



AEGIS:

An example of using a network approach
to rationalize conservation

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Content of presentation

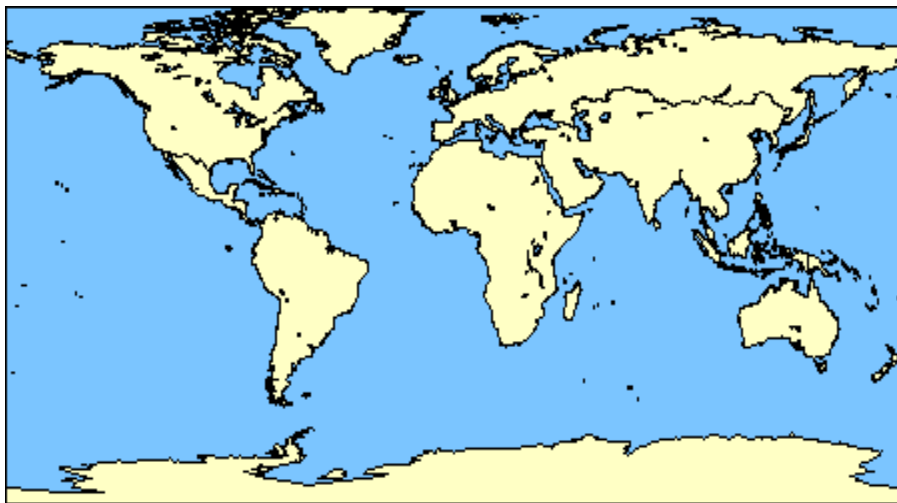


- Brief overview of AEGIS
- Key AEGIS activities:
 - Process of identifying MAAs
 - Developing quality management system
 - Managing dispersed European Collection
- How will AEGIS contribute to rationalization?
- Next steps in AEGIS implementation process
- Some issues

Some facts and figures



■ Worldwide



- app. 1500 genebanks/germplasm coll.
- app. 6 million accessions
- Estimated 2 million unique

■ Europe



- app. 500 genebanks/germplasm coll.
- app. 2 million accessions
- Only 30-40% unique(?)
- > 40 European countries

Background: ECPGR



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

Establishing 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
- Initiation of **AEGIS feasibility study**: mid 2004
- **Objectives of study** (as basis for the establishment of AEGIS):
 - Assess different **approaches** and propose **models** for the system
 - 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

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*



- *Prunus*



Summary of results so far



- Broad agreement to establish an efficient, well coordinated and **rational European Collection**; **Strategic Framework document**
- Process to identify **Most Appropriate Accessions**
- MAAs are by definition in **public domain** and **readily available**
- Countries to accept **long-term conservation responsibility** for MAAs; applying agreed **quality standards and QM system**
- Formalizing commitments through **Collective MOU**
- Whenever possible, using **existing ECPGR bodies** to oversee (=SC), coordinate (CWGs) and implement activities (NCs)
- Request **ECPGR Secretariat to coordinate** process
- Mid-term ECPGR SC meeting: Agreement to continue **AEGIS process as ECPGR Programme element**

Perceived Benefits of AEGIS



- **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**

Findings (1)

Organizational structures and institutional relationships



- ECPGR SC provides “governance” to programme
- 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
- Critical role of EURISCO and CCDBs

Findings (2)

Organizational structures and institutional relationships



- European Collection “system” encompasses the **long-term conservation** of public domain European Accessions
- This includes **routine operations** such as :
 - ❖ viability testing
 - ❖ regeneration
 - ❖ safety duplication
 - ❖ collecting
 - ❖ germplasm distribution/exchange
 - ❖ information management
 - ❖ characterization/evaluation
 - ❖ services (of entire Network!)

Findings (3)

Organizational structures and institutional relationships



- Crop WGs can delegate responsibilities to an 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

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. Accessions in **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)

Concept of Most Appropriate Accession (MAA) - 2



3. **Agronomic** (incl. research material) **and/or historically/culturally** important
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

Concept of Most Appropriate Accession (MAA) - 2



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;
- 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

Concept of Most Appropriate Accession (MAA) - 3



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
5. Health status (i.e. germplasm to be disease free)
6. Existence of morphological/molecular characterization data

Concept of Most Appropriate Accession (MAA) - 4



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 GOOD INFORMATION.

Genebank quality system



General aspects:

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)
2. **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).
3. ECPGR will develop a **quality assurance/management system**.
4. Each genebank should write down its **current procedures**
5. This is a good basis for developing **technical standards** and a good **feedback mechanism** aimed at improving quality!

Current implementation status of AEGIS



- **Strategic Framework paper** 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)
- Draft **MOU for establishment of AEGIS** shared with ECPGR SC

Current implementation status of AEGIS



- Agreed **implementation process** (as described above), which is seen as important contribution to **IT implementation**
- AEGIS coordination unit functional
- 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**

How will AEGIS contribute to the rationalization of collections?



- Building **trust and confidence** among partners
- Agreeing on a **transparent** collaboration process
- Accepting **responsibilities** on behalf of network
- Being prepared to **share "own" achievements**, infrastructure, expertise etc. with others
- Demonstrating that the agreed approach of establishing a **virtual collection** works
- Demonstrating that sharing of responsibilities leads to **more efficient activities** and **synergies**
- Demonstrate that giving up activities/germplasm does not result in a "loss" but lead to possibly **better and more effective conservation and use**

Steps ahead in making AEGIS operational (1)



- Concluding **MOU** with each of the countries to formalize responsibilities and arrangements
- Develop **model institutional contract**
- Development of **Quality Management System** for long-term conservation of the AEGIS Collection
- **Survey** institutional capacities and service conditions
- Assessing **economic implications** of AEGIS implementation
- Work closely with **4 model crops** in implementing above steps
- Use other **crop opportunities** to implement AEGIS (e.g. artichokes; *Vitis* spp)
- Develop **EU strategy on long-term support** of AEGIS
- Lobby for and seek other **sources of funding** to carrying out AEGIS implementation process.

Steps ahead in making AEGIS operational (2)



Foreseen responsibilities of Crop Working Groups:

- Establish **criteria** for Most Appropriate Accessions
- Establish **draft list of European Accessions**
- **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”
- Draft and agree on **crop specific technical standards** and assess applicability of **generic management standards**
- Prepare and coordinate implementation of **conservation action plan**
- Improve **data quality** and **coverage** of AEGIS accessions
- **Survey institutes** (i.e. capacities and availability)

Some issues and considerations for sub-regional networks in developing AEGIS



- Sub-regional mechanisms can speed up implementation:
 - Reaching agreements at the policy level
 - Coordinating inputs to various WGs
 - Identifying jointly MAAs
 - Sharing responsibilities amongst sub-regional partners
 - Identifying services that sub-region can provide to the Region
- Important opportunity to ratify and implement International Treaty!

A faint, stylized background illustration of a globe with a spiral and various icons. The globe is rendered in a light gray color, and the spiral is a darker gray. The icons include a laptop, a smartphone, and a tablet, all in a light gray color. The overall style is minimalist and modern.

■ Thank you