NRSP-6 TAC 2011 MINUTES

NRSP6 TAC meeting hosted by Potato Genebank, Sturgeon Bay, WI,
June 28, 2011

Walter DeJong, Chair, NRSP-6 TAC '11
Creighton Miller, Vice- Chair, NRSP-6 TAC '11
Fahrettin Goktepe, Secretary, NRSP-6 TAC '11

The meeting was called to order at 8:20 a.m.

ATTENDANCE

Present: Richard L. Lindroth, Phillip Simon, Larry Chandler, Ed Ashworth, John Bamberg, Jiwan Palta, Walter DeJong, Fahrettin Goktepe, Bob Hoopes, Shelley Jansky, Max Martin, Jesse Schartner, Creighton Miller, Alfonso del Rio, David Douches, Jorge Abad

On Conference Call: Peter Bretting, Chuck Brown, Benoit Bizimungu, David Spooner

The meeting started with a welcoming speech by Richard Weidman, Superintended of the Peninsular Research Station (University of Wisconsin). Weidman summarized some background information about the research station.

- The research station was in service since 1922
- The station currently has 4 Full time FTE
- The station owns about 120 acres land
- The Peninsular Station is also home to the NRSP-6, US Potato Genebank
- The station has research about tree ,small fruits and it is facilitated with online weather station network, real-time weather data, serve the community for horticultural crops

BUSINESS

Preliminaries

1. There were no announcements
2. There was a change to the Agenda. Chair proposed to move item # 10, 11 right after item #6. Miller moved to accept, it was seconded it by Simon and the change was accepted.
3. Minutes of the 2010 meeting were reviewed. Bamberg commented on follow up regarding 2010 meeting decisions: Clonal collection was virus tested.
4. Chair appointed Resolutions Comm: Jansky, with input from Miller

5. **Lead AA:**

Rick Lindroth, the Lead AA and Associate Dean went through budgetary items. At the end of his report, Lindroth indicated that there is currently no plan for permanent closure due to the budget cuts however; there is a possibility to make some shifts in the programs. There was a question in regards to what will happen to the potato genebank if the research station is shut down. It was emphasized that potato genebank greatly relies on greenhouses, fields and other facilities at this station.

The following is Lindroth's complete report:

The single factor that has dominated our work over the last 6 months has been budget cuts – at the federal, state, and university levels. At the federal level, we've seen what is likely to be a permanent loss of earmark funding, including losses to a number of ag-related projects and programs. The UW has had a policy to not pursue earmark funding, so our losses are not great, but they are still substantial to some programs (e.g., the Babcock Institute for International dairy research and development). Projections for future federal support of ag-related research are grave: the House of Representatives passed its Agriculture bill a few weeks ago. It includes deep cuts to USDA R&D, including a 12.9% ($146 million) cut from FY 2011 funding levels to the intramural Agricultural Research Service; a 16.7% ($203 million) cut to the National Institute of Food and Agriculture (NIFA); and within NIFA, a 13.9% ($37 million) cut to the competitive, extramural Agriculture and Food Research Initiative. Notably for our interests, the House Ag bill has a cut of $28 million to Hatch (12%).

At the state level, our new governor vowed to eliminate a $3 billion deficit without raising taxes. That resulted in a $250 million cut to the University of Wisconsin System, with ~$95 million at UW-Madison.

We still don't know what the cut will be to the UW College of Agriculture and Life Sciences. We are preparing for a cut in the range of $1-3 million. The most recent information was that the cut would be at the high end, which represents 7.1% of our state-funded budget. To absorb that cut by not firing faculty, (and not filling a number of faculty vacancies) means cuts of ~15% to non-faculty, state-supported entities.

Where this information intersects with this committee is with respect to CALS Agric Research Stations. They will likely be hit with a 15% budget cut, on top of a 10% cut in the last budget cycle. There is no way that the system can absorb that magnitude of cut, so the CALS deans team is looking into merging some programs and staff, and potentially closing some stations. So, for example, there's a very real possibility that the potato breeding program will move from Rhinelander to Hancock station.

No decisions have been finalized about closing any station, and no station will be closed this year. But Peninsular is one that has been identified as a likely candidate for "mothballing".

Finally, the major budget issue that is confronting NRSP6 is transitioning off of the OTT pass-through funds. There seems to be some discrepancy in terms of understanding of the long-term nature of NRSP funding, but the current NRSP committee does not view NRSP funds as a stable source of long-term funding for projects. They view them as start-up funds to get projects up and running, after which the projects will transition to other sources of funds. That is the challenge that lies before NRSP6, and one that John, Phil Simon and I have been wrestling with the last few weeks. (Since we were notified by Arlen Leholm that we

needed to document private sources of funding for *this* year, or risk not having funding approved.)

Lindroth report was followed by a serious discussion about the NRSP6 budget uncertainty.

Ed Ashworth, Regional AA, understands that there are budgetary frustrations. He proposed the possibility of rolling the potato genebank budget into the North Central Regional budget then the money can be reallocated to potato genebank. Bretting indicated NRSP6 review committee has certain criteria to apply and it looks different than the regional project. Bretting also indicated that it may not be easy to roll NRSP6 budget into a regional genebank budget because University of Wisconsin pays for some. Miller emphasized that we have to propose a permanent solution, because every year we are facing the same issue. Miller asked Bretting what would be his suggestions for a long term solution. Bretting respond it that he did not know an easy solution, but whatever we do; we have to stay on course. He also indicated that they have conducted an intensive study in Lake Tahoe in 2006, and there was a unanimous agreement to continue supporting both regional and potato genebank. Last year, the project was renewed for 5 years but that doesn't guarantee that the money will be there for upcoming years. Lindroth pointed out that since NRSP review committee is going to meet next week, we don't have enough time to review the funding structure so we need to move forward to secure the funding and keep the doors open. The question was about how the NRSP review committee functions. Bretting attempted to reach Erik, so he can provide the committee with some information about the nature of review committee and how they function, but Erik wasn't available. Once the review committee sets and approves the budget, it will go to the NRSP technical advisory committee including Experiment Station Directors who will meet in September.

6. Other regional AAs

7. **NRSP-6 Report** – Bamberg (Annual Report, CY10 to date appended and pdf posted on genebank website)

   Report was a PowerPoint presentation. Adele Douglass has received the Potato Genebank Special Recognition award. Annual report is structured by genebank mission area.

   - Acquisition and associated works: Collecting in US to stock genebank and R&D type work. Two potato species are native to US. Bamberg and del Rio were on an expedition to collect these native species in 2010 in the Santa Rita Mountains.
   - Collections: Need to look at what is available outside or in different countries and goal is to bring them in and evaluate them for different traits. Roy Navarre is currently testing a high antioxidant clones. Continue to collaborate with other genebanks.

- There was a question about if the open pollinated seeds would be a problem to maintain the original sources. Max responded that *S. andigena* collections are generally tubers so we maintain the original source. David Spooner : there is a certain degree of outcrossing, prefer to use materials for which we know the parentage. Chuck Brown: dominant traits are easy to recover, the traits with low heritability and epistatic interactions might be lost. Walter De Jong: as long as the alleles are present, we can recover the targeted ones. Shelley Jansky asked if inbreeding depression would be a concern. John Bamberg indicated that USPG received most of these material as TPS, so the original clones to which descriptive data was attached had already been compromised. Bob Hoopes suggested that if we don't have the original clones, it is better to maintain open pollinated seeds. Walter De Jong added that open pollinated seeds would be the cheapest way to maintain alleles.

- Bamberg recounted a recent success story as a model for how the genebank promotes germplasm use: Roy Navarre asked for a certain high antioxidant clone we did not have. We found it would take up to two years to obtain it from CIP and through Quarantine. We suggested screening some of the primitive cultivars already in USPG. We used pre-existing characterization data to select 100 populations, making screenhouse tubers of 15 seedlings each. Max preselected these tubers and sent 100 to Roy Navarre, who did the antioxidant analysis. One clone was identified with phenomenal levels of antioxidants—higher than reported in any previous potato, as reported at the 2010 Potato Association of America meeting in Corvallis Oregon last August.

John also highlighted few specific research projects on the collected germpasm -*S. jamesii* anti-prostate cancer property, anticancer tomatine, potato-unique satiety protein, resistance to tuber greening after illumination in *S. microdontum*.

- Preservation: 235 seed increase. Have about 4,500 seed (200/year for 20-year cycle). Involves disease and viability monitoring.

8. ARS:

David Spooner: CIP is collecting now but they are not allowed to distribute materials.

Chuck Brown:
1st part of his project: Extraction of Colombia root knot nematode resistance from potato gene bank materials, the clone (BC5) with potential resistance graduated through western regional trials. This clone is also resistant to black dot, pink rot and among all white flesh potato tested, it has the highest total phenolic. 2nd part of his project: searching for super high carotenoids, Papa Amarilla type potato, difficult to move out the genes for high carotenoids from these potatoes due to the strong linkage with a lack of dormancy. With help of molecular markers and intensive studies, a tetraploid (orange flesh) potato with dormancy was developed. Black Dot: One of the main problems for the region,

Verticilium vs black dot, in terms of soil born diseases, black dot is the new main problem for Pacific Northwest Potato industry.

Shelley Jansky:
We are extensively using gene bank germplasm, few highlights from our studies; Looking at cold sweetening, this work was published in PAA journal, currently creating new populations for genetic studies. Storage period; some materials were stored for 9 months and they are still looking great. Diploid hybrid; evaluating for late blight resistance. Tetraploid hybrid; evaluating for early blight resistant in red skin varieties and developing new population for early blight resistant. The question was what is the main source of early blight whether *Alternaria solani* was replaced by *Alternaria alternate?* Jansky responded that *A. solani* is still their main source of early blight. PVY resistance; a family derived from *S. chacoense* is presumably PVY resistant, it was interesting to see that the resistance was heat tolerant. The resistance is controlled by a single dominant gene and it is extremely resistant. *S. chacoense* could also be a source for scab resistance. 524-8 was identified to be scab resistance. Photoperiod and tuberization response is being studied. Amylose conten is relatively stable over all locations and during tuber development, but changes during the storage.

9. **NPL report**:
   Peter Bretting discussed the Office of National Programs Report, and personnel changes, retirements and open positions; the goal is to fill these positions in the near future. Rejuvenating the data base; the new version is going to be implemented in US next year. Budget; ARS lost essentially all of the earmarks and the loss of NPGS was about $700 thousand from FY10 funding level. The good news was that the President's FY12 budget proposes a substantial budget increase which is about $3.3 million. Bamberg asked Bretting if he could make some comment whether there were any discussion about possible charges for the germplasm materials. Bretting responded that the material is and will be free of charge. He referred to the NPGS policy which explains the reason why the materials are free of charges. In case of international shipping costs, Bretting indicated that it should be arranged between receiver and shipping company because ARS is not entitled to collect fees. Ed Ashworth added that NRSP6 budget is mainly salary in which less than 5% will be shipping and handling costs therefore covering the shipping costs will not make huge differences.

10. CSREES (Thro)
    Ann Marie Thro was in a trip to Afghanistan, couldn't attend the meeting.

11. Regional and ARS Technical Reports (submitted texts appended)

    Western Region:
    Fahrettin Goktepe reported that 586 units were distributed to the Western Region in 2010. Receiving states were CA, ID, OR, UT,HI and WA. Material was requested by universities, private companies and individuals.

Private sector was very active, and materials were requested for different objectives including to evaluate for organic production. Materials were of good quality and received in good condition. Genebank materials users were very appreciative for the service they receive, they will continue to request these materials in the future and integrate into their research program to respond to their needs. Materials have been used for studies on: disease resistance, health attributes, molecular genetics, new cultivars for organic potato production, heat and drought tolerance, teaching and education. Roy Navarre (USDA/ARS) is currently screening potato genebank materials for asparagine content in raw materials and acrylamide content in finished products (winner of CGC evaluation grant for 2011).

North Central Region:
David Douches received an interesting phone call from a home owner gardener with some misleading information and a website about ecos purple potato. The claim was this purple potato can survive under freezing soil temperature in WI area. It was indicated that UW wasn't aware of such claim and there wasn't any scientific study to support this. [note: the likely explanation is that this is not a true potato at all]. Resistance for Colorado potato beetle is under investigation on the materials received from NRSP6 and the selections are being made through detached leaf bioassay and screen cages. SolCAP updates: SNP genotyped 10species selections that were submitted by Dr. Spooner. Tetraploid population for late blight and scab resistance. CIP sent 48 clones to look at the genetic diversity compare to US materials. Population study of Rio Grande Russet x Premier Russet from Rich Novy, and Atlantic x Superior from Jiwan Palta. A candidate PVY resistance gene in tomato or pepper especially in tomato such as eIF4E could be useful for PVY resistance studies in potato. Jiwan Palta mentioned that clones from NRSP-6 genebank are being actively used to develop specialty type potatoes. Cold tolerance and cold respond in potato for frost resistance are being investigated in their program. Collaboration with CIP for calcium uptake in diploid and tetraploid level is in their trial studies.

North East Region:
Walter DeJong noted that the Northeast region received 647 units of germplasm, spread across 14 requests, in 2010.

These went to large universities and some small farms in NY and surrounding area. SolCAP is making genotyping easier. It is possible for someone to order SNP primers. The markers are user friendly for breeders. Identifying markers; if it is dosage sensitive, it is better to screen parental materials. Markers associated with general combining ability are useful. There was a recent article in Financial Times where Plant breeding is listed as one of the ten "hottest" fields in science. http://www.ft.com/intl/cms/s/2/bedd6da8-9d37-11e0-997d-00144feabdc0.html#axzz1QJurEHq4

Southern Region:
Creighton Miller reported seventeen orders in the Southern Region included a total of 129 accession, this was down significantly from 422 units ordered in

2009. Texas is currently using *Solanum jamesii* in human prostate cancer studies. Craig Yencho is working on heat necrosis, disease resistance such as early blight, powdery scab and Colorado Potato Beetle . He also stated that TAMU has already suffered from budget cuts. Miller has been ½ time for four years. Next year will be his last year to serve at NRSP6 committee. He was the only person working on potato for more than 35 years. Now, with Zebra Chip still the big issue, there are more than 20 working on some aspect of potato research. A major effort continued in 2010 involving research on the Zebra chip complex with emphasis on screening for host plant tolerance/resistance.

Agriculture and Agrifood Canada
Benoit Bizimungu reported 91units were ordered from genebank. AAFC is the main user, with major focus on incorporation of genetic resistance to pests such as Colorado potato beetle and diseases such as late blight, PVY, PLRV, *Verticillium* wilt. Most of the wild potatoes species they are using are ones native to Mexico. Increasing nutritional components with pigmented potatoes and starch composition are also being addressed in their studies. Fifteen new potato cultivars are being registered by Canada food agency. Two of those were from Agriculture and Agrifood Canada, the rest are mainly from Europe. Canadian plant genetic resources collection includes new cultivars, breeding lines and commercial cultivars.

12. **Industry Perspective**

Bob Hoopes stated that Frito-Lay has a long history of using NRSP-6 germplasm which is still going strong and has been quite successful in developing new clones. Frito-Lay crops out of FL, CA and TX and has developed clones which are adaptable to those areas. Long term storage like 9 months and reducing sugar for decent chip color is extremely important trait for Frito-Lay. Two clones, 440 & 438 developed by Shelley Jansky, are source of good chip color. Frito-Lay has used at least 20 wild species. Wild species used for health and wellness studies and Corinne for PVY resistance. Some European clones are also being used as source of PVY resistance. DNA markers for PVY resistance.

13. **APHIS/Quarantine report** -- Jorge Abad
    - The USDA/APHIS facility is located in Beltsville, MD with about 35 acres land, surrounded by trees isolated from commercial production
    - Abad and his lab with crop specialist and 2 tissue culture specialist are responsible for potato, sweet potato, cassava and kiwifruit
    - Can request for anyone that is a legal resident of the US
    - Most of the emphasis is given to the detection of viruses, viroids and bacteria
    - It cost APHIS about $4,000/accession to test, clean up via therapy, retest and ensure that it is free of any pest and pathogen before it is being released.

- Received all of the materials in tissue culture as plantlets,75 accession/year, if there is any suspicion or if the results are positive , they go through therapy followed by PCR, Elisa, Rt-PCR and biological test such as grafting onto sensitive indicators
- Test to see if the virus is DNA or RNA virus.
- If the material is positive with quarantine diseases, it will be destroyed.
- If the virus is seed transmitted , more dangerous, we inoculate the healthy plants to identify the symptoms, such as leaf necrosis, tip malformation distortion
- A new strain of PVS, symptomless , could not be detected on indicator plants but just under PCR. PVS -Andean is completely different strain or isolate.
- There were 72 potato clones in the PGQR in the 2010-2011, 65 of them were released, 5 of them tested positive, they are currently in therapy, 2 of them did not grow.

14. **Resolutions**:

WHEREAS, Mrs. Adele Douglass has served as the lead person for technical support of evaluation publications from the US Potato Genebank for 18 years; therefore be it
RESOLVED, that the NRSP-6 Technical Advisory Committee congratulates Mrs. Douglass for her productivity, enthusiasm, and dedication to potato germplasm research, and awards her the "Potato Genebank Special Recognition Award" for 2010 under the sponsorship of Controlled Environment Technology Systems (CETS). The plaque reads, "Gratefully acknowledging potato genebank technical work of outstanding value to the potato industry"

WHEREAS, the NRSP-6 Technical Advisory Committee met at the Potato Genebank in Sturgeon Bay, Wisconsin on June 28, 2011; and
WHEREAS, those participating were involved in productive and stimulating discussions; therefore be it
RESOLVED, that the NRSP-6 Technical Advisory Committee expresses its appreciation to Dr. John Bamberg and his staff for coordinating the meeting, and be it further
RESOLVED, that an original of this resolution be provided to Dr. John Bamberg and that a copy be filed as a part of the official minutes of this meeting.

15. Elect new officers and set next meeting location

Officers

Chair:	Creighton Miller
Vice-Chair:	Fahrettin Goktepe or the replacement
Secretary:	David Douches

Next Meeting Venue = Texas, exact venue to be determined

Respectfully Submitted,

Fahrettin Goktepe

Tour of the USPG facilities was held on the morning of June 29th