

## SUGAR, STARCH AND FIBRE CROPS NETWORK

### 4.5. Sugar, Starch and Fibre Crops Network

**Working Groups:** *Beta*; Fibre Crops (Flax and Hemp); Medicinal and Aromatic Plants (MAPs); Potato.

The **Sugar, Starch and Fibre Crops Network Coordinating Group** consisted of four members: Roel Hoekstra, The Netherlands (Network Coordinator); Ana Maria Barata, Portugal; Lothar Frese, Germany and Martin Pavelek, Czech Republic.

The **Fourth Joint Meeting of the ECPGR Beta Working Group and the World Beta Network** was held during 20–22 June 2012 in Cappelle-en-Pévèle, France. It was hosted by the company Florimond Desprez.

***Beta nana*:** Based on studies showing the diversity among the few existing populations, the establishment of a first genetic reserve on Mount Olympus, Greece was proposed together with further investigation of the distribution of genetic diversity within existing sites. The WG agreed to use funds to help the Greek Gene Bank (GGB) to complete monitoring and collecting of samples on Mount Olympus and the activity started with sampling of *Beta nana* plants at three sites during a preliminary survey in September 2012.

***Patellifolia*:** There was general agreement that genebanks should be able to offer taxonomically clearly defined standard accessions. WG funds were available to organize a meeting to set up a project proposal focusing on taxonomic aspects and genetic diversity of *Patellifolia* and *Beta* section *Corollinae*. However, no feedback was received from WG members and the project idea was put on hold.

**Genetic reserves:** As a result of the project 'An Integrated European *In Situ* Management Work Plan: Implementing Genetic Reserves and On Farm Concepts' (AEGRO), priority genetic reserve sites for *Beta* and *Patellifolia* species were identified and proposed for 26 locations. These were selected on the basis of geographic, climatic and genetic data and they form the first components of species-specific networks of plant occurrences presumed to represent a significant part of intraspecific diversity of threatened wild beet species. The ECPGR WG members agreed to revise the proposed choice of genetic reserves and to expand the list beyond the EU territory; the representatives from Armenia, Azerbaijan, Georgia, Iran, Russian Federation and Turkey will apply the 4-step methodology developed in the AEGRO project and suggest sites for genetic reserves for species of the *Beta* section *Corollinae* by end 2013.

It was also agreed that WG members would ensure that *ex situ* samples be collected from each proposed genetic reserve site and deposited in the respective country genebank. These samples should also be proposed to the respective National Coordinators for inclusion into the European Collection and therefore be flagged in EURISCO as being part of AEGIS (see below).

**Rhizomania resistance in *in situ* populations:** A wild beet population growing nearby Kalundborg, Denmark, revealed its importance for resistance gene *Rz2*. The analysis, carried out by the Christian-Albrechts-University, Kiel, Germany, pointed at the need to extend the protection of the population and its Rhizomania resistance trait beyond the boundaries of the much smaller genetic reserve location suggested by the AEGRO project.

**AKER project:** A French research initiative for sustainable beet improvement has started as a private-public partnership led by Florimond Desprez and endowed with €20 million over eight years. Three thousand accessions have been requested from genebanks to start a breeding programme that will involve crossing wild material with elite lines. Extensive phenotyping and genotyping of hybrid lines will be carried out to identify improved material. The project was officially launched in September 2012. The GGB (Greece), the IPK (Germany) and the National Plant Germplasm System (NPGS, USA) provided the majority of the approximately 2600 accessions of which 2016 accessions will be investigated during the first phase of the project.

**AEGIS** (the meeting was the first opportunity of the *Beta* WG to discuss AEGIS implementation; its last meeting was in 2006):

- Determination of *Beta* accessions for the European Collection: the WG agreed to develop a list of candidate accessions using the *Beta* Core Collection, AKER collection and accessions of threatened species.
- To allow sorting out of accessions on the basis of their taxonomy, it was agreed that the taxonomies of the N.I. Vavilov Research Institute of Plant Industry, St. Petersburg, Russian

Federation (VIR) and of the Germplasm Resources Information Network (GRIN) of the US Department of Agriculture, Agricultural Research Service (USDA-ARS) should be compared and a list of matching taxonomies compiled by the end of 2013.

- Regeneration guidelines: The WG agreed to check the validity of the existing protocols for regeneration and to request the preparation of guidelines for the multiplication of *B. nana* to Barbara Hellier (USDA-ARS).

Lothar Frese was reconfirmed as the Chair of the *Beta* Working Group. He agreed to act as the Chair until the end of 2013. Yasmina El Bahloul was elected as the new Chair of the World *Beta* Network.

Scientific papers presented by members of the WBN can be published in 2013 in the Julius-Kühn-Archiv (JKA).

The user interface of the International Database for *Beta* (IDBB, <http://idbb.jki.bund.de/idbb>) was redesigned by staff of JKI, Quedlinburg, Germany. This Internet site provides access to information systems suited to support the development of a complementary conservation programme for *Beta* and *Patellifolia*.

As part of Work Package 5 (Engaging the user community) of the EC 'PGR Secure' project ([www.pgrsecure.org](http://www.pgrsecure.org)), JKI searched various genebank information systems in Europe and overseas and selected accessions with low to intermediate scores for disease susceptibility (Beet Yellow Virus, Beet Mild Yellowing Virus, *Rhizomania*, *Rhizoctonia solani*, *Cercospora beticola* and *Heterodera schachtii*). The objective is to stimulate the re-evaluation of the accessions, which in turn may result in a wider use of crop wild relatives, landraces and former breeders' varieties in breeding research and breeding. The list will be distributed to breeding companies and made available to any interested person on request.

A Newsletter entitled *Beta Short News* prepared by L. Frese and Yasmina El Bahloul was distributed to all WG members in December 2012 and posted on the ECPGR Web site.

## Summary of AEGIS development status

### Offers by countries

The following accessions were submitted to the attention of the Working Groups for their opinion on the suitability of their inclusion in the European Collection:

- IPK, Germany: *Beta* (394), flax (298), medicinal and aromatic plants (816) and *Solanum* sp. (excluding *S. melongena*) (1015)
- CGN, The Netherlands: flax (52) and potato (452).

### Beta WG

- European Collection: At the end of 2012, the preparation of a list of candidate accessions to be included in the European Collection using the *Beta* Core Collection, AKER collection and accessions of threatened species was underway. The list will be checked by the WG members and submitted to the respective National Coordinators for approval.
- AQUAS: All *Beta* WG curators will check the validity of the seed increase protocol previously developed by the WG and the FAO *Genebank Standards for the Conservation of Orthodox Seeds* to confirm whether they can be adopted by the WG and proposed for approval as part of AQUAS. Guidelines for the multiplication of *B. nana* are planned to be developed in collaboration with USDA.

### Fibre Crops (Flax and Hemp) WG

The WG has not reported any activities related to the implementation of AEGIS (see also 2011 report).

### Medicinal and Aromatic Plants WG

In 2012, no significant progress was achieved concerning AEGIS implementation. However, in the previous years after the implementation of the 'Oregano project', it was proposed that the data

collected within the project will contribute to the selection of oregano accessions to be included in the European Collection according to the AEGIS concept.

#### **Potato WG**

- European Collection: The project funded by the AEGIS Grant Scheme 'Identification of old potato clones having unreliable variety name by means of fingerprinting using microsatellite (SSR) markers to assist in setting up the AEGIS collection for potato cultivars' was extended by six months due to the late start of the project in the potato growing season and was completed in December 2012. A progress report (December 2011) is available online ([http://aegis.cgiar.org/aegis\\_grant\\_scheme/second\\_call.html](http://aegis.cgiar.org/aegis_grant_scheme/second_call.html)). Based on the fingerprinting of 500 old potato clones, the project was to identify mislabelling or confirm the genetic uniqueness of the clones and indicate which of the fingerprinted varieties will be the most appropriate for inclusion in the European Collection. The final report will be available soon.

#### **Outlook for 2013**

The Working Group on *Beta* is planning to set up a monitoring schema of a genetic reserve of *Beta patula*. The University of Madeira with the support of the Julius Kühn-Institute submitted a research proposal entitled '*Beta patula*: a model for conservation of an endangered wild species through use in plant breeding' to the German Academic Exchange Service in December 2012 to acquire the necessary funding.

The Working Group on *Beta* will send a list of candidate accessions to be included in the European Collection to the AEGIS team.