

Minutes of the Sugar Beet Crop Germplasm Committee Meeting Held February 25, 2009

The Sugar Beet Crop Germplasm Committee Meeting was held Wednesday, February 25, 2009 from 8:00 until noon in the Longboat Room at the Wyndham Orlando Resort In Orlando, Florida. This meeting was held in conjunction with the American Society of Sugar Beet Technologist's biennial meeting (in Salt Lake City from February 25 - 28, 2009).

Roll Call

Present: Members - Klaas van der Woude, Roy Martens, Mitch McGrath, Imad Eujayl, and Lee Panella

Ex officio: Gail Wisler (NPL), Barbara Hellier (*Beta* curator WRPIS, Pullman, WA), Jinguo Hu (RL, USDA-ARS, Pullman, WA, WRPIS), Mark Bohning (USDA-ARS, Beltsville, MD)

Other: Carl Strausbaugh (USDA-ARS, Kimberly, ID), Kelley Richardson (USDA-ARS, Salinas, CA), Margaret Rekoske (Betaseed, Inc.), Wolfgang Mechelke (KWS)

Excused: Larry Campbell (USDA-ARS, Fargo ND), Bob Lewellen (USDA-ARS, Salinas, CA retired) Bob Harveson (U of NE, Scottsbluff, NE), Carol Windels (U of MN, East Grand Forks, ND), Jay Miller (Betaseed, Inc.)

Membership Elections

Members whose four year term had expired were Carol Windels, Jay Miller, Klaas van der Woude, Imad Eujayl, and Robert Lewellen. Klaas van der Woude and Imad Eujayl were elected to another four year. Bob Lewellen, who has retired, vacated his seat and Kelley Richardson, research Geneticist with USDA-ARS at Salinas, CA was nominated, and unanimously elected to fill that position. Jay Miller, who has moved into sales, vacated his seat and Margaret Rekoske was nominated, and unanimously elected to fill that position. The committee directed the chairman to see which Plant Pathologist in the sugar beet community might be interested in taking the seat vacated by Dr. Windels. [*Dr. Gary Franc (U of WY, Laramie, WY) has agreed to serve on the Sugar Beet CGC*]

I would like to give thanks to all of those who have taken the time to serve on this committee and have stepped down – Jay Miller, Carol Windels and Bob Lewellen. Special thanks to Bob Lewellen who has served long and very ably on this committee. His experience and knowledge will be missed.

Curator's Report – Barbara Hellier

Status Report on the *Beta* Collection at the
Western Regional Plant Introduction Station (WRPIS)
to the Sugar beet Crop Germplasm Committee
Barbara Hellier (Curator) February 25, 2009

The *Beta* collection at the Western Regional Plant Introduction Station in Pullman, WA currently has 2,550 accessions with 1,895 accessions (74.3%) available and 1,926 (75.5%) backed-up at

National Center for Genetic Resources Preservation (NCGRP), Fort Collins, CO. Table 1 contains a breakdown of the collection by species.

Table 2 groups the accessions of each species into increase/regeneration priority groups. Priority grouping is based on number of viable seed, seed age, and germination rate.

Table 1. Total number of accessions and number backed-up per species in the NPGS Beta collection.

Taxon	Total Accessions	Accessions Backed-up
<i>Beta corolliflora</i>	4	3
<i>Beta hybrid</i>	2	1
<i>Beta lomatogona</i>	29	4
<i>Beta macrocarpa</i>	15	13
<i>Beta macrorhiza</i>	20	2
<i>Beta nana</i>	21	0
<i>Beta patellaris</i>	29	12
<i>Beta patula</i>	3	3
<i>Beta procumbens</i>	15	5
<i>Beta sp.</i>	16	5
<i>Beta trigyna</i>	48	5
<i>Beta vulgaris</i>	24	16
<i>Beta vulgaris ssp. maritima</i>	572	391
<i>Beta vulgaris ssp. vulgaris</i>	1722	1437
<i>Beta vulgaris ssp. vulgaris (NCGRP & CSR)</i>	14	
<i>Beta webbiana</i>	8	1
<i>Beta x intermedia</i>	8	1
TOTAL	2550	1899

From February 2007 to February 2009, we received 102 orders (an increase of 15 from previous reporting period) from 75 requestors. A total of 673 accessions (an increase of 183 from previous reporting period) and 1348 seed packets were distributed. In the same time period, we acquired 16 new accessions, all *B. vulgaris* breeding lines from the US

Regeneration and maintenance activities:

We continue to focus our regeneration efforts on accessions of *B. v. ssp. maritima* and wild species. The majority of our increases are done in the greenhouse. We are using all available, suitable spaces in the WRPIS and Washington State University greenhouse systems, a total of 13-19 rooms. In Fall 2007 we planted 6 accessions of *B. v. ssp maritima* in the field. Of those we got good harvest on all but one accession. In fall 2008 we again planted 6 accessions of *B. v. ssp maritima* to the field and will plant 14 accessions of annual *B. v. ssp maritima* this spring. In Aug 2008 we sent 60 *B. v. ssp maritima* accessions to Dr. Bob Lewellen and Dr. Kelley Richardson for increase in Salinas, CA. We appreciate their willing to do this. Dr. Margaret Rekoske, Betaseed is increasing PI 538251 this year. In 2007 and 2008 we regenerated/increased a total of 43 accessions.

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Table 2. Number of Beta accessions per priority group per species. Priority group 1 = accessions with < 100 viable seed. Priority group 2 = accessions with 100-500 viable seed. Priority group 3 = accessions with 500-1000 viable seed or accessions with over 1000 viable seed and < 50% germination. Priority group 4 = accessions with 1000-5000 viable seed and >50% germination. Priority group 5 = accessions with over 5000 viable seed and > 50% germination or if no germination data is < 20 yrs old.

Taxon	Priority Group				
	1	2	3	4	5
<i>Beta corolliflora</i>			3	1	
<i>Beta hybrid</i>	1				1
<i>Beta lomatogona</i>	18	4	1	5	1
<i>Beta macrocarpa</i>	1	4	1	4	6
<i>Beta macrorhiza</i>	14	3	1		1
<i>Beta nana</i>	21				
<i>Beta patellaris</i>	4	3	2	9	11
<i>Beta patula</i>	1	2			
<i>Beta procumbens</i>				4	7
<i>Beta sp.</i>	6	2	2	3	3
<i>Beta trigyna</i>	34	6	2	4	2
<i>Beta vulgaris ssp. maritima</i>	35(6)*	50(20)	91(27)	182(44)	212
<i>Beta vulgaris & ssp vulgaris</i>	47	207	276	614	597
<i>Beta webbiana</i>	1		5	1	1
<i>Beta x intermedia</i>	7				1

* (X) Number of accessions currently being regenerated or increased.

During increase and regeneration we collect the following descriptor data on each accession: hypocotyl color, bolting tendency, cluster fasciation, flowering pattern, leaf hairiness, leaf width (min. and max.), leaf length (min. and max.), leaf pigment, petiole color, susceptibility to *Erysiphe* sp., and images of pre-bolt plants and roots.

We are continuing to work with *B. nana* material from the 2005 Greece collection. All 61 extant

plants were transplanted to outside plots in fall 2008. The 5 plants transplanted outdoors in fall 2007 survived the winter, flowered, and set more seed than plants held in the greenhouse. In early February we planted seed from 17 accessions. We have found that decorticating the seed results in the best germination rate. We removed the cork from 1,277 seed. Germination rate to date is approximately 10.9 %. The descriptor data we have collected so far from all the extant *B. nana* plants includes hypocotyl color, plant diameter, leaf length and width, number of flower stalks, and number seeds per flower stalk.

Barbara Hellier
Horticulture Crops Curator

Report on the new GRIN-Global system - Mark Bohning

The GRIN-Global Project

The mission of the GRIN-Global project is to create a new scalable, version of the USDA/ARS National Plant Germplasm System, Germplasm Resource Information (GRIN) database platform [GRIN system](#) which will be suitable for use by any interested genebank in the world. It is being developed in a joint effort with the [Global Crop Diversity Trust](#), [Bioversity International](#), and the Agricultural Research Service of the USDA (read the [ARS press release](#)). The new GRIN-Global database platform is scheduled to be completed during the last quarter of 2010.

Goal of the GRIN-Global Project

This project's goal is to provide the world's crop genebanks with a powerful, flexible, easy-to-use global plant genetic resource information management system that will constitute the keystone for an efficient and effective global network of genebanks to permanently safeguard plant genetic resources vital to global food security, and to encourage the use of these resources by researchers, breeders, and farmer-producers. By improving the capability of genebanks to provide data to a global accession-level information system under the leadership of Bioversity International, it will be possible to more accurately assess the "State of the World" for plant genetic resources, and to identify priority global needs for plant genetic resource conservation.

Technical Steering Group

A [Technical Steering Group](#) (TSG) comprised of eight international stakeholders with expertise in database systems, information management, PGR management, intensive use of PGR-associated information, and representatives of the USDA/ARS, the Global Crop Diversity Trust and Bioversity International has been formed. The TSG's technical input will be used by project personnel to help formulate critical programmatic decisions and directions, facilitating the design of GRIN-Global to meet the needs of an extremely broad international clientele.

Project Activities and Approaches

USDA/ARS project personnel, with their international partners, will identify features and functionalities required for GRIN-Global. "Use cases" and relevant workflows will be

developed to aid this effort. The current GRIN schema will be reviewed to determine required enhancements. Technology providers (including the Biodiversity Technical Design Working Group) will be consulted regarding needs, alternative approaches considered, and development of project specifications. Consultations and subsequent refinements to project plans are critical for optimal project progress.

Development Team

A core development team of software developers and database administrators has been assigned full-time to the project, enabling focused effort and project continuity. The core development team personnel are from Bioversity and from United States Department of Agriculture (USDA) / Agricultural Research Service (ARS). The USDA/ARS team is comprised of personnel from these groups:

Plant Introduction Research Unit, Ames, IA

Database Management Unit (DBMU), Beltsville, MD

National Germplasm Repository, Corvallis, OR

Subtropical Horticulture Research Station, Miami, FL

National Small Grains Germplasm Research Facility, Aberdeen, ID

More information is available at the GRIN-Global wiki (<http://www.grin-global.org>) to keep abreast of the project status and offer additional feedback on GRIN-Global in the future

Discussion of Status of Beta Germplasm

The first chapter of the Status of Beta Germplasm was distributed to members for review. As each chapter is completed it will be added to the current version until it is completed. Estimated time until completion is June 2011. It should begin appearing on the GRIN website December of 2009.

Collection Trips

Greece 2005 for *Beta nana* – update

This plant exploration was completed in 2005 and seed is being regenerated and a project to look at genetic diversity within and among populations using SSR markers has begun. The information on the trip is available from the chairperson of the Sugar Beet CGC and should be published in early 2010 in the “Report of the ECP/GR *Beta* Working Group and World *Beta* Network. Third joint meeting 8-10 March 2006. Tenerife, Spain.” Published by Bioversity International.

Discussion of Morocco collection trip

Contacts with researchers in Morocco have been made and negotiations are proceeding among USDA-ARS, the Moroccan genebank and the Moroccan government for a joint plant exploration trip for *Beta* species along the Moroccan Atlantic Coast. We are hopefully that this joint collection trip will take place either the summer of 2010 or 2011.

This is a reminder to all ARS geneticist and public plant breeders to send seed from new releases to the Western Regional Plant Introduction Station at Pullman, Washington as well as to the NCGRP in Fort Collins, CO. They can be sent to:

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Horticulture Crops Curator
Western Regional Plant Introduction Station
59 Johnson Hall, WSU
Pullman, WA 99164-6402
509-335-3763
509-335-6654 (FAX)
bhellier@wsu.edu

Status of *Beta* report and vulnerability report

The 'Status of *Beta*' report is being updated chapter by chapter by Lee Panella. The first chapter should be circulated for review by Christmas 2009, with the subsequent chapters following at a rate of about one every 4 to 6 months. A draft vulnerability report will also be drafted by the chairperson and sent to the membership for review.

New Business

The question of "should we develop at 'core' of old ARS releases, and other developed germplasm in the NPGS" was discussed. The current core collection contains accessions for *Beta vulgaris* subspecies *maritima* and *Beta vulgaris* subspecies *vulgaris* landraces. It was decided that a list would be generated and a preliminary review of those accessions be undertaken. We would try and use any published knowledge as well as knowledge of some of the recently retired more senior public and private plant breeders. The chairperson agreed to start that process and work with Mitch McGrath on it. It was decided that our collection did not have enough accessions in the other sections in Beta to warrant a separate core collection for them.

The value of germplasm from other genebanks with MTAs attached to them was discussed because the National Plant Germplasm System is beginning to accept them. The industry breeders said that adopted germplasm bred by public breeders, based on these accessions, would depend on the value of that germplasm. If the trait were unavailable anywhere else and was of sufficient value, then it might be used.

The meeting was adjourned at 11:45 am.