

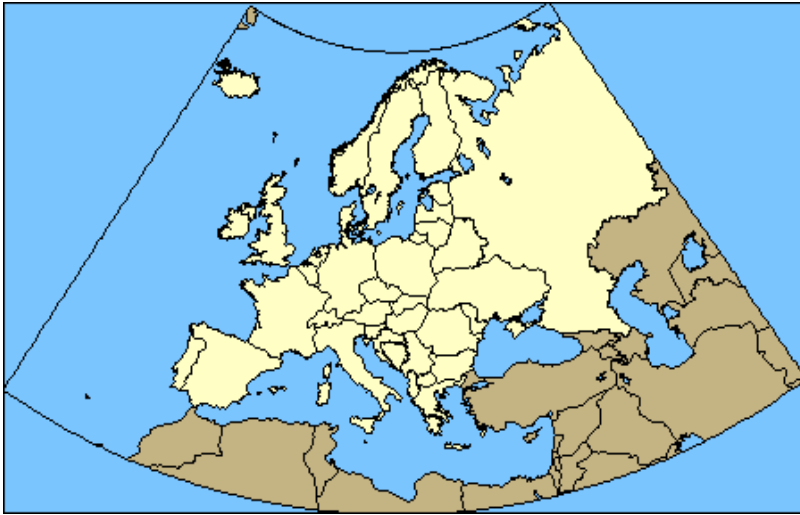


# An update on the establishment of A European Genebank Integrated System



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# Background



## ■ Europe

- App. 625 genebanks/germplasm coll.
- > 2.47 million accessions (SOW II, 2010)
- 35-50% unique (estimate based on Eurisco data)
- Example: approx. 26 500 *Pisum* accessions; held in 28 countries (EURISCO, May 2013)

# Background

- **ECPGR:**
  - Reported difficulties in PGR maintenance:
    - ✓ lack of long-term conservation facilities
    - ✓ insufficient safety-duplication
    - ✓ regeneration backlogs
    - ✓ inhomogeneous quality of material
- **GPA** and **International Treaty** call for “efficient and sustainable” system of *ex situ* conservation
- Substantial unwanted **duplication** of germplasm and efforts

# AEGIS Objective

To create **A** European **G**enebank **I**ntegrated **S**ystem 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.**

# Perceived Benefits of AEGIS

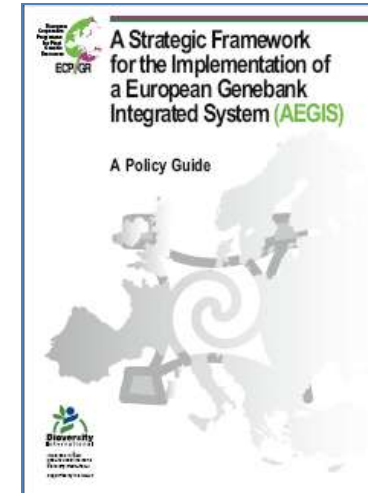
- Improved **security of germplasm** through long-term commitment and systematic safety-duplication
- Facilitated access to and **availability** of germplasm
- Improved **quality standards** of conserved material
- **Cost efficient** conservation activities
- **Reduced unwanted duplication** of germplasm material
- Improved **sharing of knowledge** and information

# Establishment and milestones of AEGIS

1. Steering Committee **decision** to initiate establishment of AEGIS in 2006
2. AEGIS Advisory Committee appointed
3. ECPGR Secretariat (incl. **AEGIS Coordinator**) to coordinate
4. **Feasibility studies** for 4 model crops conducted (2004-2008)
5. Agreement on development of **quality management system**; **AQUAS** discussion paper

# Key components of AEGIS

1. A **Strategic Framework** for the implementation of AEGIS
  - A Policy Guide
2. Formal **agreement** with countries (MoU) and institutions within countries (Associate Membership)
3. **European Collection**
4. **Quality management system** – AQUAS



# AEGIS membership status



1. **Albania** (06 May 2009) - [Associate Members](#)
2. **Austria** (05 December 2012)
3. **Azerbaijan** (16 July 2009) - [Associate Members](#)
4. **Belarus** (02 November 2011) - [Associate Members](#)
5. **Belgium** (01 June 2012) - [Associate Members](#)
6. **Bosnia and Herzegovina** (19 May 2010)
7. **Bulgaria** (02 December 2009) - [Associate Members](#)
8. **Croatia** (02 December 2009) - [Associate Members](#)
9. **Cyprus** (15 September 2012) - [Associate Members](#)
10. **Czech Republic** (23 July 2009) - [Associate Members](#)
11. **Denmark** (22 February 2010) - [Associate Members](#)
12. **Estonia** (22 May 2009) - [Associate Members](#)
13. **Finland** (02 December 2009) - [Associate Members](#)
14. **Georgia** (18 May 2009) - [Associate Members](#)
15. **Germany** (05 November 2009) - [Associate Members](#)
16. **Hungary** (22 November 2011) - [Associate Members](#)
17. **Iceland** (22 October 2010)
18. **Ireland** (22 July 2009)
19. **Latvia** (01 June 2012)
20. **Lithuania** (12 October 2010)
21. **Montenegro** (16 December 2010)
22. **Netherlands** (28 May 2009) - [Associate Members](#)
23. **Norway** (17 August 2009) - [Associate Members](#)
24. **Poland** (17 May 2010)
25. **Portugal** (20 November 2009)
26. **Romania** (14 April 2010) - [Associate Members](#)
27. **Slovakia** (17 June 2009) - [Associate Members](#)
28. **Slovenia** (21 September 2009) - [Associate Members](#)
29. **Sweden** (31 May 2011) - [Associate Members](#)
30. **Switzerland** (27 July 2009) - [Associate Members](#)
31. **Turkey** (14 November 2011) - [Associate Members](#)
32. **Ukraine** (30 April 2009)
33. **United Kingdom** (18 June 2010) - [Associate Members](#)

**51 Associate Membership Agreements**



# The European Collection

- The European Collection will consist of **dispersed accessions**, i.e. a virtual European genebank
- Through signing the **MOU** countries accept responsibility for European Accessions:
  - Long-term conservation according to quality standards
  - Availability through Standard Material Transfer Agreement (SMTA)
  - Safety-duplication
- Working Groups are responsible for:
  - Selection of European Accessions
  - Establishment of crop-specific quality standards
  - Preparation of crop conservation/management strategies

# Selection Requirements

1. Material under the management and control of the governments of member countries and their associate members, in the public domain and offered by the associate members for inclusion into AEGIS
2. Genetically unique within AEGIS, to the best available knowledge (i.e. genetically distinct accessions; assessment based on available data and/or on the recorded history of the accession)
3. Plant genetic resources for food and agriculture as defined in the International Treaty as well as medicinal and ornamental species
4. European origin or introduced germplasm that is of actual or potential importance to Europe (for breeding, research, education or for historical and cultural reasons).

# Selection Criteria

- Need to be agreed by **each WG** for their specific crop(s)
- Used when deciding **which accession to accept** among two or more (quasi) duplicate or similar accessions/genotypes (i.e. **MAAs**)
- **WGs** to decide if any of these criteria have **prevalence** over the others, or that the selection should be the result of a **combination of two or more** criteria

# Example of 'generic' Selection Criteria

1. Maintained in “country of origin”
2. A known origin (collected and/or bred; pedigree data!?)
3. Comprehensiveness of passport information
4. Number of regeneration/multiplication cycles (Do we know?)
5. Health status (i.e. is the germplasm disease free?)
6. Existence of morphological/molecular characterization data
7. Existence of (agronomical) evaluation data
8. Validated accession name (particularly relevant for perennial clonal crops where the same name can be attributed to different accessions; history of individual accessions is important; special attention to be paid to synonyms and homonyms)

# Suggested selection procedure of the European Accessions -1

1. WGs elaborate a list of candidate European Accessions for a crop “pool”, as documented either in EURISCO and/or in CCDB → **LIST OF CANDIDATE ACCESSIONS**
2. Agree on a **selection procedure** (examples on the AEGIS web site)
3. Use agreed selection criteria to **select European Accessions** (including Most Appropriate Accessions among “duplicates”)

## Suggested selection procedure of the European Accessions -2

4. WG sends list with candidate accessions to respective National Coordinators for consideration of possible inclusion in the European Collection
5. NC, in close consultation with the holding institute(s), indicates to WG whether or not proposed accessions can be included in European Collection
6. Accessions accepted by the country for inclusion in the European Collection are flagged in EURISCO as AEGIS accessions

# Suggested selection procedure of the European Accessions -3

## Complementary process:

- 1) A genebank or country** (National Coordinator) identifies all maintained accessions that originated in that country and are likely unique and offers these to AEGIS
- 2) WG** checks that the offer does not conflict with agreed selection criteria and sends comments back to National Coordinator
- 3) Mutually agreed accessions** are flagged in EURISCO

# Specific Example: Selection procedure agreed by the Wheat WG

- **Database manager** prepares a list of accessions kept in their countries of origin, based on reliable passport data (starting with advanced cultivars)
- **WG members** verify:
  - Safety-duplication done or planned
  - Presence of sufficient seed for distribution
  - Agreement of genebank to include into AEGIS
  - Possibility to add other 'unique' accessions to the list
- **Database manager** verifies that there are no evident duplications or gaps of accessions and compiles a final list based on feedback from WG members



# The European collection today

- Selection of European Accessions: an evolutionary process
- 8 WGs have agreed on selection procedures. 4 WGs have first lists of approx. 4000 selected candidate accessions
- Germany (IPK) offered about 20 000, the Netherlands (CGN) 5864, Czech Rep. 394

# The European collection today

## European Accessions

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

Total European Accessions: **11524**

Genus	European Accessions	Countries
Abelmoschus	9	Germany (9)
Abutilon	6	Germany (6)
Achnatherum	1	Germany (1)
Adonis	1	Germany (1)
Agastache	2	Germany (2)
Agrimonia	1	Germany (1)
Agropyron	2	Germany (2)
Agrostis	11	Netherlands (11)
Alcea	8	Germany (8)
Alliaria	6	Germany (6)
Allium	388	Czech Republic (82), Germany (155), Netherlands (151)
Althaea	3	Germany (3)
Ammi	7	Germany (7)
-	-	-

pause



# AEGIS Quality System (AQUAS)

- Quality assurance based on the principles:
  - Say what you do
  - Do what you say
  - Let an independent body check that you do what you say
  - Correct and improve what you say you do

# AQUAS principles

- Consensus
- Agreed minimum standards
- Capacity building
- As little bureaucratic as possible
- Monitoring system (not policing, but guiding and advisory approach)

# AEGIS Quality System (AQUAS)

- 1) Template for operational genebank manual  
(approved by the AEGIS Advisory Committee  
and available from AEGIS web site)**
  - All Associate member institutes are encouraged and expected to compile it and upload it on AEGIS Web site
  - **3** genebank manuals are online plus **1** draft received

# AEGIS Quality System (AQUAS)

## 2) Generic operational genebank standards

- a) Combined effort with FAO to develop generic operational genebank standards; active ECPGR participation in the process
- b) Generic standards on seed, field and *in vitro*/cryopreservation genebanks approved by FAO Commission in April 2013
- c) 7 WGs developed generic standards; still to be 'harmonized' with FAO standards

# AEGIS Quality System (AQUAS)

- 3) **Agreed minimum crop-specific technical standards** (complementing generic standards)
  - 6 WGs have or are developing crop-specific standards for one or more routine operations (using FAO standards as reference)
- 4) **An AEGIS Safety-duplication Policy** has been approved by SC
- 5) **An AEGIS Distribution policy** is in preparation
- 6) **Record keeping, monitoring and reporting**
  - Under development



# Proposed action points for WG workplan

1. Agree on process to identify Grain legumes accessions for the European Collection
2. Compile first lists of possible AEGIS accessions
3. Decide whether crop-specific standards are needed beyond FAO genebank standards and, in case, plan for their elaboration.

The end

