



# **A European Genebank Integrated System (AEGIS): Concept and Reality**

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# Content



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# Historical background



- Collecting of genetic diversity for breeding purposes made since 1920-30ies (Vavilov)
- Many collections in European genebanks stem from breeders collections
- More systematic conservation efforts of threatened landraces and CWRs initiated in 1960s and 1970s, incl. establishment national genebanks
- Collecting (51K past 10 years - nat. and intern.) and germplasm exchange increased holdings > 2.4 mill.

# Historical background



- Approx. **1,100,000** accessions included in EURISCO (of which 70% have “biological status”)
- Of **875,000** accessions with country of origin status, **38%** are **maintained in country of origin** (varying from 22% in north and 54% in south)
- **48%** accessions with **biological status**, obtained through collecting (and thus, are expected to be unique + having good data)
- —> **Above data support estimate that only approx. 35-50% of accessions are unique!**

# Historical background



Besides unwanted duplication other reasons to increase efficiency and to establish AEGIS are:

- significant variation in quality of conservation efforts across Europe
- inadequate information on identity and breeding value of germplasm
- lack of uniformity in terms and conditions for access to conserved germplasm

# Historical background



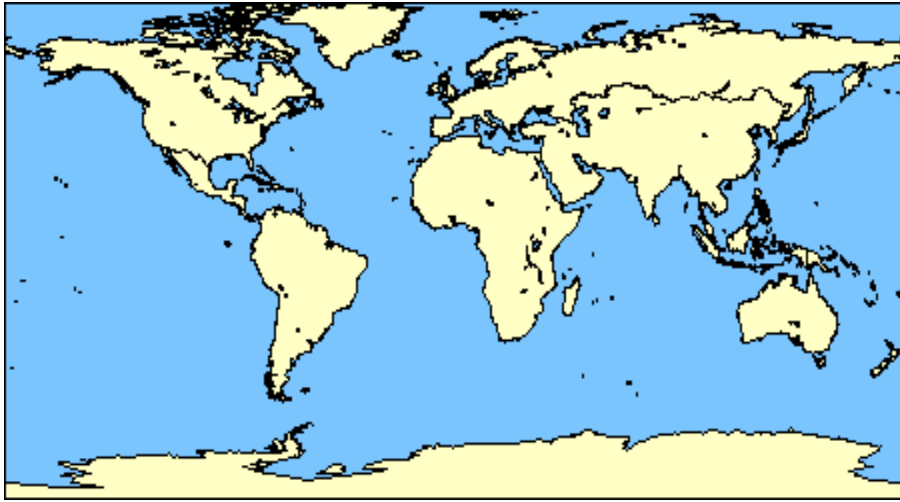
In addition, **further arguments** for establishing AEGIS came from ECPGR (early 2000s):

- Reported **difficulties in proper PGR maintenance** because of:
  - Lack of long-term conservation facilities
  - Insufficient safety duplication
  - Regeneration backlogs
- Providing concrete options for **sharing conservation responsibilities** in Europe (being discussed since 1998)

# Background to AEGIS



## ■ Worldwide



## ■ Europe



- About **1,750** genebanks/collections
- Approx. **7.4 million** accessions
- Estimated **25-30% unique**
- Approx. **62%** Annex I spp. (SOW II, 2010)
- Approx. **30,300 *Allium*** accessions held in **81 countries** (WIEWS, 2011)

- App. **625** genebanks/germplasm coll.
- **> 2.47 million** acc. (SOW II, 2010)
- Est. **35-50% unique** (EURISCO, 2011)
- Approx. **16,400 *Allium*** accessions held in **77 genebanks; 32 countries** (WIEWS 2011)

# Background: legal aspects



- **CBD (1993 – a new ABS “Nagoya Protocol”)**
  - Commitment by countries to conserve biodiversity and associated TK to provide access (PIC and mutual agreed terms)
  - Establish conservation monitoring mechanisms (checkpoints)
  - Protocol will not interrupt ITPGRFA’s MLS or other agreements
- **GPA (1996 – now being updated)**
  - Increase the efficiency of conservation activities
  - Establishment of a rational global conservation system
  - Reduce unnecessary duplication of efforts and accessions



# Background: legal aspects



- **ITPGRFA (2004 – implementation underway)**
  - Enhance national commitments and international cooperation
  - Establishment of Multilateral System (MLS) with clear ABS arrangements for Annex I species
  - Use of SMTA for exchange of Annex I germplasm
  - (ECPGR decided to use same text also for Non-Annex I species)

# AEGIS concept:

## Establishment and milestones



1. ECPGR **SC decision** to initiate establishment of AEGIS in 2006 (**facilitated by establishment IT**)
2. AEGIS Advisory Committee appointed (**in 2009**)
3. ECPGR Secretariat (incl. **AEGIS Coordinator**) to coordinate
4. **Feasibility studies** for 4 model crops conducted (2004-2008)
5. **Strategic framework** policy guide agreed (2008)
6. **Memorandum of Understanding (MOU)** developed and currently signed by 26 countries

# AEGIS concept:

## Establishment and milestones



7. Agreement on development of **quality management system**; **AQUAS** discussion paper
8. Agreement on **selection requirements** for **European Accessions** and **selection criteria** for MAAs
9. **Competitive Small Grant Scheme**:
  - **First Call** 18 proposals received and 3 awarded;
  - **Second Call** published October last year; 12 proposals received; evaluation process ongoing
10. **EUROGENEBANK** proposal to **FP7 Research Infrastructure Call**; met threshold but not selected for funding; other opportunity likely for **2012 Call**

# Model Crops



- **Seed propagated** material – annual
- **Annex I crops** of ITPGRFA

## ■ ***Avena***

selfing



## ■ ***Brassica***

outcrossing



- 
- **Vegetatively** propagated material – biennial and perennial
  - **Non Annex I** of ITPGRFA

## ■ ***Allium***

***(Veg.  
propag.)***



## ■ ***Prunus***



# AEGIS concept: principles



## General

1. AEGIS is seen as assisting countries/region to **implement IT**
2. Intention to **involve ALL countries**, irrespective of their current conservation performance
3. Building on **existing ECPGR structures** and processes (SC provides oversight; Advisory Comm. supervision; Networks and WGs play key technical role)
4. Pre-dominantly **self-financed** and “**in-kind**” contributions
5. Building on **commitments (in MoU)** of countries/institutions

## The European Collection

1. **Free and timely availability** of accessions to *bona fide* users

# AEGIS concept: principles



2. Similar terms for access and benefit-sharing to **non-Annex 1** species as in SMTA of the ITPGRFA
3. **European Accessions** maintained as a dispersed collection
4. AEGIS genebanks and other participating institutions will perform all selected activities according to **common agreed standards**
5. Accession-level passport and non-confidential characterization and evaluation **data made available on EURISCO** web site
6. **Safety-duplicates** of all European Accession in European genebank(s) and/or at the Svalbard Seed Vault
7. **TORs for each body** are/will be established through a to be agreed process by Steering Committee

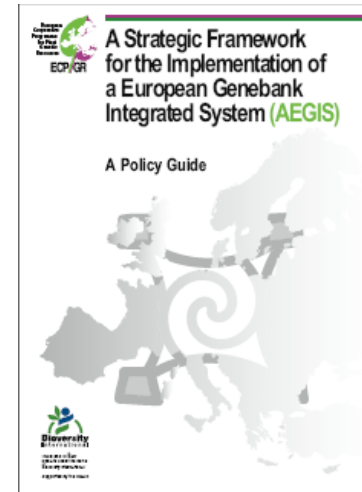
# AEGIS concept: objective



To create a European Genebank Integrated System for plant genetic resources for food and agriculture, aimed at conserving the genetically unique and important accessions for Europe and making them available for breeding and research. Such material will be safely conserved under conditions that ensure genetic integrity and viability in the long-term.

# AEGIS concept: components

1. A **Strategic Framework** for the Implementation of AEGIS - A Policy Guide
2. Formal **agreement** (MOU), currently with 26 countries and with 19 institutions within countries (i.e. **Associate Members**)
3. **European Collection**
  - only contains agreed accessions countries for each crop;
  - simplified selection procedure established;
  - in public domain;
  - readily available
  - **selection processes on the way**
4. **Generic (FAO)** and crop specific (**WGs**) standards
5. **Template** for development of **genebank manuals**





# AEGIS concept: components

6. Quality management system (reporting; monitoring; capacity building – **under development**)
7. EURISCO as information portal for European Collection (**operational; modifications needed**)



## 35\*. AEGIS Status

(AEGISSTAT)

The coded status of an accession with regard to the European Genebank Integrated System (AEGIS).

Provides the information, whether the accession is conserved for AEGIS.

0 – not part of AEGIS

1 – part of AEGIS

If the AEGIS status is unknown, the field stays empty

8. Dedicated **AEGIS website:**

<http://aegis.cgiar.org/home.html>



## A European Genebank Integrated System

AEGIS &gt; About AEGIS

 Search

### About AEGIS

- > Objectives
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- > Role of Associate Members
- > AQUAS
- > Relationship of AEGIS with ECPGR
- > AEGIS and the Treaty
- > Latest news

### Membership

### Structure

### Implementation

### Documents

### About AEGIS



The AEGIS initiative is the brain child of the European Cooperative Programme for Plant Genetic Resources (ECPGR)<sup>1</sup>. At the present time, plant genetic resources for food and agriculture (PGRFA) in Europe are conserved in some 500 institutions scattered over more than 40 European countries. While coordination of activities is carried out within the framework of the ECPGR and the ECPGR Crop Working Groups, each genebank basically operates on its own, providing for the conservation of a full range of crop germplasm important for agriculture in the area it serves.

With this in mind, the countries of the European region believe that there is a need to improve coordination and share responsibilities with respect to the conservation of, management of and access to PGRFA in Europe by setting up AEGIS.

The legal mechanism for establishing AEGIS is the Memorandum of Understanding (MoU) entered into by eligible countries of the region and the European Commission. The MoU sets out their commitments as full Members of AEGIS and the main lines of AEGIS. To be eligible for membership, the countries listed must be members of ECPGR, and either Contracting Parties to the Treaty or otherwise willing to make PGRFA under their jurisdiction available under the conditions of the Treaty.

The MoU comes into force on its signature by at least 10 eligible countries. The MoU is supplemented by a series of Associate Member Agreements for the individual genebanks that wish to become part of AEGIS.

The *Associate Member Agreements* is entered into by the genebanks with the ECPGR National Coordinator for the country concerned, who undertakes to work with the genebank in implementing AEGIS, and who is ultimately responsible for overseeing the genebank's compliance with its obligations under the agreement.

<sup>1</sup> ECPGR was founded in 1980 on the basis of the recommendations of the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO) and the Genebank Committee of the European Association for Research on Plant Breeding (EUCARPIA). It is a collaborative Programme among most European countries, aimed at facilitating the long-term conservation on a cooperative basis of plant genetic resources in Europe and their increased utilization. The Programme, which is entirely financed by the participating countries and is coordinated by a Secretariat at Bioversity International, operates through broadly focused Networks dealing with groups of crops or general themes related to plant genetic resources.

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### RELATED INFORMATION



The International Treaty

### Highlights

#### EUROGENEBANK PROPOSAL SUBMITTED

In response to the Seventh Framework Programme call FP: INFRA-2010-1.1.7, Plant Genetic Resources Centres, Bioversity International has coordinated the preparation of the project proposal **EUROGENEBANK**.

The proposal was submitted on **3 December 2009**. For more information on the submitted proposal, [click here](#)



[http://aegis.cgiar.org/about\\_aegis.html](http://aegis.cgiar.org/about_aegis.html)

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# AEGIS reality



- Despite dedicated budget, limited funds available keep establishment speed low
- Routine applications (such as molecular tools) in accession management are expensive
- EUROGENEBANK proposal (FP7 RI3) unsuccessful
- Possible new proposal for 2012 Call
- Development of components and processes rather slow and sometimes cumbersome
- Learning by doing

# AEGIS reality



- Dependence on “in kind” contributions of members
- Not all countries and genebanks are actively engaged
- Data coverage in EURISCO and CCDBs and quality of available information hinders steady progress with selection of European Accessions
- Coordination of AEGIS too hands off?

# Conclusions and perspectives



- Good progress being made despite constraints
- Pragmatic decisions and solutions are aimed at (especially to establish European Collection and agreed crop specific standards)
- Additional funding will be sought (FP7; others?)
- European Collection expected to provide attractive vehicle for additional funding for specific projects
- Rationalization process can only start if European Collection (for individual crops) will be in place

# Conclusions and perspectives



- Better quality germplasm with relevant data are expected, incl. C&E data (phenotypic and genotypic!)
- Recent ECPGR External Review fully supported and assessed concept/progress positively



**Thank you!**