, Assistant Dean of Research, UGA, CAES and S-009 Administrative Advisor

Funding of S-009 Multistate Hatch grant expected to continue

- Gives annual updates about the unit to the board and all members agree to continue support

National Plant Germplasm Coordinating Committee

- Significant funds in FY18 went to the Potato germplasm facility in Wisconsin
- AFRI Foundational update
    - New grants program for cultivar development
    - Funding for High-intensity Phenotyping Sites
    - USDA NPL: foundation seed programs at universities are closing down
    - Tom Zimmerman: issue with cultivar development without sufficient foundation seed services

Function to solve particular research problems in a collaborative effort (non-commodity focus)
Challenge the group to identify a target discipline of the S-009

"Utilization of peanut germplasm for GWAS for breeding program", Charles Chen – Professor, Crop, Soil and Environmental Sciences, Auburn University

- Update on peanut research and development program at Auburn Univ
- History of peanut domestication and adaptation
- Production solely within the greater Southeast and little in New Mexico
- Important of germplasm unit to maintain diverse accessions that have potential benefit alleles
- Variability in yield components (size and number)
- Use of mini-core collection for GWAS
- Evaluating leaf spot (early and late) to identify QTL and resistance PIs

Soraya Bertioli: What do you mean by homozygous seed?

- Charles Chen: Uniform seed/plants based on phenotypic selection

Tom Zimmerman: Are you meaning purifying or selection of the accessions?

- Tallury: Selection of appropriate lines based on phenotypic selection for future studies

Tom Stalker: Why not use a specific, homogenous line for genetic mapping?

- Tom Zimmerman: variable seeds of mixed sample is maintained for diversity (Tallury: off-types may have beneficial genetics for cultivar development)
- Wang: Need purified sample/seed source for genetic studies

Tour – Old Rotation

Participants toured the Old Rotation plots on the Auburn Campus let by Dr. Audrey Gamble, Assistant Professor and Extension Soil Scientist, and Dr. Dennis P. Delaney, Extension Specialist.

The National Plant Germplasm System: 2019 Status, Prospects, and Challenges
Peter Bretting – National Program Leader, USDA-ARS

See attached presentation

- Update on USDA NPGS
- Strong growth in horticultural plant stocks compared to row crops (2009-2018)
- Steady demand (250-300,000 germplasm requests) annually in the past decade (2009-2018)
- Real NPGS budget peaked in 2003 (50% number of samples handled) and has been a gradual decline since
- Generational change with retirements
  - Maintaining history while training new staff is challenging
- Clonal propagation or in vitro propagation (100x more expensive) is a challenge
- BMPs and handling procedures of GE traits/accessions
  - Expiration of GE cultivars go right into public domain
- Hiring freeze has been partially lifted
  - Rice curator
  - Cold-hardy grade curator
  - Vegetable curator
  - IT specialist
- 1/3 of PGR managers will retire within 5 years
- workshop to train university research faculty to maintain more collections for NPGS
  - survey circulating for priorities of training
- Lack of coffee germplasm collection (growing concern in Hawaii about preservation of varieties as a result of prevalent diseases/pathogens like coffee rust)
  - Congress allocated $1.9mil to maintain coffee and evaluate for host plant resistance to develop genetic markers
- Cryopreservation method of citrus enabled increase security of citrus stocks ($1mil)
- Industrial hemp genetic resources in Geneva, NY ($500k)
  - Transplant seedlings ($7 per plant) using tobacco planter
  - Issues with CBD varieties having seeds that germinate reliably

Tom Stalker: Asked Peter Bretting what is the role of the TAC? Peter Bretting: Report and communicate activities and value of S-009 unit to experiment station directors and other administrators, provide technical review and suggestions for improvements, report germplasm use trends from each state, provide information on how it benefits stakeholders in each state

PGRCU Annual Update, Melanie Harrison, Research Leader, USDA, PGRCU

See attached presentation

State Reports were given by all State Representatives in Attendance

3:35PM - MEETING ADJOURNED.

2019 S-009 Technical Advisory Committee Annual Meeting
Center for Advanced Science, Innovation and Commerce (CASIC) 109, Auburn University, 559 Devall Dr. Auburn, AL 36849

AGENDA

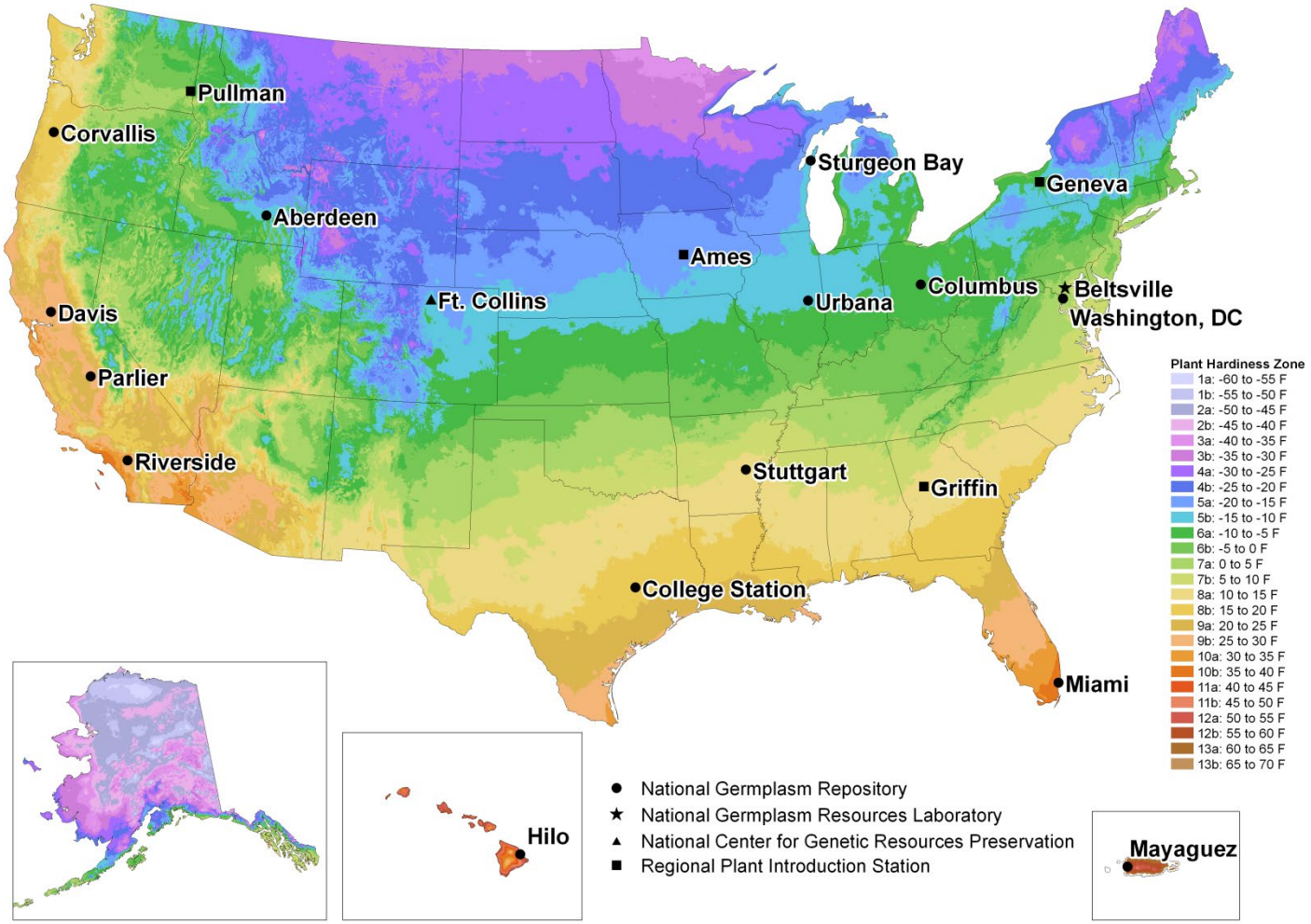
Friday, July 12, 2019

9:00 am	Call to order and introductions – Charles Chen – Professor, Crop, Soil and Environmental Sciences, Auburn University
9:15 am	Approval of 2015 minutes Additions to agenda Committee appointments (2020 officers and meeting location)
9:30 am	Welcome to the AU Campus Henry Fadamiro Associate Dean for Research, College of Agriculture, Auburn University
9:45 am	S-009 Business Meeting
10:00 am	Report from SAAESD & National Plant Germplasm Coordinating Committee Bob Stougaard – Assistant Dean of Research, UGA, CAES and S-009 Administrative Advisor
10:15 am	"Utilization of peanut germplasm for GWAS for breeding program" Charles Chen – Professor, Crop, Soil and Environmental Sciences, Auburn University
10: 45 am	Break
11:00 am	Tour
12: 00 pm	Lunch
1:15 pm	PGRCU Annual Update and Group Discussion
1:45 pm	The National Plant Germplasm System: 2019 Status, Prospects, and Challenges Peter Bretting – National Program Leader, USDA-ARS
2:00 pm	State Reports
2:30 pm	Adjourn

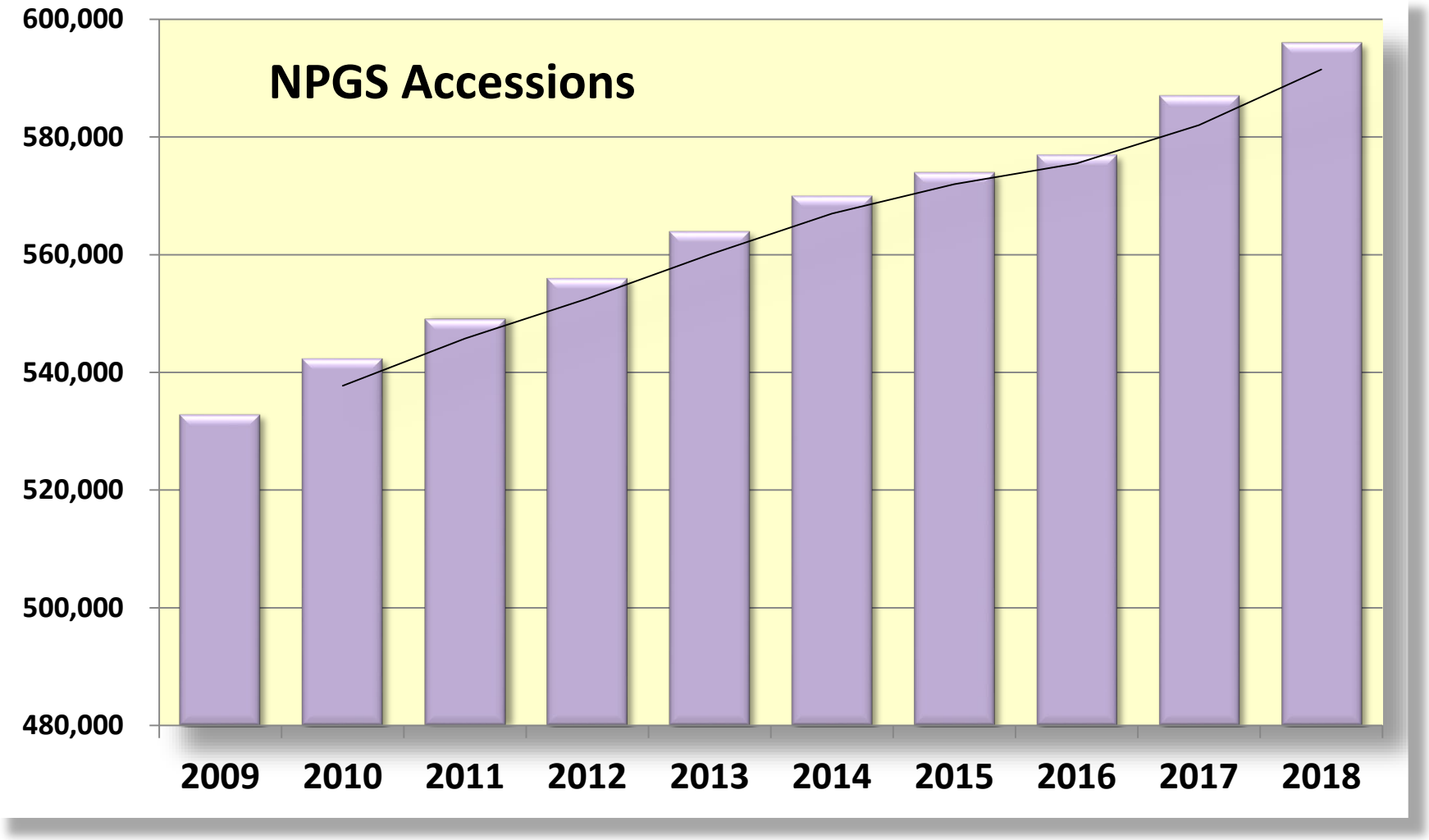
The National Plant Germplasm System: 2019 Status, Prospects, and Challenges

Peter Bretting
USDA/ARS Office of National Programs
Peter.bretting@ars.usda.gov
1.301.504.5541

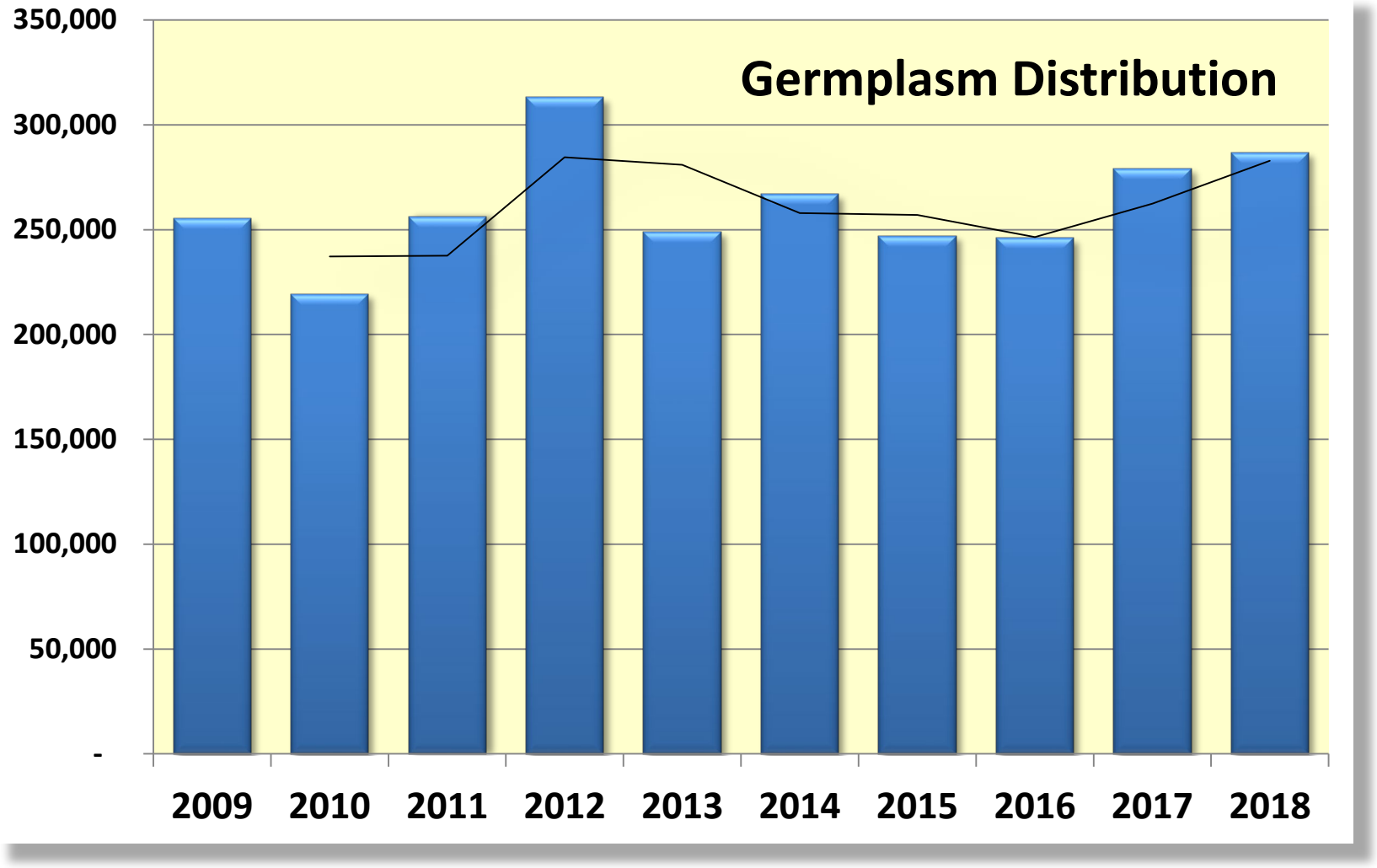
USDA National Plant Germplasm System (NPGS)



Number of NPGS Accessions 2009-2018



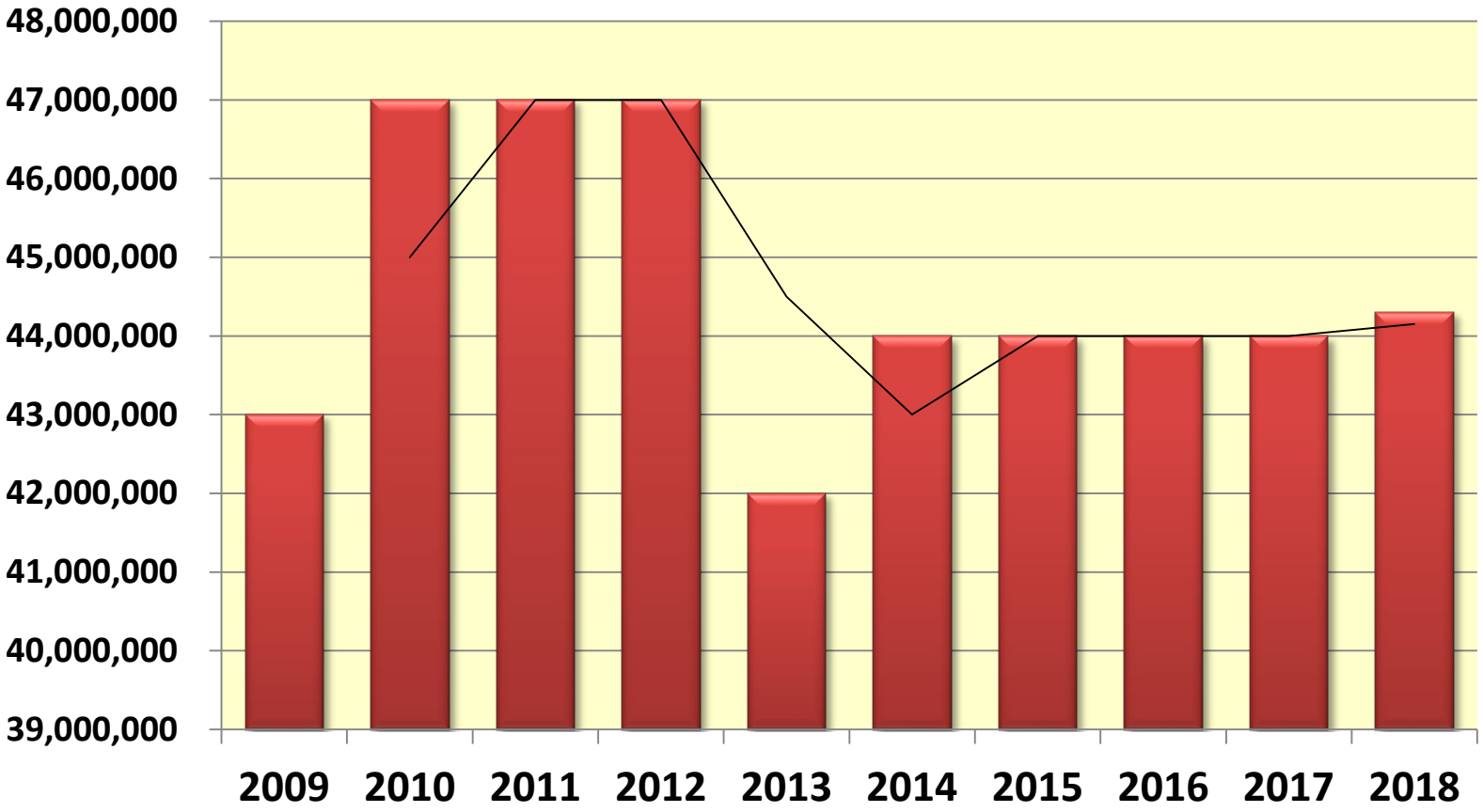
Demand for NPGS Germplasm 2009-2018



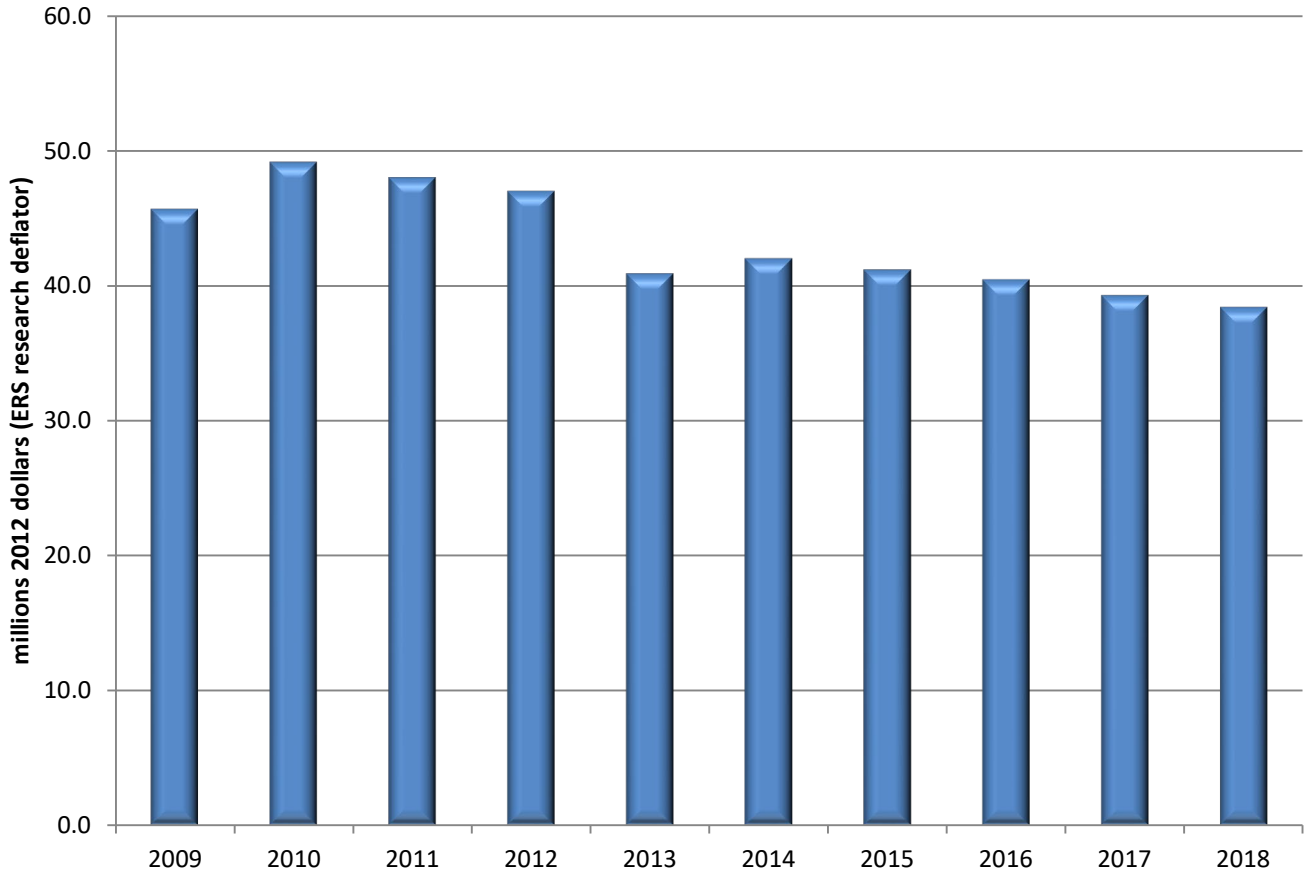
ARS National Plant Germplasm System

BUDGET

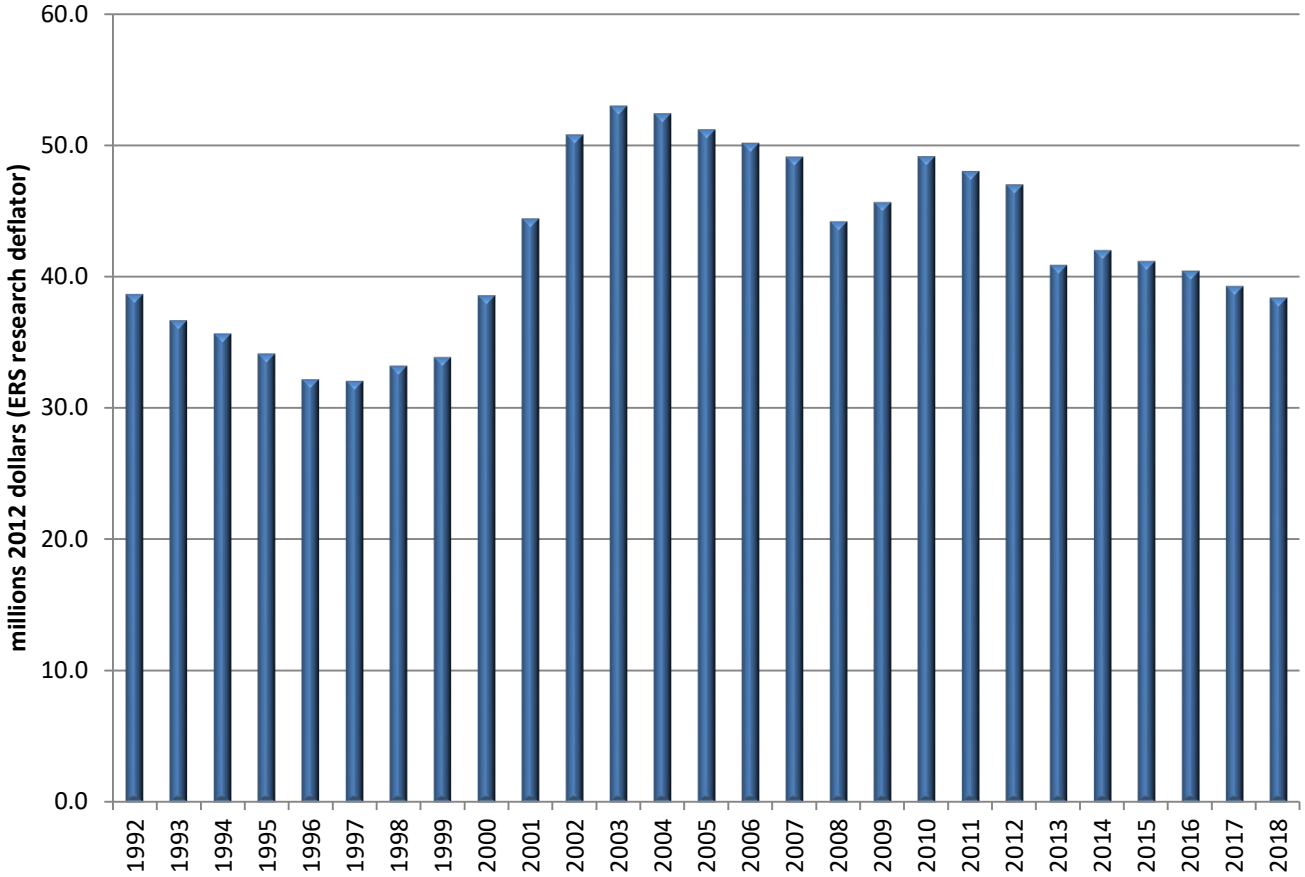
2009-2018



ARS NPGS real (deflated) budget, 2009-2018



ARS NPGS real (deflated) budget, 1992-2018



Some key challenges for the NPGS

- **Managing and expanding the NPGS operational capacity and infrastructure to meet the increased demand for germplasm 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 germplasm.**
- **BMPs and procedures for managing accessions (and breeding stocks) with GE traits and the occurrence of adventitious presence (AP).**
- **Acquiring and conserving additional germplasm, especially of crop wild relatives.**

Genetic Resource 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 John Wiersema, (ARS-Beltsville); Dave Stout, Frank Dugan, and Vicki Bradley (ARS-Pullman); Harold Garrison (ARS-Davis); Joseph Postman and Jack Peters, (ARS-Corvallis). We mourn the passing of Phil Stinard (ARS-Urbana).**
- **Welcome and best wishes to Ben Gutierrez, new cold-hardy grape curator and Joanne Labate now permanent vegetable curator (ARS-Geneva); Trevis Huggins, new rice curator (ARS-Stuttgart); Vivian Bernau, a second maize curator (ARS-Ames); Benjamin Haag, new IT specialist (ARS-Beltsville); and Scott McNeill, new agronomist (ARS-Aberdeen) .**
- **With the hiring freeze partially lifted, we hope to hire additional staff in the near future, including curators at Hilo, HI; Pullman, WA; Corvallis, OR and Urbana, IL.**

Plant Genetic Resource (PGR) Management Training Initiative

- **At least 1/3 of NPGS PGR managers could (likely will) retire within 5 years.**
- **Currently, no formal, comprehensive program exists for training new PGR managers.**
- **G. Volk (ARS-Ft. Collins) and P. Byrne (CSU-Ft. C.) secured a USDA/NIFA grant for a workshop at Ft. C. 24-26 April 2018 that discussed designing & developing a training program for PGR management to be delivered primarily through distance-learning.**
- **The workshop generated numerous insights; workshop participants are developing prototype educational materials, and have submitted a NIFA Higher Education Challenge grant proposal.**

FY 19 ARS NPGS Budgetary Increases

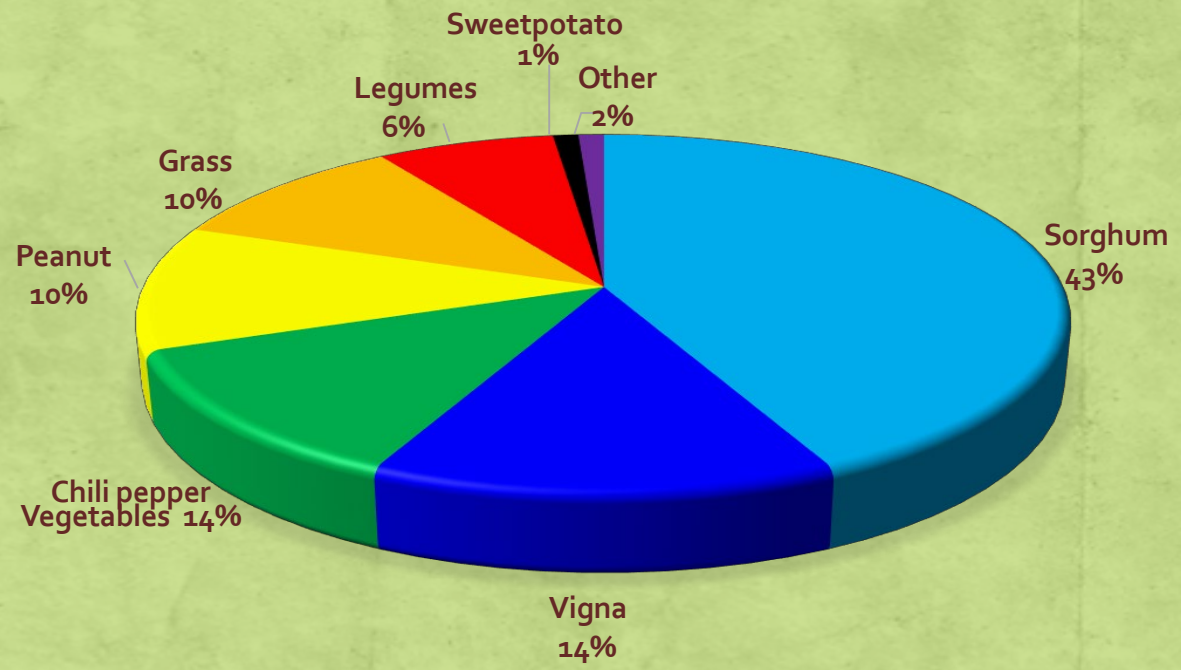
- **Coffee genetic resources ($1.9 million): Hilo, HI; Mayagüez, PR; Ft. Collins, CO; Beltsville, MD.**
- **Citrus genetic resources ($1 million): Riverside, CA; Ft. Collins, CO.**
- **Industrial hemp genetic resources ($500,000): Geneva, NY.**

Plant Genetic Resources Conservation Unit

Annual Update

S-009 Technical Advisory Committee Annual Meeting
July 12, 2019

Crops managed

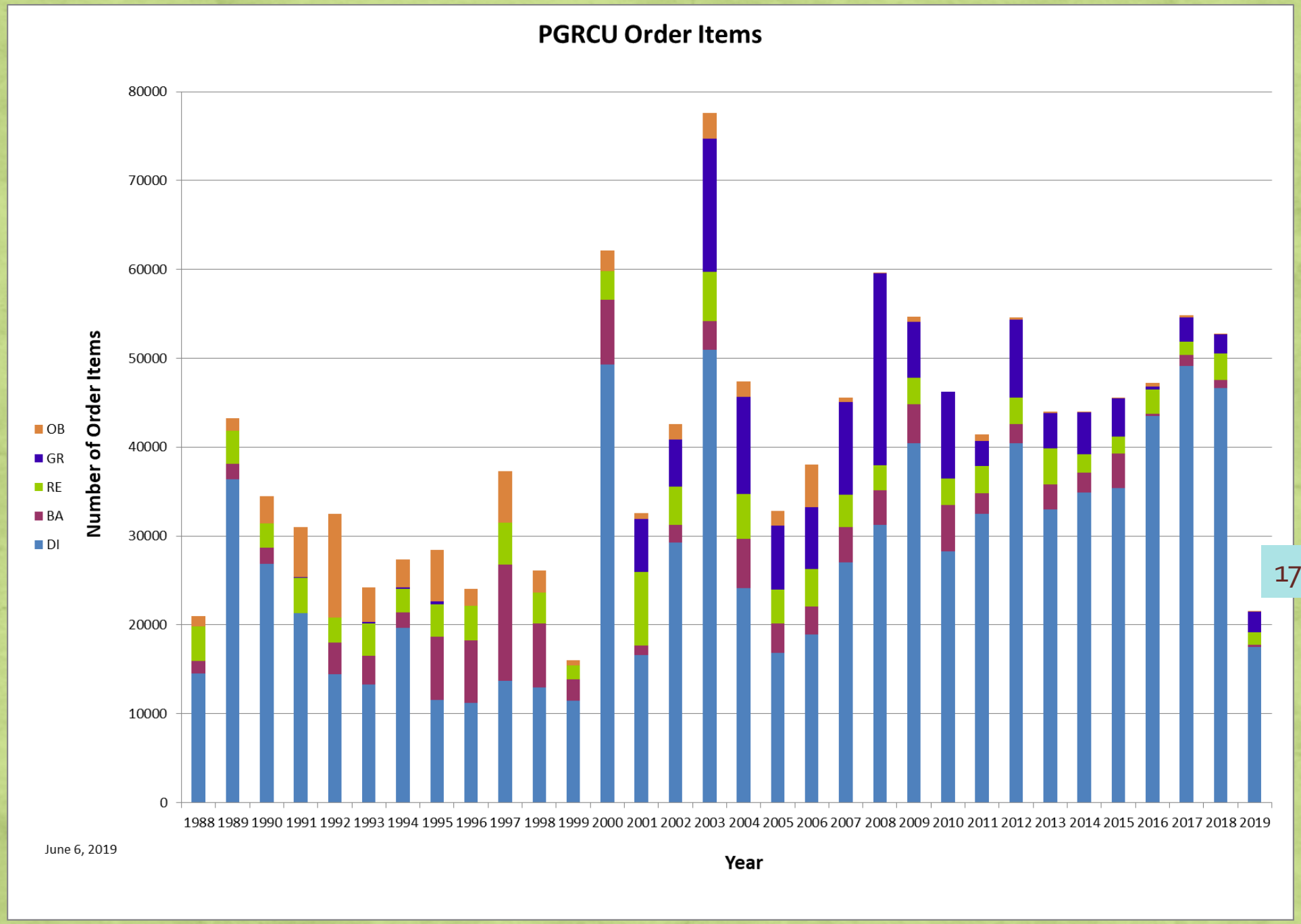


Curators and Scientists

- Sorghum & S-009 Millets (Melanie Harrison)
- Peanut & Vigna (Shyam Tallury)
- Pepper, Melons, Vegetables (Bob Jarret)
- Legumes, Warm-season Grasses, Clover (Brad Morris)
- Sweet Potatoes (Ming Li Wang)

Collection Stats

- The germplasm collection has 100,342 accessions representing 282 genera and 1608 species as of June 2019.
- In 2018, a total of 46,676 accessions were distributed worldwide to stakeholders. Sorghum, watermelon, and peppers were the top three distributed crops. A total of 9593 were distributed to the S-009 region, 27,021 were domestic distributions, and 19,635 were foreign distributions.
- Over 85% of the accessions are available for distribution and over 97% are safely backed up at a secondary site.
- Approximately 88% of the accessions have inventories at -18°C to extend seed viability in storage.


PGRCU Order Items
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Year
June 6, 2019

17,485

Characterization Efforts

- Fruit quality traits have been evaluated in a subset of *Capsicum* germplasm and genetic characterization of *Capsicum* continues.
- Virus testing is underway for several vegetable crops including *Citrullus* (Bacterial Fruit Blotch) and *Cucurbita moschata* (Squash Mosaic Virus).
- Select sorghum lines have been screened for abscisic acid sensitivity.
- Protein content and flavonoid content have been measured in select accessions of vigna and protein content in select accessions of sesame.
- Functional DNA markers have been developed in peanut (FAD2A and FAD2B) to assist in identifying high oleic acid peanut germplasm.

Personnel Changes

- New Hires\Appointments:
  - Tiffany Fields was promoted to Seed Storage Manager. Previously, Ms. Fields served as a seed storage technician for over 22 years.
  - John Sherouse joined our team in March 2019. Mr. Sherouse will provide facility maintenance for all federal buildings and greenhouses at the Griffin location.

- Vacancies to be Advertised Soon:
  - Seed Storage Technician (Biol Sci Tech; GS-4/5/6)

- Temporary Appointments:
  - Three USDA L/A appointments
  - One FT, Temp S-009 Field Technician







Personnel

15 Federal and 7 S-009 Permanent Employees; Four Temp Employees















Seed Storage Progress Update

- A total of 1564 accessions of NSSL only sorghum has been processed into the collection (32% of 4937 total).
- A total of 2407 regeneration inventories were processed into the collection in 2018/2019.
- Ten year seed viability retesting is complete through 2019 including testing of all Sorghum Association Panel germplasm. A total of 2121 samples were pulled for testing in 2018 and 2275 in 2019 (as of June 6).

Regeneration Update

- In 2018, 2993 accessions were pulled for regeneration and 1451 have been pulled in 2019.
- Regenerations offsite
  - USDA\ARS - P.R. and St. Croix (sorghum, legumes)
  - Parlier (watermelon, vigna, pepper, okra, other)
  - HM Clause – Florida & India (okra)
  - World Vegetable Center (Taiwan; okra)
  - Enza Zaden (Netherlands; *Curcurbita moschata*)
  - Monsanto (Woodland, CA; pepper)

Facility Update - Completed Projects

- Asbestos containing sidewalls were replaced with cement board siding in three greenhouses
- Evaporative cooling system replaced in S-009 Grass Greenhouse
- Installation of tractor wash pad at Westbrook Farm
- Asbestos abatement (ceiling) in S-009 Plant Introduction Building

Facility Update – Planned Projects

- Metal roof and siding replacement in USDA Shop
- Evaporative cooling system replaced in two S-009 greenhouses
- Upgrade of HVAC system and GH heating in USDA Greenhouse Complex
- New roof in USDA Seed Processing Building
- Covered walkway between USDA Seed Processing and Seed Storage Buildings and new doors.
- New workstations in USDA Seed Processing Building

Crop Germplasm Committee News

Crop Vulnerability Statements (CVS)

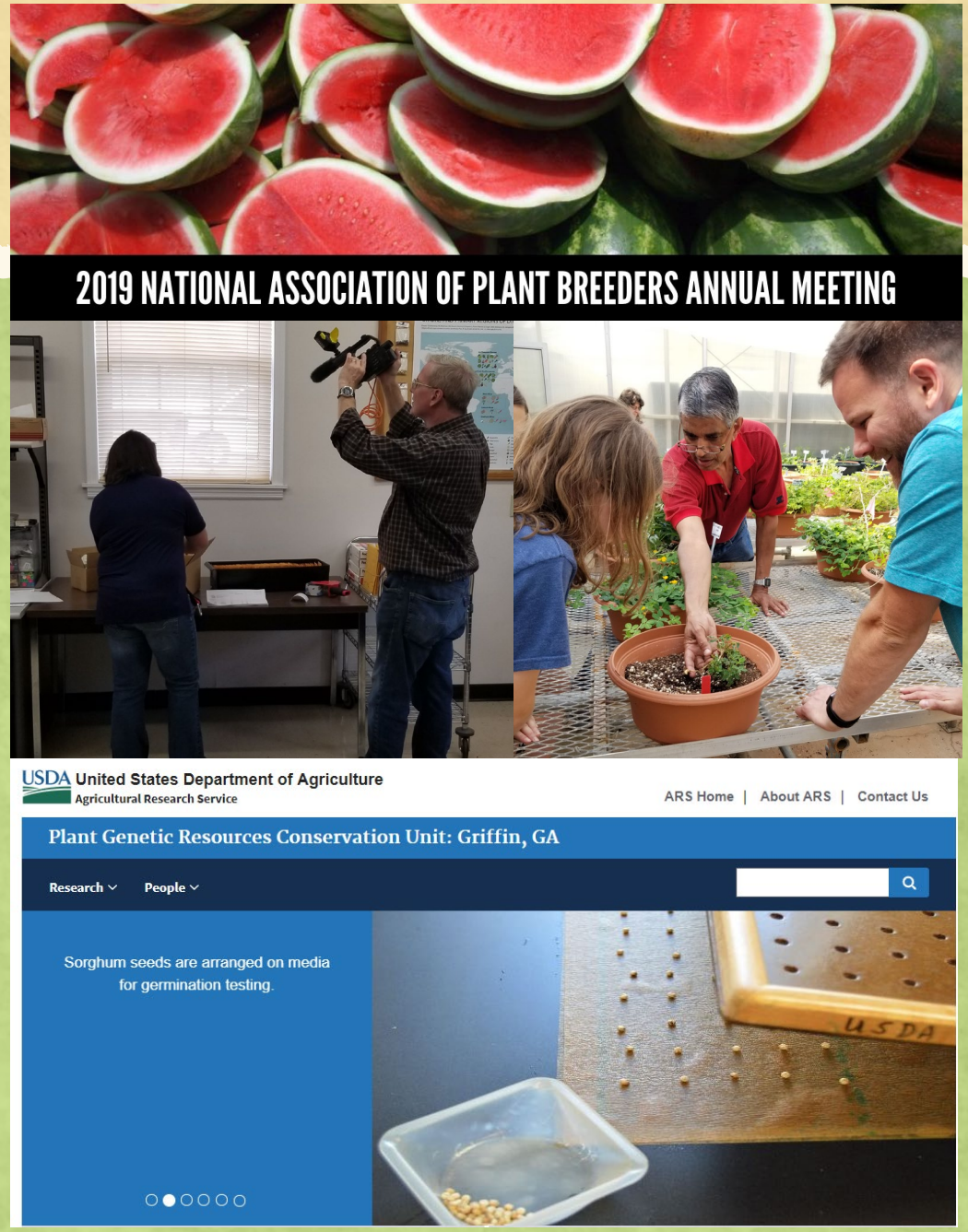
- Sweetpotato CVS and Sorghum CVS have been reviewed and updated.
- Update of the Forage and Turf Grass and New Crops CVS is in progress.

Crop Germplasm Committee (CGC) Participation

- Based on input from its members, the Vigna CGC has been moved from the Regional Horticulture meeting to the ASA-CSSA-SSA Annual Meeting in hopes of increasing attendance.
- The Clover and Special Purpose Legume CGC has been proposed to be combined with the Alfalfa CGC.

Outreach Efforts

- National Association of Plant Breeders National Meeting will tour Griffin collection on August 26, 2019 (~300 participants)
- NPGS Video Series – Griffin location filmed in May 2019
- Mentorship – UGA Young Scholars Program, Pike Co. STEM Program, Hispanic Association of Colleges & Universities (HACU) Student
- Bring Your Daughters and Sons to Work Day
- PGRCU website – photo carousel updated quarterly
- Numerous tours



Questions