AEGIS:
Roles and responsibilities of Model Crop Network Working Groups

Jan Engels and Lorenzo Maggioni

ECPGR Cereals Network Meeting
21-24 April 2008, Foça, Izmir, Turkey
Content of presentation

A. Brief overview what *Avena* WG reported on AEGIS

B. What is expected from each Model Crop WG?

1. Process of identifying MAAs
2. Developing *quality management system*
3. Assessing *operational costs* for collection maintenance
4. Writing *report* for Steering Committee meeting
Findings of Avena Group

- based on Avena subgroup report

Preferred model by Avena Working Group:

• Decentralized system
• Share responsibilities at accession basis
• Regional and sub-regional considerations are the starting point for deciding on primary conservation responsibility
• Consider in case of duplicate accessions: country of origin of cultivar, accession or of collector of wild species or landrace (of non-European material)
Findings of Avena Group

*based on Avena subgroup report*

Main considerations for **decentralized approach:**

1. CBD and IT recognize **national** responsibilities/patrimony
2. Conservation of **local knowledge** of crop and its uses
3. **Visibility** in national conservation context; securing local expertise for crop; maintaining awareness and recognition
4. **Access** to local/nearby conserved germplasm is easier
5. **Quality of management** depends on combination of local (growing) conditions, interest and capacity
6. Specific **peculiarities** of individual accessions, especially for regeneration and maintenance, better addressed by local curation
7. Can build on **existing elements** of conservation system
8. Buffers better against continuous political, scientific and environmental **changes**

ECPGR Cereals Network Meeting
21-24 April 2008, Foça, Izmir, Turkey
Findings of Avena Group
Organizational structures and institutional relationships (1)

• Build on nat. genebanks that hold collection of crop
• Additional coordination elements are considered, i.e.:
  ➢ European Coordinating Lead Institution for Avena GR
    ✓ coordinate implementation annual work plans:
      ❖ manage central crop database
      ❖ coordinate collecting activities
      ❖ coordinate characterization/ evaluation
    ✓ when deciding on Lead Institution, consider:
      ❖ experience in GR + research management
      ❖ legal and financial status
      ❖ location of Avena WG chair and CCDB manager
      ❖ minimum expertise and facilities available
Findings of Avena Group
Organizational structures and institutional relationships (2)

- The European Avena Collection “system”:
  1. Long-term conservation of public domain AEGIS Accessions – in base collection (decentralized; apart from active collection; not for distribution)
  2. Germplasm distribution, i.e. active collection (each genebank; includes all or part base collection)
  3. Safety duplication (central European store, e.g. Svalbard Seed Vault?)
  4. Working collections (temporary; breeding, research; outside official system)

- However, these ideas have to be integrated into the European Accessions and virtual AEGIS genebank system!
Findings of Avena Group
Concept of MAA

- A MAA accession should be:
  - True to name
  - Maintained in country of origin, or
  - Introduced material of importance to breeding and research and used in Europe
  - Virus-free or of highest health status
  - Possess complete passport data (PPD)
  - Morphologically and/or molecularly characterized

- However, the above points should match the agreed primary criteria and specific points need to be formulated as secondary criteria
Findings of Avena Group
Concept of MAA

• Some suggestions by Avena WG on MAA concept:
  ➢ Start with accessions that have clear/complete PPD, i.e. accessions originally collected by holding institute and accessions considered as national cultivars
  ➢ Include accessions with a clear legal status, and
  ➢ Agreed primary conservation responsibility by nat. Genebank

• These and other suggestions have been used to establish a “generic” list of secondary criteria for adoption by the WG
<table>
<thead>
<tr>
<th></th>
<th>EADB</th>
<th>EURISCO</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARM</td>
<td>0</td>
<td>11</td>
<td>-11</td>
</tr>
<tr>
<td>AUT (2)</td>
<td>416</td>
<td>306</td>
<td>110</td>
</tr>
<tr>
<td>AZE</td>
<td>0</td>
<td>3</td>
<td>-3</td>
</tr>
<tr>
<td>BEL</td>
<td>627</td>
<td>0</td>
<td>627</td>
</tr>
<tr>
<td>BGR</td>
<td>382</td>
<td>2308</td>
<td>-1926</td>
</tr>
<tr>
<td>CHE</td>
<td>0</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>CZE</td>
<td>2000</td>
<td>1996</td>
<td>4</td>
</tr>
<tr>
<td>DEU</td>
<td>4948</td>
<td>4756</td>
<td>192</td>
</tr>
<tr>
<td>ESP</td>
<td>2558</td>
<td>1307</td>
<td>1251</td>
</tr>
<tr>
<td>EST</td>
<td>135</td>
<td>130</td>
<td>5</td>
</tr>
<tr>
<td>FRA</td>
<td>820</td>
<td>0</td>
<td>820</td>
</tr>
<tr>
<td>GBR (2)</td>
<td>2984</td>
<td>2709</td>
<td>275</td>
</tr>
<tr>
<td>GEO</td>
<td>0</td>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>GRC</td>
<td>21</td>
<td>23</td>
<td>-2</td>
</tr>
<tr>
<td>HUN</td>
<td>1150</td>
<td>1228</td>
<td>-78</td>
</tr>
<tr>
<td>IRL</td>
<td>0</td>
<td>23</td>
<td>-23</td>
</tr>
<tr>
<td>ITA</td>
<td>0</td>
<td>630</td>
<td>-630</td>
</tr>
<tr>
<td>LTU</td>
<td>615</td>
<td>33</td>
<td>582</td>
</tr>
<tr>
<td>LVA</td>
<td>324</td>
<td>5</td>
<td>319</td>
</tr>
<tr>
<td>NLD</td>
<td>556</td>
<td>536</td>
<td>20</td>
</tr>
<tr>
<td>POL</td>
<td>1287</td>
<td>2320</td>
<td>-1033</td>
</tr>
<tr>
<td>PRT</td>
<td>41</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>ROM</td>
<td>0</td>
<td>201</td>
<td>-201</td>
</tr>
<tr>
<td>RUS</td>
<td>13116</td>
<td>11857</td>
<td>1259</td>
</tr>
<tr>
<td>SVK</td>
<td>93</td>
<td>994</td>
<td>-901</td>
</tr>
<tr>
<td>SWE (2)</td>
<td>722</td>
<td>726</td>
<td>-4</td>
</tr>
<tr>
<td>TUR</td>
<td>643</td>
<td>0</td>
<td>643</td>
</tr>
<tr>
<td>UKR (2)</td>
<td>377</td>
<td>548</td>
<td>-171</td>
</tr>
<tr>
<td>YUG</td>
<td>168</td>
<td>0</td>
<td>168</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33983</strong></td>
<td><strong>32672</strong></td>
<td><strong>1311</strong></td>
</tr>
</tbody>
</table>
Action: Most Appropriate Accessions (MAA)

In **summary**, Avena WG is expected to:

1. Finalize **selection criteria** for identification of MAAs (using prim. and sec. draft criteria)
2. To establish the **process** of applying criteria
3. Establish **draft list** of MAAs
4. Contact the individual National Coordinators (NCs) with proposed MAAs for given country
5. Agree on **final MAA list** and inform NCs

ECGPR Cereals Network Meeting
21-24 April 2008, Foça, Izmir, Turkey
Action: Genebank quality management system

In addition to previous presentation the following specific tasks are identified for the WG are:

1. Make inputs into development of generic management standards (Secretariat; WG; individuals)
2. Develop crop specific technical standards (WG)
   a) Suggested process is that each genebank writes down its current procedures (i.e. genebank manual) (curators)
   b) This is a good basis for WG to develop standards and a good feedback mechanism aimed at improving quality!
   c) Consider use of a “common framework” (i.e. collection form – Bioversity) —► standardization across crops!
Objective: Assessment of operational costs for collection management before and after AEGIS in order to be able to measure rationalization impact of AEGIS

An expert will assist Secretariat to:

1. Develop methodological framework (draft to be discussed at meeting in Poland)
2. Develop a technical guide for data collection and work with model crop curators to refine methodology
3. Secretariat to oversee data collection by curators
4. Provide a framework for collation of datasets by crop and genebank
5. Conduct data analysis and provide summary report
Action: Operational Costs for Collection Maintenance (2)

Expected action:

1. 3 curators and database manager to participate in model crops meeting in Radzikow, 1st week July (details: next slide)

2. Contribute to development of methodology (WG/selected curators)

3. Participate in data collection (curators)

4. Comment of analysis and final report (WG)
Action: Meeting of model crops curators and CCDB managers

Timing: 1st week of July in Radzikow, Poland
Action: Plan to participate

Objectives:
1. Info sharing
2. Discussion on progress and constraints with implementation (i.e. criteria to select and list of MAAs; services to be provided);
3. Discussion on QMS and technical standards
4. Discussion on cost assessment approach
Summary action list

1. Participate in meeting in Poland, 1st week July

2. Preparation of report (mid July 2008!), including:
   a. Final list of selection (secondary) criteria for MAAs
   b. (Draft) list of proposed/agreed MAAs
   c. Suggestions for generic and technical standards for QMS
   d. Assessment of capacity and availability of expertise, infrastructure, etc. for conservation of Collection
   e. Recommendations on how to involve all relevant stakeholders in management of European Avena Collection
   f. Proposed plan on how to structure the management of this Avena Collection, incl. possible Lead Institute
   g. Prepare/coordinate implementation of Crop Conservation Workplans
Thank you
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)
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
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 (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)

9. Others?

APPLICATION OF CRITERIA WILL LARGELY DEPEND ON AVAILABILITY OF GOOD INFORMATION.