

MINUTES

Potato Crop Germplasm Committee meeting

Potato Association of American annual meeting 2016 at Grand Rapids, MI --- 6:30 AM, Aug 2nd, 2016

Present: Jia, Bamberg (Chair), Jansky, Holm, Hoopes, Whitworth, Douches, Sathuvalli, Novy, Yenko, Barkley, del Rio, Shannon, Ellis

Introductions: Jia is standing in for Gusmini, and Shannon for Endelman. Bamberg gave a sketch of the history and purpose of the CGCs, and particularly the history and rationale for the composition of the potato CGC as it relates to the PAA. He noted that the full record of past grant awards and meeting minutes is available through the genebank website's links to GRIN.

The agenda items proposed by Bamberg by email on July 27 (attached) were addressed:

Collecting: Ellis reported that CIP has a collecting proposal pending. The first priority should be to accomplish the release of the embargoed 1999 Peru collections made by Spooner & cooperators.

Quarantine: Dr. Abad moved to a different position and we are waiting for his replacement to be selected. Bamberg provided some history of Quarantine interaction with the genebank, noting that in recent years, Q not only routinely clears materials coming into the country, but helps the genebank with virus cleanup, testing of suspect stocks in the genebank and general potato pathology advice.

CGC grant: The proposal by JC Miller lab that we forwarded was funded. For future projects, a screen for Lso resistance was mentioned. Last year it was mentioned that a grant to analyze the pending GBS data would also be a worthy project, and that the building interest in diploid breeding with inbreds could be applied in some way to selected genebank species.

Genebank incorporation of clones with expiring PVP. The group favors the genebank doing so, at least for a few years until all interested parties have had opportunity to get samples. Absent members JC Miller and W DeJong also voiced their support in emails Bamberg received in response to the emailed agenda.

Update on genotyping of genebank stocks-- Frito: about 750 named clones and cultivated species populations. Data coming soon. CIP/US: about 300 named clones to be SNPed along with CIP cultivated collection. DNA also submitted for this project, with data generation and reporting pending. China (R. Zhang): nearly 4000 wild seed pops and 150 clones. Dr. Jansky recently visited RZ in China and reports some germination problems were encountered, but otherwise project is on track, but no delivery date can be estimated at this point.

Plan to close PARS, home of genebank: UW is talking about closing the farm, but no details available at present. We have options regardless of UW decision that will keep genebank operational.

Ellis reported on a project to genotype thousands of accessions—a five year program. Also, CIP's development of a virus elimination routine with RNA-based proving of clean status. CIP can be an easy conduit of true seed germplasm from US to Peruvian collaborators.

New member: As physiologist A Pavlista is retiring, the group proposed that the chair ask P Bethke to join.

Respectfully submitted,
John Bamberg

Email agenda distributed 7/29/16

Potato CGC colleagues,

Our meeting for 2016 is scheduled for **6:30 AM on Tuesday** (at breakfast) in the **Ruby room** at the Potato Association of America meeting at Grand Rapids, MI.

If you need reminding of the time and place, it is on the PAA meeting program on the PAA website; direct by link below. This year I see these as agenda items-- let me know if you have others:

1. Collecting
2. Quarantine
3. Should genebank accept all expired and abandoned PVP clones?
4. How should genebank approach accepting large clonal research populations?
5. Status of 2015 evaluation grant and ideas for future grants
6. Update on mass genotyping of genebank stocks

China initiative (Shelley)

CGC SNP of cultivars (Dave Ellis* & Dave Douches)

Frito GBS of cultivated clones and seedlings (Haiyan Jia*)

7. Additional CGC members needed? (A. Pavlista is retiring)

* these individuals will also update on general status of CIP and Frito interaction with the genebank

Agendas and Minutes of past meetings, past Crop Vulnerability reports, history of evaluation grants, and other PCGC documents can be found for your review by following the "Administrative Reports" link at the genebank (NRSP6) website.

MINUTES

Potato Crop Germplasm Committee meeting

PAA 2015 – Portland, ME

6:30 AM -- July 21st, 2015

Present: Gusmini, Abad, Bamberg (Chair), Jansky, Holm, Hoopes, Ronis, Whitworth, Douches, Sathuvalli, DeJong, Novy, Yencho, Barkley, del Rio

Bamberg gave a sketch of the history and purpose of the CGCs, and particularly the history and rationale for the composition of the potato CGC as it relates to the PAA. He noted that the full record of past grant awards and meeting minutes is available through the genebank website's links to GRIN.

The agenda items proposed by Bamberg by email on July 14 were addressed:

Collecting: Nothing particularly new. We continue to learn about status and dynamics of the *in situ* reserve from work in the USA. We continue to build relationships in Peru that involve joint use of germplasm. We had hoped to find *jamesii* sites in Mexico with Hector Lozoya this fall, but that was determined to be too risky.

CGC grant: The proposal we forwarded was funded. It will allow SNP 12K genotyping of ~400 of our clones and screening of ~160 *demissum* accessions for late blight pursuant to making a core subset. We need to be on the look-out for highest priority screening projects for upcoming years.

Quarantine: Dr. Abad distributed a report that is posted on the genebank website. One issue was the problematic import of tubers from Peruvian markets that were intercepted. This appears to have been resolved, since, quarantine issues aside, both Peru and USDA officials agree that if this germplasm was imported without proper MTA, it should be destroyed. There are other issues of quarantine concern like attempts to get waivers for mini-tuber imports. Also, negotiations are in progress for regulating TPS imports. Bamberg mentioned that Quarantine not only routinely clears materials coming into the country, but helps the genebank with virus cleanup, testing of suspect stocks in the genebank and general potato pathology advice.

Ideas for future grants: Bamberg noted that in addition to the CGC sponsored genotyping, Pepsico/Frito has initiated a genotyping project for over 700 of the genebank's clonal and seed samples of cultivated forms and will share the data. And very recently, R. Zhang of Inner Mongolia University contacted the genebank with a proposal to GBS most of the collection and share the data. We could be close to the dream of having most of the collection assessed for patterns of diversity—e.g., be able to identify core subsets and de-emphasize relative duplicates. In light of the expected influx of so much data, the group suggested that a CGC-sponsored grant might be needed to manage it.

It was noted that interest in diploid breeding with inbreds has been building. This suggest the possibility of a CGC grant to survey key germplasm in the collection for self-compatibility.

Meeting logistics: It was noted that the genebank should put more effort into facilitating remote participation in the TAC meeting. The current CGC meeting at PAA also might have been joined by remote members, but no equipment was available at the conference hotel. For example, P. Bretting sent a NPL report (posted on genebank website) but was unable to come in person.

Respectfully submitted,
John Bamberg

The National Plant Germplasm System: 2015 Status, Prospects, and Challenges

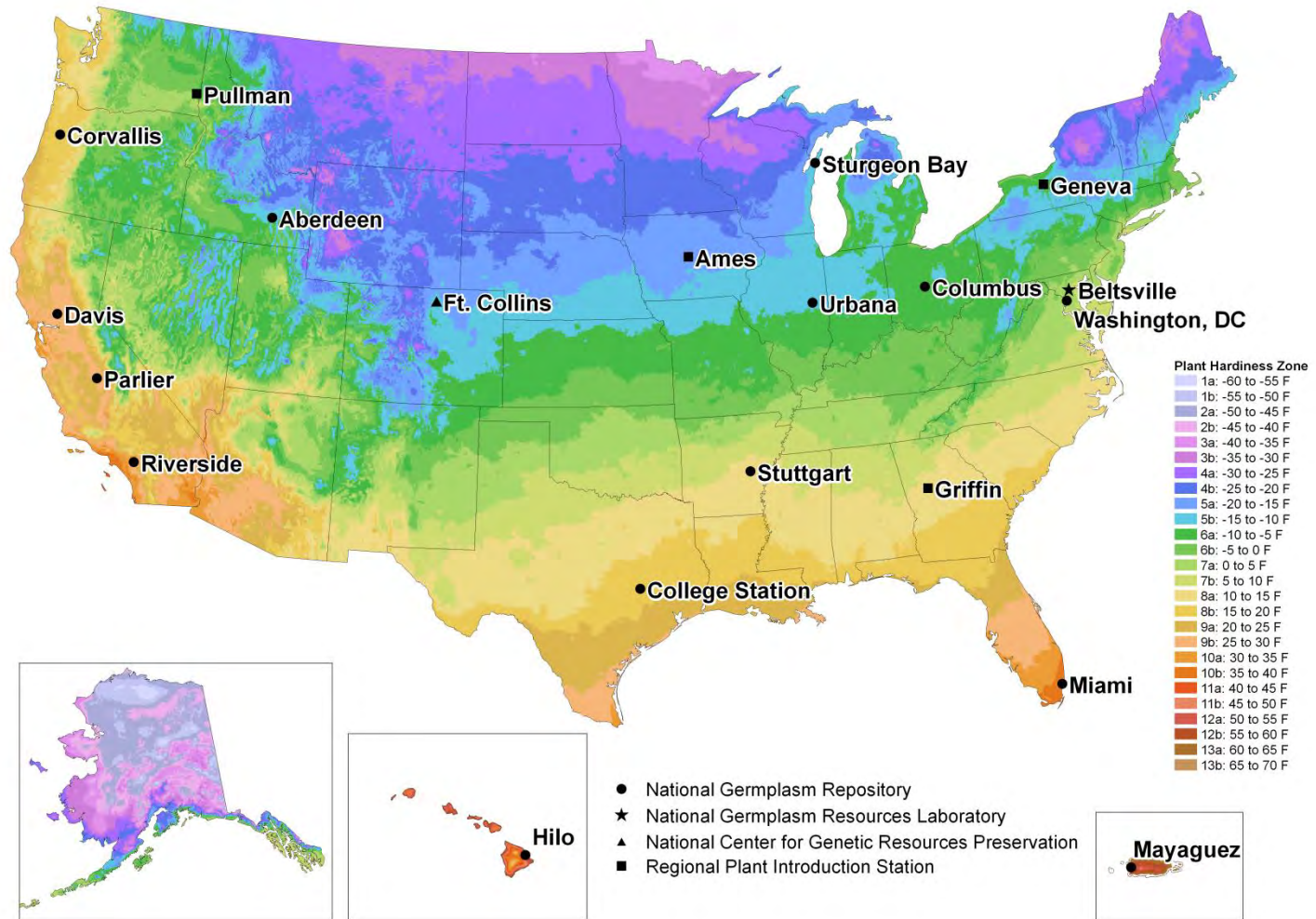
Peter Bretting

USDA/ARS Office of National Programs

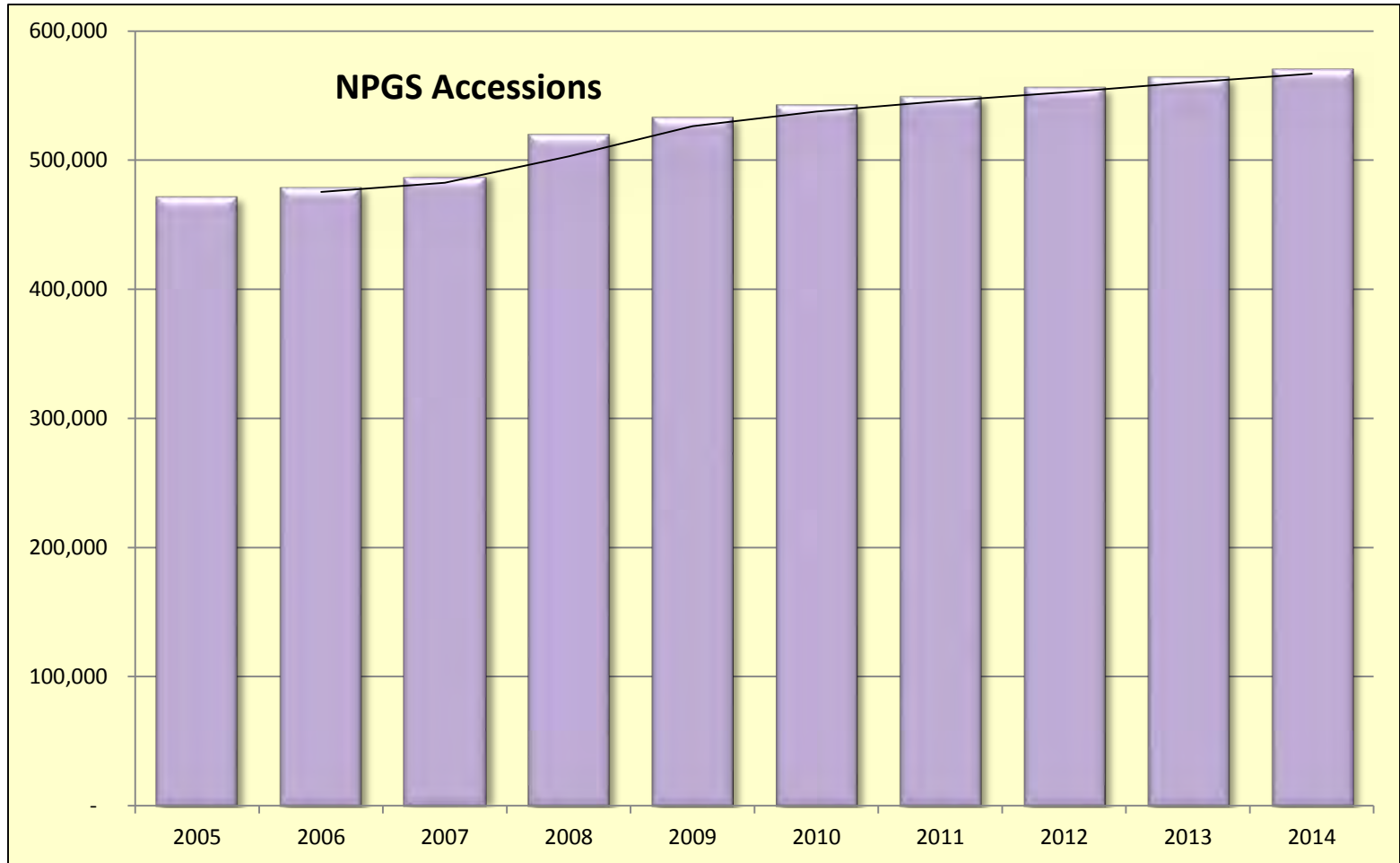
Peter.bretting@ars.usda.gov

1.301.504.5541

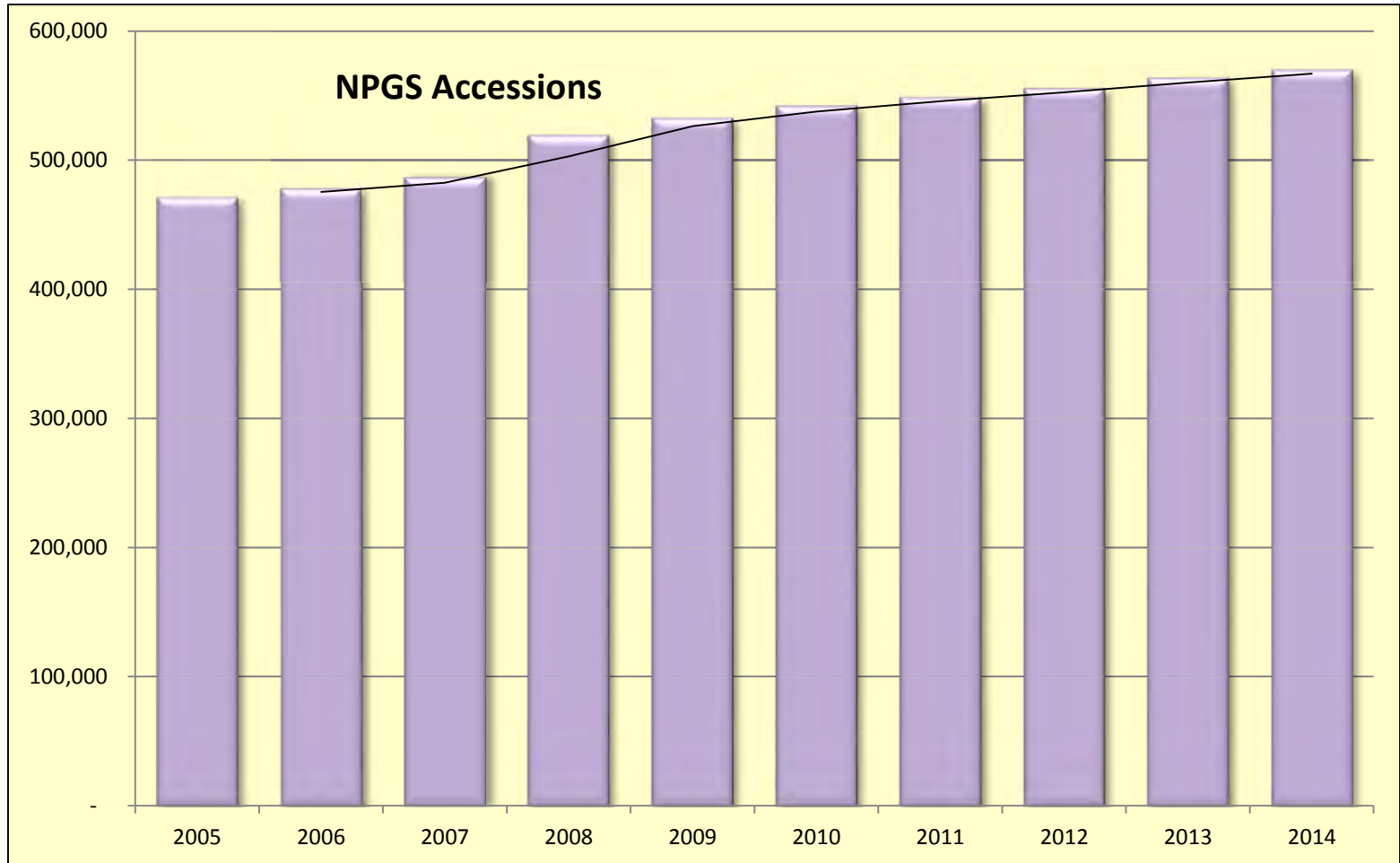
USDA National Plant Germplasm System (NPGS)



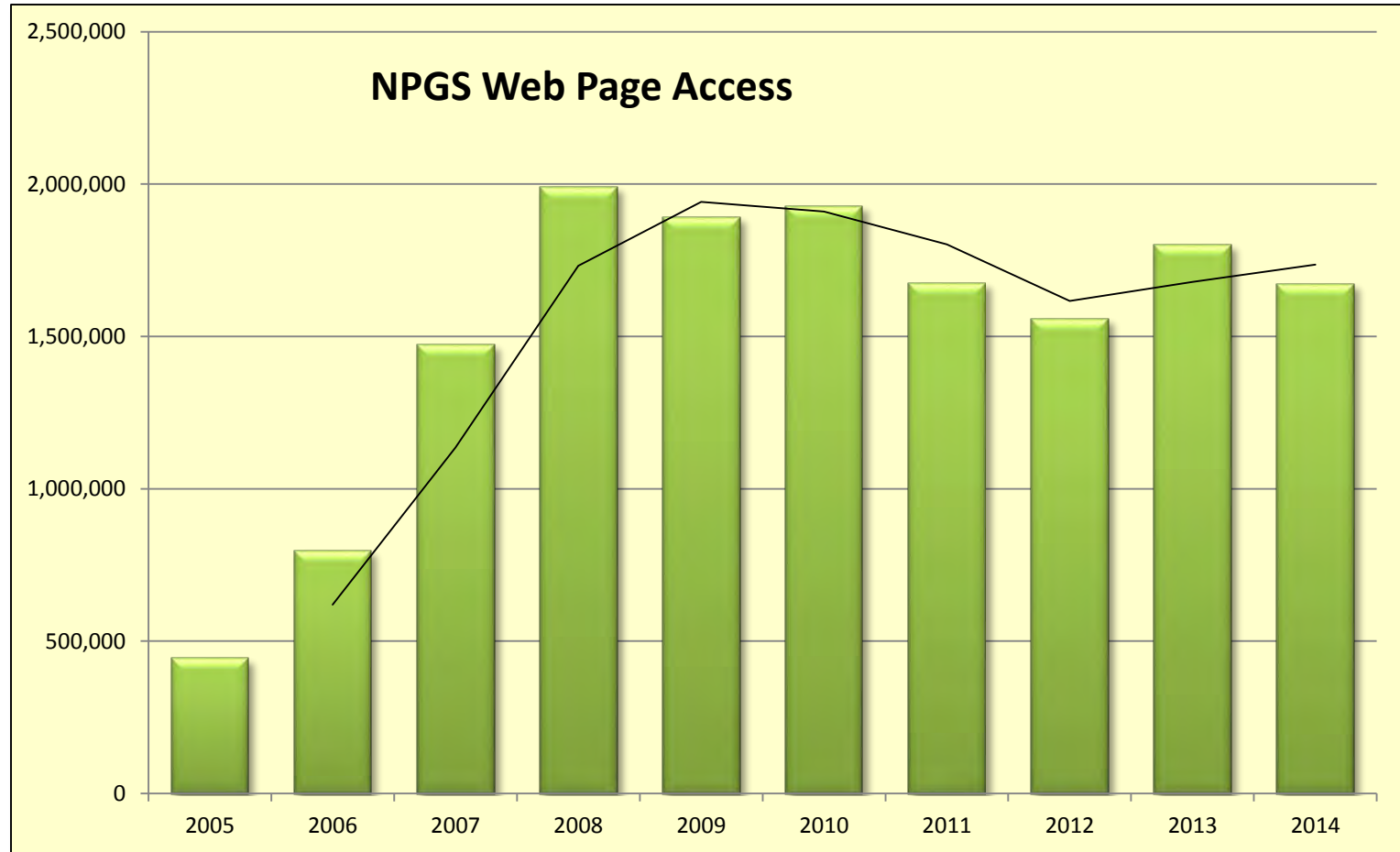
NUMBER OF NPGS ACCESSIONS 2005-2014



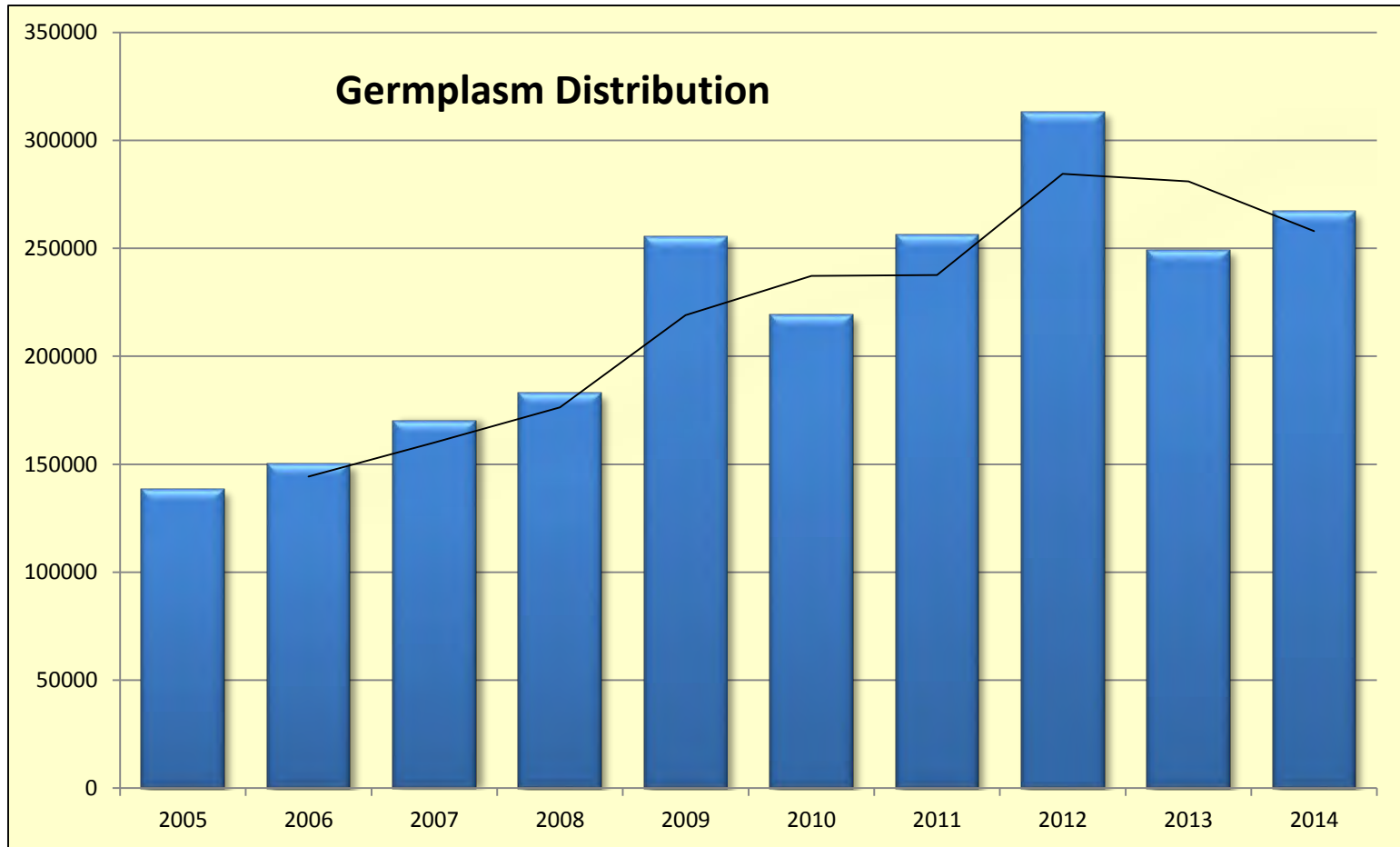
NUMBER OF NPGS ACCESSIONS 2005-2014



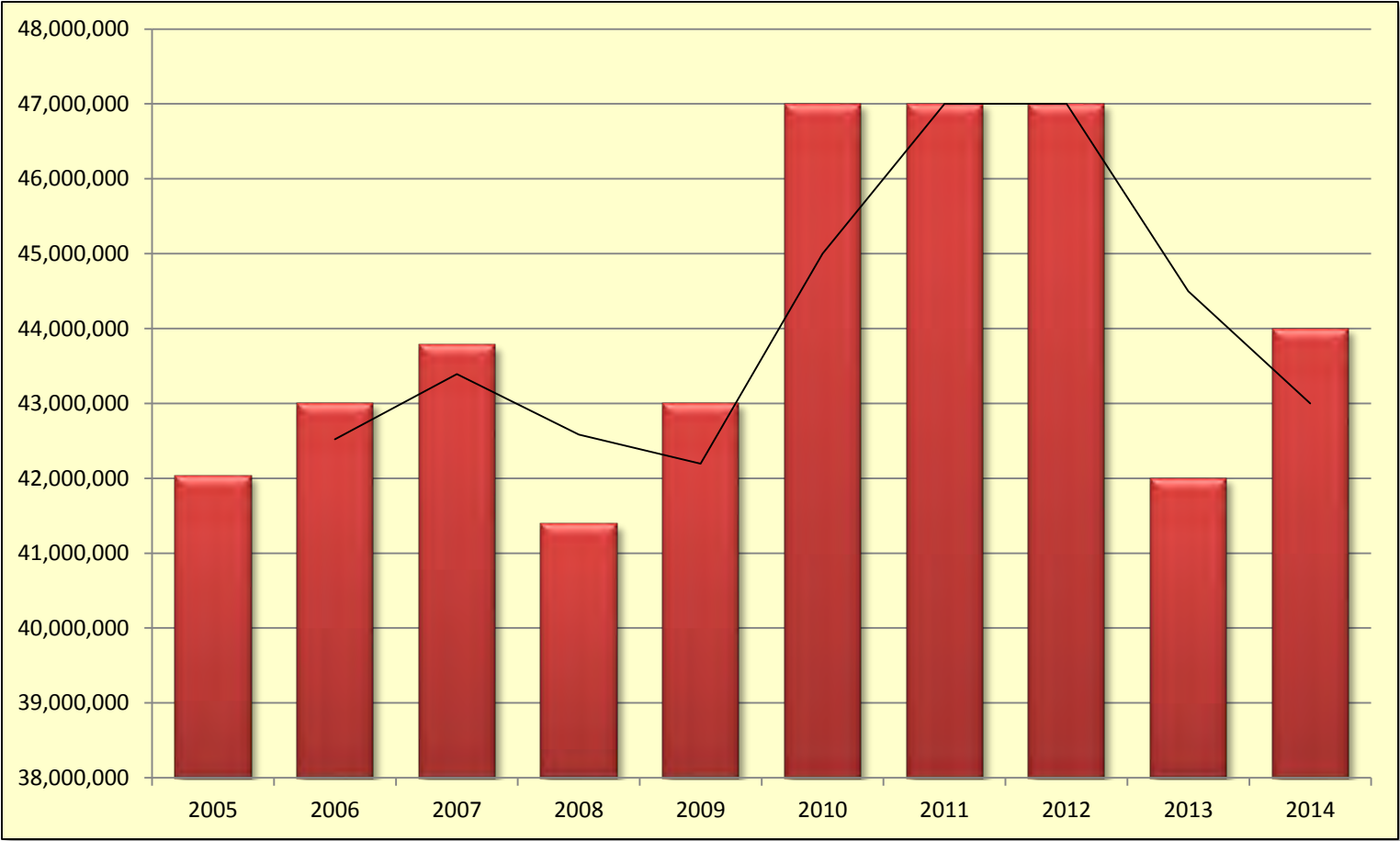
DEMAND FOR NPGS INFORMATION 2005-2014



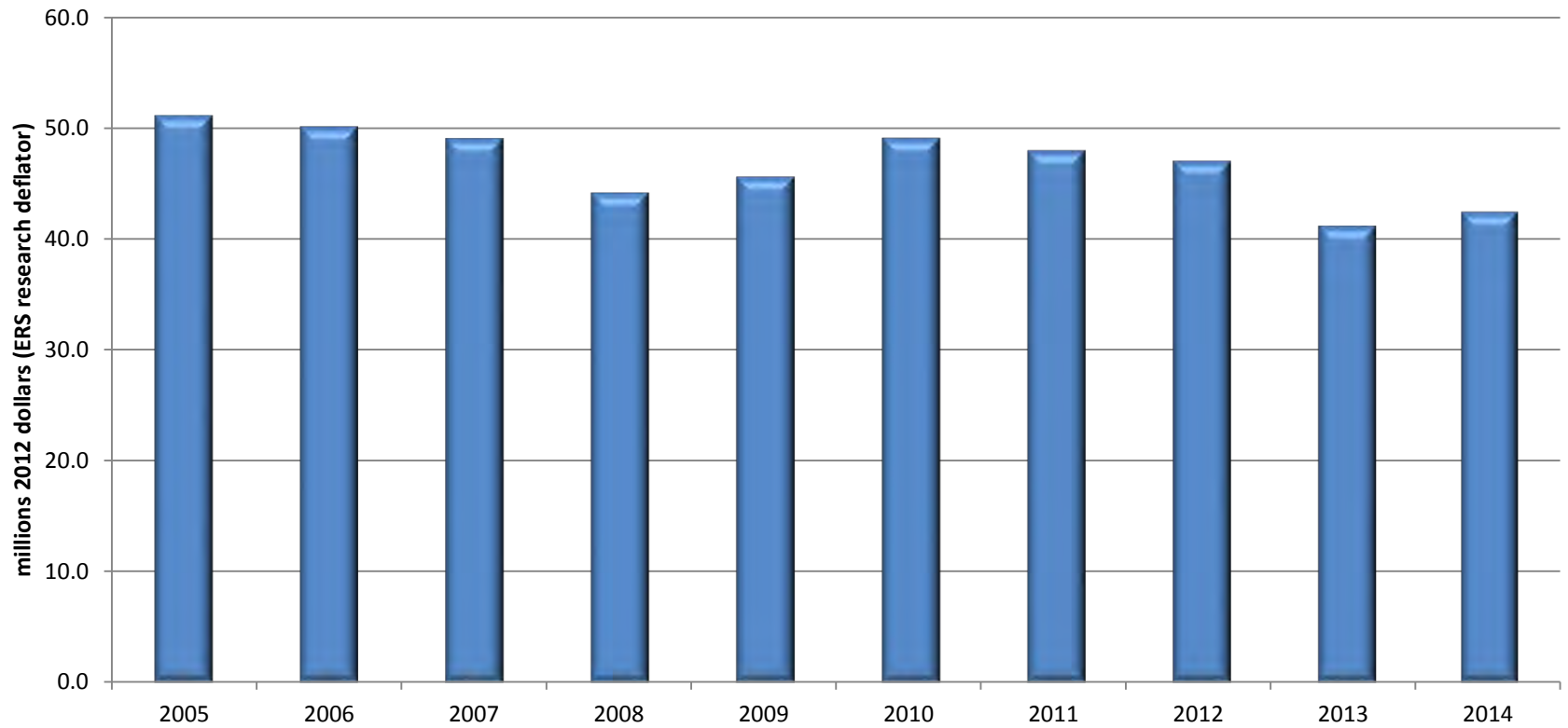
DEMAND FOR NPGS GERMPLASM 2005-2014



ARS NATIONAL PLANT GERMPLASM SYSTEM BUDGET 2005-2014



Real ARS National Plant Germplasm System Budget, 2005-2014 converted to 2012 dollars with ERS research deflator



FY 2016 President's Budget Proposal

- The President's FY 2016 budget proposal for the USDA/ARS requests funding increases of about \$3.475 million for the National Plant Germplasm System.
- \$1.5 million: under the Sustainable Small Farm Initiative, specifically the sub-initiative Expand the National Plant Germplasm System (\$1 million increase) and Provide training/information to Native Americans on conserving/improving traditional crops (\$500,000 increase).
- \$1.5 million: under Translational Crop/Livestock Genetics Initiative, specifically under the sub-initiative Analyze genetic stocks/specialized populations using advanced genomics/genetic technologies.
- \$475,000: under Vertical Farming Initiative, specifically under the sub-initiative Develop high value horticultural varieties that are adapted for growth in greenhouses/urban environments.

Some key challenges that stretch the NPGS's budgetary resources

- **Managing and expanding the NPGS operational capacity and infrastructure to meet the increased demand for germplasm and associated information**
- **Fulfilling the demand for additional germplasm characterizations/evaluations**
- **Acquiring and conserving germplasm of crop wild relatives**
- **Managing genetic/genomic seed stocks**
- **BMPs and procedures for managing accessions (and breeding stocks) with GE traits and the occurrence of adventitious presence (AP)**

Genetic Resource Management Priorities

- **Acquisition**
- **Maintenance**
- **Regeneration**
- **Documentation and Data Management**
- **Distribution**
- **Characterization**
- **Evaluation**
- **Enhancement**
- **Research in support of the preceding priorities**

DiversitySeek (DivSeek) Initiative

- **Mission--to enable breeders and researchers to mobilize a vast range of plant genetic variation to accelerate the rate of crop improvement and furnish food and agricultural products to the growing human population.**
- **Build on existing, emerging and future initiatives to characterize crop diversity and develop a unified, coordinated and cohesive information management platform to provide easy access to genotypic and phenotypic data associated with genebank germplasm.**
- **Its partners currently include 58 public-sector agricultural research institutions from many nations, including Clemson, Cornell, Iowa State, UC-Davis, Georgia, Minnesota, Missouri, and USDA/ARS.**
- **The DivSeek Steering Committee (includes P. Bretting) met on 29 May 2015 in Rome to address specific details for the organization, function, and scope for the Initiative.**

ARS Big Data Initiative

- **FY 2015-2019, \$25 M**
- **“Science DMZ”**
 - **Dedicated scientific research network for data computing**
- **High-performance computing (HPC) system**
 - **Hybrid of local and cloud resources**
 - **Storage and efficient processing of ARS data**
- **Virtual research support core**
 - **Experts to staff the new infrastructure**
 - **Provide computational research support**

Status of the Potato Quarantine Program, 2015

Presented to the Potato Crop Germplasm Committee

July 21, 2015 in Portland, ME

by

Jorge Abad, PhD

Senior Plant Pathologist-Program Manager

Potato, Sweet Potato and Cassava Quarantine Programs

Plant Protection and Quarantine (PPQ)

USDA APHIS

Bldg. 580, Powder Mill Road, Beltsville, MD 20705

Phone 301-313-9317

Email: jorge.a.abad@aphis.usda.gov

Introduction

The mission of the Potato Quarantine Program (PQP) is to test germplasm for pathogens as a condition for the entry of this valuable crop germplasm into the United States. Special emphasis is given to the detection of viruses, viroids and bacteria including phytoplasmas. This program is the first line of defense against the inadvertent introduction of new potato diseases into the USA. Such diseases have the potential to create both economical and environmental burden to the crop. Additionally, in our program, any infected accession is subjected to therapy for the elimination of pathogens and then retested to ensure the success of the treatment. Eventually all the accessions are released to the requesters.

Staff

No rearrangements occurred in our Lab, last year. Prat Bandla, tissue culture specialist, continues taking responsibilities in potatoes, sweetpotatoes and in addition to these crops; she works with tissue culture in sugarcane, rice and other Poaceas. Prat was also trained in Cryotherapy at the USDA-ARS Cryopreservation Unit at Fort Collins, CO. Richard Slocum, our senior specialist, continues working with tissue culture in cassava in addition to his crops i.e. pomes, apples, kiwis and small fruits. Crindi Loschinkohl, our crop specialist, continues doing an outstanding job with her tremendous expertise in acquisition, testing, and distribution of potatoes, sweetpotatoes and cassava. Seth Pack continues to be our gardener, he is doing an excellent job in the greenhouse work and helping Crindi with the biological and molecular tests. We have Student worker since September last year to help in the routine chores at the TC lab. and molecular testing. The USDA-APHIS Plant Germplasm Quarantine Program continues under the leadership of our Director, Dr. Joseph Foster.

Accomplishments

Our PQP continue keeping very high standards in pathogen detection tests for potato diseases. We keep on using a sound biological test under optimum conditions that ensures the interception of unknown or unusual viruses. This test includes the mechanical inoculation onto 12 different indicator plants and grafting on healthy potatoes when the accessions are negative for all the tests yet still showing symptoms in the original potatoes. Serology and molecular based methods will not detect the unknown viruses. We routinely use ELISA for PVX, PVT, PVM, PVA, PMTV, potyviruses and *Clavibacter michiganensis*. ImmuoStrips for *Ralstonia solanacearum*. RT-PCR and PCR tests with generic primers for: luteoviruses, carlaviruses, potexviruses, potyviruses, geminiviruses and phytoplasmas, respectively. We are using qRT- PCR (real time) to detect *Potato yellow vein virus* and *Potato leaf roll virus* potentially damaging and seed transmitted virus. Furthermore, in collaboration with the International Potato Center (CIP) in Peru, we are detecting and identifying difficult unknown viruses by next-generation sequencing analysis, a state of the art method where no specific primers are needed.

As several viroids have been reported affecting potatoes, we have developed a wide spectrum system of conventional RT-PCR that will detect PSTVd and all

pospoviroids that potentially can infect potatoes. Therapy continuous to be primordial in our program for the elimination of viruses in infected accessions. Thermotherapy and chemotherapy are used in the treatments in our current curing method.

We continue the introduction of true potato seed (TPS) accessions. Testing for this group is slightly different. Ten percent of the seedlings are sacrificed to be grown and mechanically inoculated in a set of five indicator plants that will show symptoms of all seed transmitted viruses in potatoes if present. Non-isotopic nucleic acid hybridization is used to detect PSTVd, a viroid that is readily transmitted by botanical seeds in potatoes. If the tests are negative; the remaining 90 % of the seeds are released.

Our primary stakeholders continue to be potato Breeders from universities, government and the private industry. Growers are also requesting potatoes from abroad. We continued our collaboration with the NRSP-6 US Potato Genebank by introducing more potato accessions through our quarantine program and running therapy to clean up their accessions that are infected with viruses. This season four accessions were imported and/or treated by therapy for the Genebank. Also, seven virus-infected accessions that were sent to us from Sturgeon Bay, completed therapy and testing therefore released back to Genebank. Thermotherapy and chemotherapy were used in the treatments.

Potato germplasm acquisition and releases

Our inventory for 2014-2015 consisted of 179 potato clones and 20 true seed lines with an overall total of 199 accessions, surpassing one more time our quota for the year (Table 1). It includes all the acquired and released germplasm as well as the clones in therapy for this season. From those, 136 clones were received this season, 72 as *in vitro* cultures and 64 as tubers. The remaining 43 accessions were obtained the previous years. After testing, we released 67 accessions. Twelve clones either died or did not grow, and 8 clones tested positive for carlaviruses, *Potato leaf roll virus* and potyviruses thus remaining in therapy, all summarized in table 1. Detections were made only in clonal accessions.

For true potato seed, 20 accessions were received and tested this year in our program. Seventeen were released and three were retained due to suspicious symptoms for a potential unknown virus (detected by deep-sequencing). Identification of this pathogen is underway (Table 1).

A note about an unusual interception of potatoes from South America

On May 25, 2014, about 200 of Andean potato tubers for planting were intercepted at the international airport in Miami by Jeana Davis, an APHIS inspector. Tubers were divided in 56 bags properly labeled with names of native Andean potatoes. Mr. David Hoffman from Illinois hand carried those potatoes under a Q37 permit (P37-09-00882) wrongly issued to him in 8-25-2009 (expired 8-25-2014) that authorized *Solanum tuberosum* 'seed' from Peru imported for 'propagation', per the permit.

Potato is a prohibited crop under our Code of Federal Regulations (CFR) when imported from any country in the world with the exception of Canada. Consequently,

APHIS took a corrective action by diverting those potatoes to our quarantine facility in Beltsville in order to be tested and eventually released to Mr. Hoffman. This action was in consultation with the USDA APHIS PPQ-PHP-Regulations, Permits, and Manuals, Plants for Planting Policy staff. They agreed in granting a Controlled Import Permit under the guidance of PGQP in order fulfill all the requirements to introduce these potatoes into the USA after testing in quarantine. This permit is still in process and the potato accessions are in quarantine under our permit.

Last June in our NRSP-6 meeting, it was unanimously recommended by the Technical Advisory Committee not to allow this introduction. They also recommended consulting with Drs. Peter Bretting and Gary Kinard, Agricultural National Leader and Research Leader at the USDA ARS, respectively, for their guidance in this matter. Both are involved in acquisition of foreign germplasm issues. The committee also recommended requesting the Peruvian Government's opinion. The SENASA, the equivalent of APHIS in Peru, response was that they do not require an authorization to grow those potatoes once they are out of the country (Peru). In their own words, it is USDA APHIS, as the Plant Protection entity in the US, who is now responsible to determine the final destination of the potatoes intercepted (See Appendix 1).

Please we need your advice in this matter.

Obtaining foreign germplasm

Federal law (Title 7 of the Plant Pest Act) prohibits the importation of plant parts for use in vegetative propagation of some 50 plant genera, including tuber-bearing *Solanum* spp. Importation of true potato seed (TPS) is also prohibited. The quarantine period for potatoes is typically 6-7 months. Potatoes generally are acquired from foreign donors or institutes or from plant exploration as seed lots of 200 seeds or more, as tubers, or as *in vitro* plantlets. All acquisitions must be accompanied by an import label issued by the PGQP pathologist for potato. Potato slots are filled and processed on a "first-come, first-served" basis. The indexing season for potatoes (based on greenhouse growing conditions for indicator plants) is from September through May. Requests for potato importation should be submitted between January and May preceding the start of the testing cycle.

The Crop Germplasm Committees of the various prohibited genera are composed of scientists with expertise in the genetics of the crop, and the Curators of the various collections in the National Plant Germplasm Repository System have unique knowledge of the diversity of the germplasm held in the collections for which they are responsible. Both the CGCs and the curators are part of the National Plant Germplasm System.

In applying this set of procedures, the PQP recognizes that contact with the Potato CGC and curators are critical and considered an important component in the plant introduction system. PQP will always take its recommendations. The Potato CGC may provide a prioritized list of the accessions that its members would like to import, those items are first on the list and the first to be served by PQP and in the order suggested by the CGC.

Acknowledgments

The Potato Quarantine Program is operating nearly without backlogs. This accomplishment would not be possible without the dedicated and outstanding work of our personnel at the PGPQ. I want also to acknowledge Dr. Joseph Foster, our Director for his guidance and encouragement.

CONTACT INFORMATION:

Dr. Jorge Abad
USDA, APHIS, PPQ, PGQP
Bldg. 580, Powder Mill Road
BARC-East
Beltsville, MD 20705
FAX: 301-504-6124
Voice: 301-313-9317
Jorge.A.Abad@aphis.usda.gov

Ms. Crindi Loschinkohl
USDA, APHIS, PPQ, PGQP
Bldg. 580 Powder Mill Road
BARC-East
Beltsville, MD 20705
Voice: 301-313-9304
Crindi.Loschinkohl@aphis.usda.gov

For additional information about the potato quarantine program in PGQP, you may contact:

Dr. Joseph A. Foster
APHIS, PPQ, PPQ, PGQP
Bldg. 580, Powder Mill Road
BARC-East
Beltsville, MD20705
Voice: 301-313-9315
Joseph.A.Foster@aphis.usda.gov

Table 1.- 2014-2015 Potato Quarantine Program Activities

Clonal Potatoes			
There were 179 potato clones in the PGQP in the 2014-2015 season.			
1	clone was received in 2012		
	1	from Japan	for M. Martin
42	clones were received in 2013		
	3	from the Repository	for M. Martin
	39	from Chile	for G. Secor
136	clones were received in 2014		
	3	in vitro from Germany	for F. Goktepe
	1	in vitro from the Netherlands	for D. Bernhardson
	5	in vitro from Germany	for C. Higgins
	55	tubers from Peru	for D. Hoffman*
	5	in vitro from New Zealand	for G. Ebe
	2	in vitro from Germany	for T. Lübberstedt
	1	in vitro from the Netherlands	for J. Wallace
	14	in vitro from the Netherlands	for J. Bragg
	3	tubers from Canada	for A. Witherell
	5	tubers from Peru	for A. del Rio
	1	in vitro from Germany	for J. Düsing
	1	in vitro from Peru	for M. Martin
	1	tuber from Scotland	for C. Keller
	6	in vitro from Brazil	for R. Novy
	4	in vitro from Peru	for S. Marquardt
	9	in vitro from Peru	for D. Norman
	5	in vitro from Ethiopia	for K. Perry
	12	in vitro from Chile	for G. Secor
	3	in vitro from Scotland	for N. Gudmestad
* This group of tubers were field-collected and intercepted with a mistakenly-issued permit. They were brought to PGQP too late for this year's testing.			
Of these 179 clones:			
	12	died before testing began (field-collected tubers arrived rotted.)	
	9	were still in therapy from last year	
	82	arrived too late for testing	
	1	was discarded (a replicate of a released clone)	
	75	were tested	
		8 were positive	(Carlavirus, Luteovirus, Potyvirus, and unknown viruses)
		67 were released	
True Potato Seed			
There were 20 TPS lots in the PGQP in the 2014-2015 season.			
	15	from The Netherlands	for J. Bragg
	5	from The Brazil	for D. Douches
Of these 20 seed lots:			
	20	seed lots were tested	
		17 were released	
		3 were positive	(Unknown viruses)
Totals			
	Total accessions = 199		
	Total tested = 95		
	Total released = 84		
	Total positive = 11		
	Total died = 12		
	Total discarded = 1		
	Total carried over to next year = 91		

Appendix 1

From: Rocio Beingolea Barua <RBEINGOLEA@senasa.gob.pe>
Sent: Tuesday, July 14, 2015 6:19 PM
To: Abad, Jorge A - APHIS
Cc: Dave Ellis (d.ellis@cgiar.org); Bamberg, John
Subject: RE: Intercepción de papas traídas de Perú.

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Señor Abad muy buenas tardes,

Por parte del SENASA, no necesitan autorización para sembrar dicho material, asumo que la persona o institución interceptada trato de ingresar las papas nativas en forma ilegal.

El APHIS USDA como Organismo Nacional de Protección Fitosanitaria soberano determina el destino final del producto.

Lo que sí nos gustaría conocer en qué fecha fueron interceptadas la papas, que persona o Institución llevaba este material y la empresa de transporte.

Saludos cordiales,



De: Abad, Jorge A - APHIS [mailto:jorge.A.Abad@aphis.usda.gov]
Enviado el: martes, 14 de julio de 2015 02:28 p.m.
Para: Rocio Beingolea Barua
CC: Dave Ellis (d.ellis@cgiar.org); Bamberg, John
Asunto: RE: Intercepción de papas traídas de Perú.

Estimada Ing. Beingolea,

El año pasado, más de 50 bolsas de papas nativas peruanas (3/4 tubérculos por bolsa) fueron interceptadas en el aeropuerto de Miami. Estos tubérculos tenían como fin el ser plantados en los EE.UU. Tomando una acción correctiva hice que re-dirigieran estos tubérculos al programa de cuarentena, el cual dirijo. Las papa están seguras en nuestro programa.

Mi pregunta es, tienen estas papas necesitan tener una autorización del SENASA de Perú para poder ser plantadas en otro país, como en los EE.UU.?

Si es así, tendríamos que proceder con la destrucción del material a no ser que Ud. Nos diera otra opción. Por favor hágame llegar su respuesta.

Cordialmente,
Jorge Abad

Jorge A. Abad, PhD

Plant Pathologist in detail at PPQ-PHP-Regulations, Permits, and Manuals, Plants for Planting Policy

Information on ePERMITS: <http://www.aphis.usda.gov/permits/>

**Lead Plant Pathologist/ Program Manager
Potato, Sweetpotato and Cassava Quarantine Programs
Plant Germplasm Quarantine Program (PGQP)
USDA-APHIS-PPQ-Field Operations
BLDG 580, BARC-E, Powder Mill Road
Beltsville, MD 20705**

(Phone) 301-313-9317

(Fax) 301-504-6124

(Email) Jorge.A.Abad@aphis.usda.gov

<http://www.aphis.usda.gov/plant-health/quarantine-programs>

MINUTES

Potato Crop Germplasm Committee meeting

PAA 2014 -- Spokane, WA

7:00AM -- July 31st, 2014

Present: Abad, Bamberg (Chair), Jansky, Ronis, Whitworth, Douches, Cooper, Martin, Ellis, Endelman, Sathuvalli

The meeting was opened by participants introducing themselves. Bamberg then gave a sketch of the history and purpose of the CGCs, and particularly the history and rationale for the composition of the potato CGC as it relates to the PAA. He noted that the full record of past grant awards and meeting minutes is available through the genebank website's links to GRIN.

The agenda items proposed by Bamberg by email on July 14 were addressed:

Quarantine: Dr. Abad reviewed details of his report to the committee (attached). His lab serves the genebank and all other importers. They must detect and clean up infected stocks. A challenge is setting quotas and priorities. However, the committee applauded Dr. Abad's commitment to leading a responsive and efficient program that has eliminated most of the quarantine delays and limitations of the past. Bamberg noted that a published review for an industry or research outlet could help germplasm users understand the rules of potato import as pertains to phytosanitary and germplasm ownership considerations, and the grave consequences that might result from breaking them.

CIP: Dr. Ellis gave an update on the genebank. He is presenting a poster at the PAA14 meeting (attached). CIP germplasm is under the International Treaty. The genebank is making improvements in cryo preservation, the quarantine program, databases, and safety backups. CIP is keen on continuing cooperation with USPG on research, as well as joint efforts to fingerprint germplasm, rationalize the collections, and otherwise improve its health, evaluation, documentation and reliable identification. Funding is a challenge. Collecting is still shut down, but they are hopeful of progress in the near future.

Evaluation grant awarded for FY14. Dr. Cooper was funded this year to study insect and bacterial resistance to address the Zebra chip problem (report brochure attached). With the genebank, he has screened and identified *S. bulbocastanum* that psyllids do not prefer and others that inhibit insect development. Crosses have been made at the genebank to combine the two types of resistance. Work on screening *S. verrucosum* for resistance and using it to introgress *bulbocastanum* is in progress.

Evaluation priorities: Zebra Chip is of high importance. Thus, one reasonable option for FY15 funding would be a second year of Cooper's ZC resistance screening. But all members should be on the lookout for other worthy evaluation projects. We favor new, promising ventures that can be given a start with these small grants. Also, the work should result in evaluation datapoints that can be applied to our potato germplasm accessions in GRIN.

Vulnerability Statement. This year, we responded to the NPL's request for an updated report, which has now been posted. Thanks to Shelley for the considerable effort she put into drafting much of the new document.

Other issues: During travel for these meetings, Bamberg received a report (attached) from the base collection at Ft. Collins (NCGRP), with respect to their long-term backup storage of USPG germplasm.

Meeting adjourned at 8:40.

Respectfully submitted,
John Bamberg

Status of the Potato Quarantine Program, 2014

Presented to the Potato Crop Germplasm Committee

July 31, 2014 in Spokane, WA

by

Jorge Abad, PhD

Senior Plant Pathologist-Program Manager

Potato, Sweet Potato and Cassava Quarantine Programs

Plant Protection and Quarantine (PPQ)

USDA APHIS

Bldg. 580, Powder Mill Road, Beltsville, MD 20705

Phone 301-313-9317

Email: jorge.a.abad@aphis.usda.gov

Introduction

The mission of the Potato Quarantine Program (PQP) is to test germplasm for pathogens as a condition for the entry of this valuable crop germplasm into the United States. Special emphasis is given to the detection of viruses, viroids and bacteria including phytoplasmas. This program is the first line of defense against the inadvertent introduction of new potato diseases into the USA. Such diseases have the potential to create both economical and environmental burden to the crop. Additionally, in our program, any infected accession is subjected to therapy for the elimination of pathogens and then retested to ensure the success of the treatment. Eventually all the accessions are released to the requesters.

Staff

A slight rearrange occurred in our Lab, last year. Prat Bandla, tissue culture specialist, will continue taking responsibilities in potatoes, sweetpotatoes and in addition to these crops; she started working with tissue culture in sugarcane and other poaceas. Prat was also trained in Cryotherapy at the USDA-ARS Cryopreservation Unit at Fort Collins, CO. Richard Slocum, our senior specialist is focusing in cassava and rice in addition to his crops i.e. pomes, apples, kiwis and small fruits. Crindi Loschinkohl, our crop specialist, continues doing an outstanding job with her tremendous expertise in acquisition, testing, and distribution of potatoes, sweetpotatoes and more recently cassava. Seth Pack continuous to be our gardener, he is doing an excellent job in the greenhouse work and helping Crindi with the biological and molecular tests. We just received the authorization to hire a new Student worker to help in the routine chores at the TC lab. The USDA-APHIS Plant Germplasm Quarantine Program continues under the leadership of our Director, Dr. Joseph Foster.

Accomplishments

Our PQP continue keeping very high standards in pathogen detection tests for potato diseases. We keep on using a sound biological test under optimum conditions that ensures the interception of unknown or unusual viruses. This test includes the mechanical inoculation onto 12 different indicator plants and grafting on healthy potatoes when the accessions are negative for all the tests yet still showing symptoms in the original potatoes. Serology and molecular based methods will not detect the unknown viruses. We routinely use ELISA for PVX, PVT, PVM, PVA, PMTV, potyviruses and *Clavibacter michiganensis*. ImmuoStrips for *Ralstonia solanacearum*. RT-PCR and PCR tests with generic primers for: luteoviruses, carlaviruses, potexviruses, potyviruses, geminiviruses and phytoplasmas, respectively. We are using qRT- PCR (real time) to detect *Potato yellow vein virus*, a potentially damaging and seed transmitted virus. Furthermore, in collaboration with the International Potato Center (CIP) in Peru, we are identifying difficult unknown viruses by next-generation sequencing analysis, a new method where no specific primers are needed.

As several viroids have been reported affecting potatoes, we have developed a wide spectrum system of conventional RT-PCR that will detect PSTVd and all

pospoviroids that potentially can infect potatoes. Therapy continues to be primordial in our program for the elimination of viruses in infected accessions. Thermotherapy and chemotherapy are used in the treatments and our current curing method will be enhanced with Cryotherapy this coming season.

We continue the introduction of true potato seed (TPS) accessions. Testing for this group is slightly different. Ten percent of the seedlings are sacrificed to be grown and mechanically inoculated in a set of five indicator plants that will show symptoms of all seed transmitted viruses in potatoes if present. If the test is negative; the remaining 90 % of the seeds are released.

Our primary stakeholders continue to be potato Breeders from universities, government and the private industry. We are also continuing our collaboration with the NRSP-6 US Potato Genebank by introducing more potato accessions through our quarantine program. This season, we have requested seven accessions for the Genebank from the International Potato Center in Peru. In addition, several clones introduced to the Genebank several years ago are undergoing therapy to eradicate viruses in our tissue culture lab. These accessions were placed in thermotherapy and chemotherapy; the clones will be maintained in tissue culture until they have generated sufficient material for testing. After testing is complete and the accessions are found to be negative to the testing procedures, they will be released to the Genebank.

Potato germplasm acquisition and releases

Our inventory for 2013-2014 consisted of 105 potato clones, surpassing one more time our quota for the year (Table 1). It includes all the acquired and released germplasm as well as the clones in therapy for this season. From those, 98 clones were received this season, all as *in vitro* cultures. The remaining 8 clones were obtained the previous years. After testing, we released 56 accessions. Nine clones either died or did not grow, and 40 clones tested positive for either carlaviruses or *Potato leaf roll virus* all summarized in table 1. Detections were made only in clonal accessions. For true potato seed (Table 2), 48 accessions were received this year in our program. Only 26 were tested and 18 accessions released. The donor requested the destruction of the material due to a probably contamination with PSTVd.

Obtaining foreign germplasm

Federal law (Title 7 of the Plant Pest Act) prohibits the importation of plant parts for use in vegetative propagation of some 50 plant genera, including tuber-bearing *Solanum* spp. Importation of true potato seed (TPS) is also prohibited. The quarantine period for potatoes is typically 6-7 months. Potatoes generally are acquired from foreign donors or institutes or from plant exploration as seed lots of 200 seeds or more, as tubers, or as *in vitro* plantlets. All acquisitions must be accompanied by an import label issued by the PGQP pathologist for potato. Potato slots are filled and processed on a “first-come, first-served” basis. The indexing season for potatoes (based on greenhouse growing conditions for indicator plants) is from September through May. Requests for

potato importation should be submitted between January and May preceding the start of the testing cycle.

The Potato Crop Germplasm Committee is considered an important component in the plant introduction system. The committee can help by taking an active role in developing and submitting an annual prioritized request for potato germplasm to the PGQP.

Acknowledgments

The Potato Quarantine Program is operating nearly without backlogs. This accomplishment would not be possible without the dedicated and outstanding work of our personnel at the PGPQ. I want also to acknowledge Dr. Joseph Foster, our Director for his guidance and encouragement. Also, to Dr. Clarissa Maroon-Lango at PGQP, her great collaboration, the outstanding molecular testing in her lab and her friendship is gratefully appreciated.

Table 1.- 2013-2014 Potato Clonal Testing.

<u>Clonal Potatoes</u>		
There were 105 potato clones in the PGQP in the 2013-2014 season.		
1	clone was received in 2011	
	1 from Chile	for G. Secor
6	clones were received in 2012	
	1 from Poland	for C. Brown
	1 from Japan	for M. Martin
	1 from Germany	for L. Ewing
	1 from Germany	for Valley Tissue Culture
	1 from The Netherlands	for Valley Tissue Culture
	1 from Germany	for C. Keller
98	clones were received in 2013	
	all were received <i>in vitro</i>	
	42 from Chile	for G. Secor
	6 from Ethiopia	for K. Perry
	5 from France	for K. Perry
	11 from Germany	for Valley Tissue Culture
	2 from Germany	for F. Goktepe
	11 from The Netherlands	for Valley Tissue Culture
		for N.
	10 from The Netherlands	Champouret
	2 from Peru	for M. Martin
	9 from Peru	for R. Shakya
	1 from Scotland	for J. Wallace
Of these 105 clones:		
	6 died before testing began	
	2 arrived too late for testing	
	1 was discarded (a replicate of a released clone)	
	96 were tested	
	40 were positive	(Carlavirus, Luteovirus)
	56 were released	

Table 2.- 2013-2014 TPS Testing.

<u>True Potato Seed</u>		
-		
There were 48 TPS lots in the PGQP in the 2013-2014 season.		
30	from The Netherlands	for J. Bragg
18	from The Netherlands	for J. Debons
<u>Of these 48 seed lots:</u>		
22	were discarded at the request of the donor before testing commenced	
26	seed lots were tested	
	18 were released	
	8 were discarded at the request of the donor after testing commenced	

CONTACT INFORMATION:

Dr. Jorge Abad
USDA, APHIS, PPQ, PGQP
Bldg. 580, Powder Mill Road
BARC-East
Beltsville, MD 20705
FAX: 301-504-6124
Voice: 301-313-9317
Jorge.A.Abad@aphis.usda.gov

Ms. Crindi Loschinkohl
USDA, APHIS, PPQ, PGQP
Bldg. 580 Powder Mill Road
BARC-East
Beltsville, MD 20705
Voice: 301-313-9304
Crindi.Loschinkohl@aphis.usda.gov

For additional information about the potato quarantine program in PGQP, you may contact:

Dr. Joseph A. Foster
APHIS, PPQ, PPQ, PGQP
Bldg. 580, Powder Mill Road
BARC-East
Beltsville, MD20705
Voice: 301-313-9315
Joseph.A.Foster@aphis.usda.gov

The Genebank at the International Potato Center: A Global Asset to Ensure Food Security



In-Trust Collections for Humanity

The genebank at the International Potato Center (CIP), in Lima, Peru safeguards the global collections of potato (6,788 accessions), sweetpotato (7,503 accessions) and nine different Andean Root and Tubers (ARTC, 2,516 accessions) (Figure 3). These collections are held in-trust for the Food and Agriculture Organization of the United Nations (FAO) and are distributed for research and breeding world-wide under the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA). The CIP genebank is the largest in vitro genebank in the world maintaining over 14,000 accessions (>90% of the cultivated collection) in vitro. The importance of the in vitro collection is that this is the only way to conserve and distribute disease-free clonal material, a requirement for the international transfer of clonal plant genetic resources. Wild accessions in contrast are maintained as seed with parents of the regenerated material being tested for seed-borne diseases. In the past 10 years, CIP has distributed over 15,000 samples representing over 30% of the diversity (accessions) held in the collections to over 150 different countries. In keeping with the mandate of a Research Center of the Consultative Group on International Agricultural Research (CGIAR), CIP is committed to ensuring global food security and productivity and in this end, 90% of material distributed from the CIP genebank has been shipped to and used in the developing world. In the Andean region, the CIP Genebank partners with numerous indigenous communities, such as the Parque de la Papa in the Cusco area, exchanging knowledge germplasm and research.

World's Largest In Vitro Genebank

Wild accessions are maintained and distributed as seed (populations). Clonal (cultivated) collections are maintained and distributed as in vitro plantlets. CIP maintains over 14,000 accessions by over 70 dedicated people working in the lab and the field. Although all accessions are *theoretically* available for research and breeding, the CIP genebank has undertaken an unprecedented project to confirm that only pathogen-free, true-to-type germplasm is distributed. During this 5-year project, some accessions are not available, yet if desired, they will be prioritized to get this material to potential users as soon as possible.

International Treaty for Plant Genetic Resources for Food and Agriculture

The CIP collections are maintained *in-trust* for the FAO and distribution and use are governed by the ITPGRFA. Therefore distribution of all material is under the terms of the Standard Material Transfer Agreement (SMTA) of the ITPGRFA.



Figure 2. Number of accessions, species and breeding lines conserved in the CIP genebank (20 May 2014).

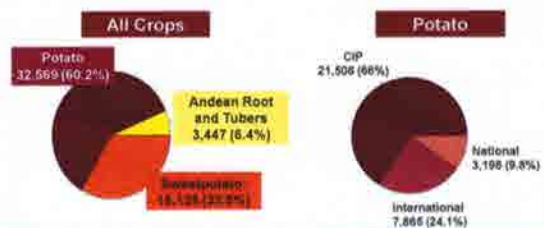
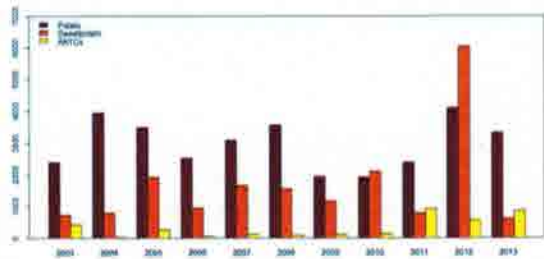
	Species	Accessions	Countries Represented	Breeding Lines
Cultivated Potato	7	4,354	21	3,516
Wild Potato	151*	2,414	14	-
Cultivated Sweetpotato	1	5,324	56	715
Wild Sweetpotato	67	1,179	19	-
Cultivated ARTC	11	2,018	13	30
Wild ARTC	35	497	4	-
Total	272	16,876	62 unique	4,261

* Hawkes

Figure 3. Composition of cultivated potato collection by taxa.

Spp.	# of accessions	% of collection	Ploidy
<i>S. stenotomum</i> subsp. <i>stenotomum</i>	301	6.9	2x
<i>S. stenotomum</i> subsp. <i>goniocalyx</i>	99	2.3	2x
<i>S. phureja</i>	206	4.7	2x
<i>S. x chaucha</i>	117	2.7	3x
<i>S. tuberosum</i> subsp. <i>andigenum</i>	3218	73.9	4x
<i>S. tuberosum</i> subsp. <i>tuberosum</i>	179	4.1	4x
<i>S. x ajanhuiri</i>	14	0.3	2x
<i>S. x juzepczukii</i>	36	0.8	3x
<i>S. x curtilobum</i>	6	0.1	5x
Hybrids	178	4.1	n/a

Figure 1. Germplasm distribution by collection in past 10 yrs.



Global Asset Freely Available

All accessions are freely available upon request for research and breeding for use in food and agriculture and can be ordered at the CIP website (www.cipotato.org – genebank tab). All accessions are shipped under the terms of the SMTA (www.planttreaty.org). Due to the delicate nature of the in vitro material, a small shipping and handling fee may be requested to cover the cost of overnight courier for delivery. We do attempt to track use and are always looking for reliable results about the use of our germplasm.



Parque de la Papa – A Living Laboratory

Parque de la Papa is an association of six indigenous communities high in the Andes who the CIP genebank has been partnering with for almost 15 years. The Parque is a 9,000 hectare valley where potato is currently grown from 13,000 ft. to over 14,700 ft.). In the past 30 years, due to warming climates and the associated insect and disease pressures, potato cultivation in this valley is now at elevations 300 ft. higher than just 30 yrs. ago! The effect of a warming climate is very pronounced in the high elevation Andes and CIP is working with these communities to develop strategies to adapt to this rapid change.

- Dave Ellis
- Nataly Franco¹
- Rene Gomez²
- Ivan Manrique³
- Ana Panta⁴
- Genoveva Rosset⁵
- Alberto Salas⁶
- Rocio Silvestre⁷
- Fanny Vargas⁸
- Rainer Vollmer⁹
- Brenda Zea¹⁰

- ¹Safety Back-up
- ²Cultivated Potato
- ³ARTCs
- ⁴In vitro
- ⁵Sweetpotato
- ⁶Wild Potato Species
- ⁷Breeding Lines
- ⁸Herbarium
- ⁹Cryopreservation
- ¹⁰Phytosanitary



Summary

We are currently screening populations of wild potatoes, *Solanum bulbocastanum*, *S. verrucosum*, and *S. hjertingii* for resistance to potato psyllid and *Liberibacter*, the pathogen that causes zebra chip disease of potato. To date, we have identified five populations of *S. verrucosum* that are putatively resistant to potato psyllid. Assays to screen *S. bulbocastanum* for resistance to *Liberibacter* are currently underway.

REPORT ON CURRENT
CGC GRANT

Screening for Resistance to Potato Psyllid and Zebra Chip Disease among Wild Potatoes



Contact Information

W. Rodney Cooper

USDA-ARS-Yakima Agricultural Research Laboratory

Wapato, WA 98951

Rodney.Cooper@ars.usda.gov

509/454-4463

W. RODNEY COOPER
USDA-ARS-WAPATO, WA

Rodney.Cooper@ars.usda.gov



Significance

- ◆ Zebra chip disease of potato has recently become a major concern for potato growers in the western U.S.
- ◆ Zebra chip is caused by the bacterial pathogen, *Liberibacter solanacearum*, which is transmitted by the potato psyllid.
- ◆ Currently, zebra chip is controlled by insecticide applications to target the psyllid.
- ◆ Development of new potato varieties that are resistant to *Liberibacter* or potato psyllid would provide a cost-effective management tool for zebra chip disease.

- ◆ Using choice and no-choice assays, we recently identified psyllid resistance in *Solanum bulbocastanum*.



Zebra chip disease of potato

Objectives

- ◆ Screen populations of *S. verrucosum* and *S. hirtingii* for resistance to potato psyllid
- ◆ Screen populations of *S. bulbocastanum*, *S. verrucosum*, and *S. hirtingii* for resistance to *Liberibacter*.

Approach: Psyllid Assays

- ◆ Combined use of choice pre-screening studies followed by no-choice performance assays.
- ◆ For prescreening assays, one plant from each population will be placed in each of 10 cages, and 100 adult psyllids will be dispersed in each cage. The numbers of eggs, nymphs, and adults on each plant will be counted after three weeks. Data from these prescreening assays will be used to identify populations with putative resistance to potato psyllid for inclusion in the performance assays.

- ◆ For performance assays, a single mated female will be confined to each plant (10 per plant population) and the number of eggs will be counted after three days. Plants will be maintained for another three weeks before counting the number of living offspring.

Approach: ZC Assays

- ◆ Three *Liberibacter*-infected psyllids will be confined to each of 10 plants per population for 24 hours. Non-infected adult psyllids will be confined to plants for controls.

- ◆ Plants will be tested for *Liberibacter* using PCR three weeks after removing the insects and will be monitored weekly for symptoms associated with *Liberibacter*. Assays will be terminated after 12 weeks or when the above-ground portions of the plants die.

Progress

- ◆ Results of choice assays on *S. verrucosum* identified five populations with putative resistance to potato psyllid. These include P1 195170, P1 195171, P1 251756, P1 545745, P1 275259.
- ◆ No-choice assays on *S. verrucosum* are currently underway.

- ◆ *S. bulbocastanum* plants have been inoculated with *Liberibacter*. Initial results are expected by the end of August.

Future

- ◆ Determine whether resistance traits from different populations can be combined for enhanced psyllid resistance.
- ◆ Determine how much of the resistance from wild potatoes can be transferred to the background of marketable potatoes.

More Details

- ◆ Cooper WR and JB Bamberg. 2014. Variation in *Bactericera cockerelli* (Hemiptera: Trioziidae) oviposition, survival, and development on *Solanum bulbocastanum* germplasm. American Journal of Potato Research. In press. DOI 10.1007/s12230-014-9384-x

National Center for Genetic Resource Preservation (NCGRP) CGC Report 2014

The NCGRP, in Fort Collins, CO is a part of the National Plant Germplasm System (NPGS), and provides safety backup of NPGS collections and conducts research to improve gene bank functioning.

Plant and Animal Genetic Resources Preservation Unit stores a broad range of plant, animal and microbe diversity not only for the NPGS, but for other organizations here and abroad. 2014 seed and clonal activities:

- Received 8,371 seed packets from NPGS active sites. The PAGRP now provides safety back up for 82% of seed collections and 14% of vegetatively-propagated collections in the NPGS
- Conducted 7,448 germination tests. Over 63% of incoming seed from NPGS sites had > 85% germination.
- Conducted 1,019 monitor tests. 68% of the accessions had > 85% viability, indicating they are storing well. For accessions with declining viability, efforts are underway to get this information back to NPGS sites so they can send us fresh seed.
- A total of 170 clonally propagated plant accessions were placed into long-term storage. Significant progress was made in developing cryo protocols for dormant buds. Efforts this year bring our total number of cryopreserved vegetative accessions to 3762.
- Staffing changes- Dr. Stephanie Greene came on board in May 5 as seed curator, filling the Vice Ellis position. Dr. Dave Dierig retired from the ARS on May 30.

Cruciferous Vegetable CGC

NCGRP-unique accessions		% Backup of active collection (seed)	
Ames	Geneva	Ames	Geneva
54	329	99	44

† Vegetable and oilseed

Root and Tuber CGC

Crops	NCGRP-unique accessions			% Backup active collection (sd)			# cryopreserved
	Ames	Geneva	Pullman	Ames	Geneva	Pullman	
Beet†	-	-	12	-	-	75	-
Carrot	100	-	-	85	-	-	-
Garlic	-	-	-	-	-	-	98
Onion	-	3	0	-	56	30	-

†sugar and table

	NCGRP-unique accessions	% Backup active collection (sd)	# cryopreserved
Potato CGC			
Potato (seed)	7	96	-
Potato PVP	-	-	223
<i>Solanum</i> CWR	-	-	38

Plant Germplasm Preservation Research Unit develops state-of-art tools to improve genebank capacity and efficiency. Objectives of the Unit include: i). detecting gaps and redundancies in collections using statistical genetics and spatial analyses and comparing diversity in germplasm conserved *ex situ* and *in situ* ii). enhancing long-term viability of stored germplasm; iii). developing metrics to monitor and validate viability, health and genetic integrity; iv). using genomic annotations and methods to locate genes for key agricultural traits. Projects in 2014 included developing better methods to eradicate graft-transmissible pathogens to protect the Citrus collection from Huanglongbing (HLB) (Dr. Gayle Volk); analyzing population structure of *Helianthus pumilus*, a sunflower CWR, to inform effective conservation (Dr. Chris Richards); and developing new methods to detect seed aging that are non destructive (Dr. Chris Walters).

POTATO CGC 2013

Annual Meeting Minutes

PAA 2013 -- Quebec City, Quebec, Canada
6:30AM -- Aug 1st, 2013

Present: Abad, Bamberg (chair), Yencho

1. Minutes of 2012 meeting were approved.
2. Evaluation grants: A list of past recipients has been created. Bamberg & Palta got the \$10K award for FY13. Future priorities to include Zebra Chip? Is hairiness an avenue to avoiding infection (e.g., Prince Hairy) or bacterial resistance?
3. Collecting: The statement by Spooner had previously been distributed: "Basically, Peru is our primary collecting goal, with only 2 years of a 5-year collecting mission completed, but stopped for political reasons. As you know, Peru has retained most of our germplasm from even out first 2 year's collecting. I have been communicating with CIP and Edward Garvey's and Peter Bretting's Office on this. CIP (through their new genebank Director David Ellis) recently suggested that we write a new collecting proposal for Peru, but Peter Bretting indicated that this cannot proceed until we get access to the germplasm we collected in 1998 and 1999. If we ever do gain access to these germplasm collections I will lead an effort to continue these collections, based on plans already outlined in the 5-year collecting plan I already submitted." The group encourages the USA to pursue restarting participation in Peru collecting.
4. Quarantine: Dr. Abad presented the status of quarantine for potato by going over his written report*. He is trying to increase the quota of seed imports from 75 to 100, to meet increased demand, but it will be difficult with current resources. There are options to get special permits for quarantine processing off campus-- details will be distributed by JA by follow-up email.
5. Members: The value of expertise in industry and utilization & marketing was noted, and decision to invite M. Krucker of Simplot and Jeff Bragg was made. C. Yencho suggested PCGC establish communication with Global Crop Diversity Trust.
6. Vulnerability report. It had not been studied at the time of the meeting, so no discussion occurred except that it should have one-page executive summary and visuals for rapid assimilation of the key points.
7. After the meeting, a NPL report* was received by email by J. Bamberg from P. Bretting.

Minutes by Bamberg

*text available under genebank website's Administrative Reports link.

POTATO CGC 2012

Annual Meeting Minutes

PAA 2012
Denver, CO
6:30AM -- Aug 12, 2012

Present: Goyer, Bamberg (chair), Douches, Holm, Hoopes, Abad, Whitworth

1. Bamberg gave background on what PCGC is and does.
2. Dr. Abad presented the status of quarantine for potato, particularly in terms of reorganization of APHIS/ARS quarantine and testing quota/throughput. Concern was raised about a particular proposed permit to import numerous stocks from Scotland, and whether PCGC should take a formal position. Suggested that PAA could link the genebank so those who seek imports there would see stocks already in the country. Virus elimination technology and services were reviewed. Sometimes the importer would be just as satisfied with a clone already in the country, and we ought to be ready to make such suggestions to reduce unnecessary quarantine work.
3. Germplasm evaluation: Goyer explained potential for folate screening. Douches is evaluating for drought stress and SNPs of the genebank's NewMinicore. Past evaluation grant outcomes were reviewed: Bamberg (2012), Navarre (2011), Jansky (2010).
4. Communication. Whitworth agreed to organize communication between US and Mexican germplasm workers by consulting with H. Lozoya. Discussion followed on how to enhance media contacts and promote non-professional potato enthusiasts like SeedSavers' Kenosha Potato Project. Also, the need for the genebank to keep up with expected formats like short videos about its services and products.

Minutes by Bamberg

POTATO CGC 2011

Annual Meeting Minutes

PAA 2011
Wilmington, NC
6:30AM Wed Aug 17, 2011

Present: Bamberg (chair), Douches, Jansky*, Hoopes, Goktepe, Abad

1. Dr. Abad presented the status of quarantine for potato. Progress was made in that the CGC group decided it would be advantageous for breeders and other germplasm users to coordinate and prioritize import requests. Also, Bamberg asked Abad to write a paper for *American Journal of Potato Research*, covering all points about potato import.
2. FY11 CGC grant for asparagine is just getting started. FY10 award to Jansky on starch screening has made good progress, as reported in several presentations by Shelley at this PAA meeting.
3. A general discussion of screening priorities followed, with recognition that it might be moot in light of no scheduled grant offering as of yet for FY12.
4. Heightening awareness of potato: The group discussed how the writing of a popular book is often the basis of interviews that bring a topic to the public's attention. Could potato professionals collaborate to write such a book for potato?

* new member

Minutes prepared by Bamberg

POTATO CGC 2010

Annual Meeting Minutes

PAA 2010
Corvallis, OR
7:00 AM Tues Aug 17, 2010

Present: Bamberg (chair), Whitworth, Martin, Douches, Hoopes, Goktepe, Abad

1. Dr. Abad presented the status of quarantine for potato. There is a need to prioritize processing of imports considering home gardener imports. We should have a higher profile for heirloom acquisitions. Q tried to catch everything, but genebank should continue to look for off types in new stocks.
2. A general discussion of screening priorities followed. We need novel traits that a little seed money could start. What about requesting matching funds? Possible topics: acrylamide, B vitamins, titanium, AGEs.
3. Acquisition was discussed. Peru continues to be a high priority collecting location but impediments there continue.

Minutes prepared by Bamberg

POTATO CGC 2009

Annual Meeting Minutes

PAA 2009

Frederickton, NB, CANADA

6:00 AM Aug 11, 2009

Present: Bamberg (chair), DeJong, Douches, Hoopes, Abad

1. Dr. Abad presented the status of quarantine for potato. Capacity is an ongoing limitation. Virus therapy (including PSTV) was discussed as a way to accomplish release of infected imports.

2. As usual, a general and specific discussion of screening priorities followed. Grants are small, so this funding should go to emerging traits with promise, but should provide datapoints to assign to the potato population records in GRIN. Possible traits where some work has already been funded: Ca, tomatine, phenolics, soft rot, protein. Future possibilities: Zebra chip, Starch balance.

Minutes prepared by Bamberg

POTATO CGC 2008

Annual Meeting Minutes

PAA 2008
Buffalo, NY
3:30 PM Aug 13, 2008

Present: Bamberg (chair), Brown, Vales, Pavlista, Abad

1. Reviewed general discussion from June 10th NRSP6 TAC meeting at Cascade Locks, OR.
2. Funding for evaluation proposals: I was decided that we should wait until word of funding of SCRI proposals. Then distribute ideas and vote by email. Brown favors Starch balance screening proposal. Zebra Chip is also very important.
3. Bamberg reviewed pending imports of *microdontum* and acquisition of other stocks from Southwest collecting.
4. Dr. Abad presented the status of quarantine for potato.

Minutes prepared by Bamberg

POTATO CGC 2007

Annual Meeting Minutes

PAA 2007
Idaho Fall, Idaho
6:30 AM Tues Aug 14th

Present: Bamberg (chair), Bethke, Douches, Brown, Yilma, Navarre, Hoopes, Abad

1. Introductions, distribution of handouts.
2. Review of past funding exercises and grant proposals. Report of PCI screening progress. Nutritional components of tubers was identified as a hot topic.
3. Dr. Abad reviewed the year's progress in potato Quarantine. Some collected seeds still in storage at Sturgeon Bay will be processed next year.
4. Germplasm collecting status and issue of whether genebank should keep US varieties: Time ran out for discussion of these topics-- plan for communication by email.

Minutes prepared by Bamberg

POTATO CGC 2006

Annual Meeting Minutes

PAA06 at Madison, WI, Monona Terrace
7:00 AM, Tues, July 25th
Breakfast Room

1. Present: Bamberg (chair), Palta, Martin, DeJong, Vales, Brown, Douches, Spooner, Stevenson, Thill, Hoopes, L. McCann.
2. Review 2005 minutes
3. Spooner discusses current embargo on collecting and distribution from Latin American sources of in situ potato.
4. Palta reviewed results from the previous grant involving screening for a potato anticancer protein, PCI. It was suggested that work such as this should be communicated to industry. It was suggested that an important consideration will be environmental vs genetic influence on PCI levels.
5. A single proposal was submitted for consideration: Martin/Bamberg/Palta on K screening. This was approved for a recommendation for funding.

It was suggested that the parents of the mapping population should be K evaluated for the purpose of eventual identification of the genetic basis of high-K if it exists.

6. Priorities for future screening were discussed. In view of a prediction of limitations on inputs in the future, mineral and water use efficiency should be considered high priority.
7. A report from Quarantine was distributed.

Minutes prepared by Bamberg

POTATO CGC 2005

Annual Meeting Minutes

PAA at Calgary, Alberta, Westin Hotel
7:00 AM, Wed, July 20th, Banff Room

1. Present: Bamberg (chair), Brown, Douches, Tai, Stevenson, Palta, Pavlista, Hoopes.
2. Approval of 2004 minutes
3. Past evaluation grants summarized by Bamberg. Brown reports on powdery scab evaluation results and considerations for further screening. Funding for this work came very late in the FY.
3. Selection of evaluation grant proposal(s) for CGC sponsorship: Palta reports on progress in anti-cancer Potato Carboxypeptidase Inhibitor screening funded FY05 and proposal for continuation in FY06. Brown presents his Potato Tuber Moth evaluation proposal. Vote favored Palta proposal. Past and current consensus is that only those present and party to the discussion on proposals should vote, in this case a limited number.
4. Discussion and approval of crop vulnerability statement as updated by Hoopes.
5. Quarantine status. Bamberg summarizes distributed report received from S. Hurtt.

Minutes prepared by Bamberg

POTATO CGC 2004

Annual Meeting Minutes

Aug 8, 2004

PAA Scottsbluff, NE

Present: Brown, DeJong, Hoopes, Mosley, Spooner, Bamberg (chair).

1. 2003 meeting Minutes approved.
2. Discussion and selection of PCI anti-cancer screening by Palta et al. as only proposal to submit for FY05 funding. Discussion of “low-carb” impact and idea that future grants might include nutritional screening like carbs, iron, zinc.
3. Vulnerability statement requested by NPS. Bob Hoopes made a draft update of the old CGC statement and the Committee discussed it. Genebank could be attacked, but this would not directly terrorize the average citizen. Contaminant added to common potato agrichemical could have wide impact. Tuber necrotic PVY and phytoplasmas are two emerging problems that could disrupt production and trade. Hoopes will revise according to CGC discussion.
4. Did not have time to discuss status of Quarantine or germplasm collecting.

Minutes prepared by Bamberg

POTATO CGC 2003

Annual Meeting Minutes

Aug 11, 2003

5 PM at PAA Spokane venue

Present: Brown, Tarn, Miller, Hurtt, Simon, Hoopes, DeJong, Martin, Mosley, Spooner, Douches, Bamberg (chair).

1. Attendees introduced themselves.
2. Hurtt reviews US Quarantine progress: Asks that importers request Q slots more in advance. Less therapy is now needed, making it possible to direct more time elsewhere. If there are not enough requests to fill the slots quota, we can do some of the seedlots waiting in quarantine at USPG. Questions were raised about restricted distributions. SH *does* ask importers to consult with the genebank if there is any possibility that doing so would facilitate the introduction process. SH noted that S. Salih handles the tissue culture aspects of the program.
3. Review of C. Brown's Powdery Scab evaluation proposal. Some resistant cultivars like Tarago from Australia said to exist. Approved as first priority. Bamberg suggests that if additional worthy proposals develop before the submission deadline of Nov 17, he will submit same in case funds are available to support a second priority project. Approved.
4. Spooner leads discussion of embargo of Andean germplasm. No response for officials in Peru. Politically charged situation. Collections from 2nd of 5 year program being maintained at CIP (ca. 100 items). Would like to complete planned years 3-5. Suggestion of a survey expedition with no collection probably not useful—waiting is advocated. Others are collecting in Peru.
5. Reports of past evaluation grants. Spooner has created an Excel file documenting all past evaluations for his 2002 grant. R. Novy has made good progress screening Andigena for tuber blight resistance (2003).
6. Minutes of 2002 meeting. Bamberg mentions being remiss in not preparing and distributing them. Promised to do so soon.

Adjourn 6:30

POTATO CGC 2002

Annual Meeting Minutes

Aug 11, 2002

PAA Toronto venue (Hilton Hotel)

Present: Hurtt, Hoopes, Mosley, Spooner, Douches, Tai, Salih, Cameron, Pavlista, Bohning, Bamberg (chair) and 16 non-members from preceding PAA Breeding and Genetics section meeting.

1. Bohning gives a brief history of CGCs and purpose. Bamberg says how Potato CGC relates to the USPG Technical Committee.
2. Attendees introduced themselves.
3. Hoopes gives report of CGC Chairs' meeting which he attended as sub for chair Bamberg: Substantial increases in funding for NPGS. NSSL increasing in scope—PVP potato vouchers now held there. CBD has a problem with germplasm inputs. Hartung noted Q quotas for potato are 75 clones and 50 seedlot slots annually. Will IPR inhibit germplasm exchange? Expanding use of DNA markers to assess status and dynamics of genetic diversity in the USPG was commended.
4. Spooner mentioned his evaluation grant rationale: To use previous evaluation data to test predictive value of taxonomy. Reviewed past collecting: 13 expeditions. Goal of collecting in Peru is thwarted. Looked at sites in Honduras without success.
5. Salih distributed Q status handout. Reviewed process of potato she is involved in, and current outlook. Spooner voiced concern about quotas if Peruvian collection resumes and embargoed collections are released for import to Q.
6. Discussion of screening priorities. Tuber blight noted as high priority, Jelly End, and Silver Scurf also important. Note: Novy tuber blight proposal was approved for FY03.
7. Cameron mentioned that evaluation grants have a *de facto* limit of \$20K. Should be top screening priorities. NPGS budget nearly doubled from \$20M to \$38M. K. Eversol working as lobbyist. Need to have a goal of mining the value in the genebanks. Germplasm contribution to nutrition is a topic of increasing interest. Still have a SNAFU in Q construction of new facilities / space.

Minutes

Potato Crop Germplasm Committee Annual Meeting*

Somerset Doubletree Hotel, Somerset NJ

5:00 PM, August 1, 1999

1. Auto-introductions of those present: (see attached address sheet) Visitors: F. Lauer, Z. Huaman, K. Haynes.
2. Bamberg explains history and relationship of CGC and NRSP-6 TAC (since potatoes have their own TAC with national expert representation, the role of the CGC is primarily evaluation, centered on the yearly grant opportunity through ARS).
3. Bob Goth mentioned that we ought to direct attention toward cleaning up virus infected clonal breeding stocks. However, it was determined that this is not a problem of the genebank stocks per se.
4. Philosophical considerations RE prospective evaluation proposals: Sentiment was expressed that the CGC ought to concentrate on important potato disease and pest resistances. The counterpoint is that the CGC has a limited funding scope, and has a mission to screen raw germplasm, so perhaps ought to try to find novel pioneering projects that open the door to elaboration by other researchers. Perhaps it would emphasize the 1st priority proposal if it was the only one submitted.
5. Discussion of proposals. Bamberg presented 3 proposals, none others having been solicited by members. One proposal on frost tolerance and acclimation screening was submitted by J. Palta, Horticulture Dept., UWisc, Madison. A second proposal would be to extend the FY99 proposal by W. Stevenson, Dept. Plant Pathology, UWisc, Madison for a second year with the same scope and funding. A third idea for screening had not yet been developed into a formal proposal. This involved screening potatoes for increased levels of antioxidants.
6. Decision to submit the Stevenson proposal for a second year, MSC. Alvin Mosley noted that he has an efficient late blight field screening