



AEGIS

An ECPGR initiative to establish a rational European genebank system

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Content of presentation

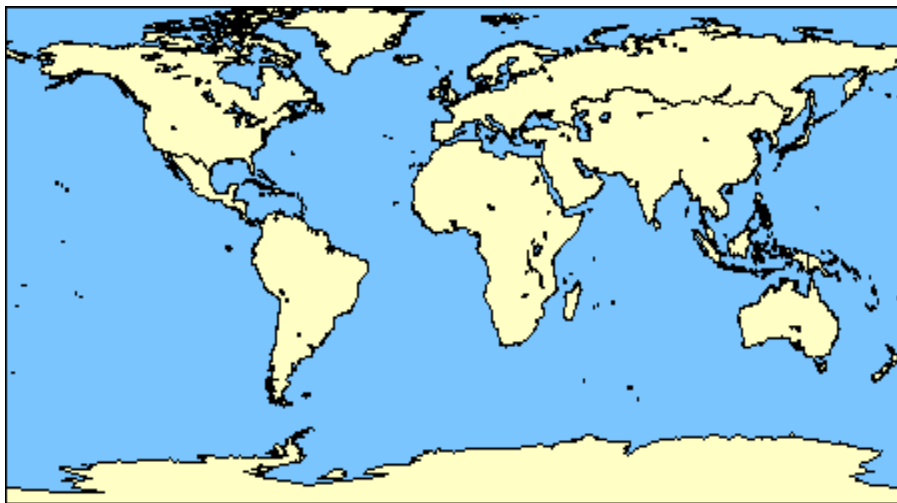


1. Background to AEGIS
2. Feasibility study and its results
3. Process of identifying MAAs
4. Genebank quality management system
5. Legal aspects and considerations
6. Next steps
7. Proposed WG responsibilities

Background



■ Worldwide



- app. 1500 genebanks/germplasm coll.
- app. 6 million accessions
- Estimated 2 million unique
- Approx. 25,000 Allium accessions (SoW)

■ Europe



- app. 500 genebanks/germplasm coll.
- app. 2 million accessions
- 30-40% unique(?)
- Approx. 13,000 Allium accessions
- Held in 32 genebanks; 20 countries

Background: legal



- **CBD (1993)**
 - Commitment by countries to conserve biodiversity and to provide access (PIC and mutual agreed terms)
- **GPA (1996)**
 - Increase the efficiency of conservation activities
 - Establishment of a rational global conservation system
 - Reduce unnecessary duplication of efforts and accessions
- **ITPGRFA (2004)**
 - Enhance national commitments and international cooperation
 - Establishment of Multilateral System (MLS)

Background: Europe



- European Cooperative Programme for Plant Genetic Resources (ECPGR)
 - Since 1980; Europe wide; most major crops/groups
- ECPGR Crop Working Groups (incl. *Allium*):
 - Reported on difficulties in proper PGR maintenance:
 - ✓ lack of long-term conservation facilities
 - ✓ insufficient safety-duplication
 - ✓ regeneration backlogs
 - Discussed options for sharing conservation responsibilities in Europe already in 1998

Towards AEGIS



- ECPGR Steering Committee (9th Meeting, Turkey 2003):
 - **Decision** to initiate and fund a feasibility study (mid 2004 – mid 2006)
 - Using **4 "model" crops** (i.e. *Avena*, *Allium*, *Brassica* and *Prunus*)
 - Coordination Unit based at Bioversity International
 - **Objectives:**
 - assess organizational,
 - technical,
 - legal/ political and
 - economic feasibility
- as basis for the establishment of AEGIS

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 Feasibility Study Activities:



- Tasks / Outputs for the **Project Partners**:
 - Assess different **approaches** and propose **models** for the system and discuss pros and cons
 - Propose an **organizational structure**
 - Address **legal/political issues** in developing the system
 - Analyze the concept of **Most Appropriate Accession**
 - Draft guidelines on **quality standards** for long-term conservation
 - Applicability to **other crops**

Findings (1)

Organizational structures and institutional relationships



- ECPGR SC provides "governance"
- AEGIS Advisory Committee provides oversight
- Build on capacity of (national) genebanks
- Use existing ECPGR institutional framework
- Important role + responsibilities for Crop WGs
- Coordinating role by National Coordinators

Findings (2)

Organizational structures and institutional relationships



- European Collection “system” encompasses following responsibilities:
 1. Long-term conservation of public domain AEGIS Accessions (including routine operations such as viability testing, regeneration, characterization/evaluation; services of entire Network!)
 2. Safety duplication
 3. Required routine germplasm management activities
 4. Germplasm distribution

Findings (3)

Organizational structures and institutional relationships



- European Coordinating **Lead Institution** (for each crop genepool)
 - o Operate under Crop WG
 - o Implement (part of delegated) crop conservation action plans, e.g.:
 - ❖ **manage central crop database**
 - ❖ **coordinate collecting activities**
 - ❖ **coordinate characterization/ evaluation**
 - ❖ EU programme spoke's person

Summary of results so far



- Broad agreement to establish an efficient, well coordinated and **rational European Collection**
- Identification of **Most Appropriate Accessions** (i.e. criteria)
 - To place MAAs in **public domain**
 - To be **readily available**
 - Countries to accept **long-term conservation responsibility** for MAAs
 - Using to-be-agreed **quality standards**
- Formalizing commitments through **Collective MOU**
- Whenever possible, using **existing ECPGR bodies** to oversee, coordinate and implement activities
- Request **ECPGR Secretariat to coordinate** process
- Mid-term ECPGR SC meeting: Agreement to continue **AEGIS process as ECPGR Programme element**

Perceived Benefits of AEGIS



- Improved **collaboration** between countries
- **Cost efficient** conservation activities
- **Reduced duplication** of germplasm material
- Improved **quality standards**
- Increased **effectiveness in regeneration**
- Facilitated **access and availability** of germplasm
- Improved **security of germplasm** through safety-duplication
- Improved **sharing of knowledge and information**

Concept of Most Appropriate Accession (MAA) - 1



Primary criteria:

- A. fully discriminative, i.e. accepted accessions will need to comply with all requirements below;
 - B. these criteria are not crop-specific
1. In the **public domain** (i.e. Annex I material that is in the MLS and non-Annex I material designated to AEGIS by governments or any other holder)
 2. **Genetically unique** (i.e. genetically distinct accessions; assessment based on available data and/or on the recorded history of the accession)
 3. **Agronomically** (incl. research material) and/or **historically/culturally important**

Concept of Most Appropriate Accession (MAA) - 2



4. **Plant Genetic Resources**, incl. medicinal and ornamental spp., and CWR (i.e. excluding forest genetic resources; non-plant agrobiodiversity species, etc.)
5. **European origin or introduced germplasm** that is of actual or potential (breeding/research) importance to Europe

ABOVE CRITERIA ARE NOT VERY STRICTLY DEFINED AND SHOULD LEAVE ROOM FOR FLEXIBILITY

Secondary criteria:

- A. not fully discriminative
- B. might be crop-specific
- C. used when deciding which accession to accept among two or more "quasi duplicate" or similar accessions

Concept of Most Appropriate Accession (MAA) - 3



D. WGs to decide if any of these considerations has prevalence over the others, or that the selection should be the result of a combination of two or more secondary 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?)

Concept of Most Appropriate Accession (MAA) - 4



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)
9. Others?

APPLICATION OF CRITERIA WILL LARGELY DEPEND ON AVAILABILITY OF INFORMATION. SUGGESTIONS ON HOW BEST TO PROCEED IF INFORMATION IS SCANTY?

Genebank quality system (1)

- Focus on **genebank operational** (e.g. seed storage, regeneration protocols, etc) and not on **product related** aspects (e.g. quality of composition of collection, info supply, etc)
- Important to distinguish between **quality assurance** and **quality standards!**
- **Quality assurance** is based on **principle** that you:
 - a) **say what you do**
 - b) **you do what you say** and
 - c) **you let an independent body check that you do what you say** (i.e. an audit like ISO9001)

Genebank quality system (2)

- Develop ECPGR genebank quality assurance system
- **Technical quality standards process:**
(crop- and method-specific; consensus required)
 - each genebank writes down what its **routine procedures** are
 - This will be a good basis for discussing **standards** and a good **feedback mechanism** aimed at improving quality!
 - Bioversity developed a **framework** for seed management related aspects

Genebank quality system (3)

- Possible process to follow to establish standards:
 1. Inventory of technical **standards on routine operations** in genebanks (combined with inventory of routine procedures)
 2. Based on inventory and published standards, i.e.
 1. FAO-IPGRI Genebank Standards
 2. Regeneration guidelines (IPGRI, 1997)
 3. Others?propose **draft AEGIS standards**
 3. Assess these **standards** on their scientific merits with respect to **longevity and genetic integrity** (especially regarding storage, viability testing and regeneration)
 4. Agree on **minimum set** of AEGIS standards

Legal aspects to be considered

1. Legally binding **agreement** between all partners, i.e. the **Collective MOU** (**elements being identified**)
2. Where applicable or required, collaborating **institutes** might conclude **contracts** (possibly crop genepool specific) to arrange detailed management aspects (**e.g. building on existing arrangements**)
3. Need to involve national **policy-makers** in process (**explaining what AEGIS is; identifying MAAs; accepting AEGIS responsibilities**)
4. Question whether AEGIS countries have **ratified IT**. (**If not (yet), they should accept AEGIS principles to be able to participate!**)

Legal aspects to be considered

5. Type of **MTA** to be used by AEGIS? → **(S)MTA**
(proposed for Annex I and non-Annex I species;
in case of the latter the MTA will be very similar)
6. All forms of a genetic resource should be
exchanged with (S)MTA (excluding dead
material)
7. Importance of **phytosanitary**/quarantine
considerations when exchanging germplasm

Current implementation status of AEGIS



- **Strategic Framework paper** being finalized by Bioversity Local Task Force, based on findings of 4 model crop groups, in close consultation with AEGIS SC and being endorsed by ECPGR SC
- General description of **AEGIS goal, scope, procedures, benefits** and its **governance** (= ECPGR SC)
- Agreed **implementation process** (as described above), which is seen as important contribution to **IT implementation**
- AEGIS coordination unit established
- TORs and composition of new Advisory Committee, Local Task Force and Coordinator established
- AEGIS adopted as **integral part** of ECPGR programme
- Funding comes from **regular ECPGR budget**

Steps ahead in making AEGIS operational (1)



GENERAL/AEGIS COORDINATION

1. Develop **Collective Memorandum of Understanding (MOU)**
2. Agreements to be signed by **each country with AEGIS**; collectively these will form the **MOU**
3. Develop **model institutional contract**
4. Development of **Quality Management System** for long-term conservation of the AEGIS Collection
5. **Survey** institutional capacities and service conditions
6. Assessing **economic implications** of AEGIS implementation
7. Work closely with **4 model crops** in implementing steps
8. Lobby for and seek **funding** in order to carrying out the implementation process.

Steps ahead in making AEGIS operational (2)



9. Work closely with four model crops in implementing above steps
10. Lobby for and seek funding in order to carrying out the implementation process through national commitments, regional commitments (i.e. EU), global opportunities (Trust?) and project proposals
11. Others?

Steps ahead in making AEGIS operational (3)



Proposed responsibilities of Crop WGs:

1. Establish **criteria** for Most Appropriate Accessions
2. Establish **draft list of European Accessions**
3. **Oversee process to identify AEGIS Accessions** that will form the European Collection, incl. **sharing information** on identified accessions with respective National Coordinators as suggestions for “designation”
4. Draft and agree on **crop specific technical standards** and assess applicability of **generic management standards**
5. Prepare/coordinate implementation of **conservation action plan**
6. Improve **data quality** and **coverage** of AEGIS accessions
7. **Survey institutes** (i.e. capacities and availability)

A faint, stylized background illustration of a globe. A hand is shown holding a tablet or screen, with a spiral pattern emanating from the center of the globe. The entire scene is rendered in a light gray tone against a white background.

Thank you!