FROM: Progress report of the AEGIS model crops: *Avena*
July 2008

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1. **Establishing selection criteria for the identification of the Most Appropriate Accessions (MAAs)**

   The Most Appropriate Accession is an accession of an original seed lot or seed sample that is genetically as close as possible to the original population. It shall be true to name, held in the country of origin or introduced material of importance for breeding and research and used in Europe, accompanied by passport data, and characterized morphologically or with markers.

   The European *Avena* Database contains about 34,000 entries from more than 20 genebanks. The main problem is to identify the Most Appropriate Accession and duplicates accessions. A first identification, at the **national level**, within collection in framework national genebanks has to be done following by another one at the **international level**, between collections in framework EADB. This identification of MAA and duplicates is based on a comprehensiveness of passport data and on the FAO/IPGRI multi-crop passport descriptors which have to be as complete as possible.

   ➢ **Recommended primary selection criteria**
   i. In the **public domain** (i.e. Annex I material that is in the multilateral system of the ITPGRFA and non-Annex I material designated to AEGIS by governments or any other holder)
   ii. **Genetically unique**, to the best available knowledge (i.e. genetically distinct accessions; assessment based on available data and/or on the recorded history of the accession)
   iii. Agronomically (incl. research material) and/or historically/ culturally important
   iv. Plant Genetic Resources, including:
   1. Wild species (most of collected accession are unique)
   2. Landraces (local) (most of collected accession are unique)
   3. Obsolete improved varieties (all collected before 1950s are unique)
   4. Advanced improved varieties (to divide to unique accession and duplicates)
   5. Breeding/research materials (most of collected accession are unique)

   The selection of accession following this criterion has to be done in two steps, the first one at national level within the collection to select accessions that have been **collected or bred in the country** where they are **being conserved**. And the second one at the international level between collections, to select unique accessions that have been **collected or bred in European countries** or accessions that have been **collected or bred in non-European countries**.

   v. European origin or introduced germplasm that is of actual or potential (breeding/research) importance to Europe

   ➢ **Comments on draft priority selection criteria**

The dominating criterion excluding accessions from being considered as MAA in any case will be lack of information.

> **Recommended secondary selection criteria** (used when deciding which accession to accept among "quasi duplicate" or similar accessions)
>   i. Maintained in "country of origin"
>   ii. A known origin (collected and/or bred)
>   iii. Comprehensiveness of passport information
>   iv. Number of regeneration/multiplication cycles (the lowest one)
>   v. Health status (i.e. is the germplasm disease free?)
>   vi. Existence of morphological/molecular characterization data
>   vii. Existence of agronomical evaluation data
>   viii. 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, transparent selection is needed)
>   ix. Initial contributor/collector

> **General observations and comments on the process of developing the criteria and lessons learnt for other crops** (Germeier *et al.*, 2006)

Identification of duplicate groups and MAA will be a huge effort by itself. The management of the collections follows different methodology and fulfils different quality standards depending of the collection holder. Several methodologies could help to determinate duplicates as observation in field, protein markers or looking for genetic distances using morphological traits or molecular markers. Regrouping of unknown and mistaken accessions might be possible.

To be able to make comparison between potential duplicate accessions and choose the MAA at national and international level, some criteria have to be specified precisely as for example passport, characterization and evaluation data.

2. **Establishing the list of MAAs**
   > **The procedure followed, including the respective roles of associated institutions, the countries (i.e. National Coordinators), the Central Crop Database manager and the Working Group**

The first step (cf. scheme 1) to establish the list of MAAs has to come from curators (1) by updating and complete the data available in European database such as Avena database, directly with the database manager or Eurisco by the intermediate of the national inventory focal point. To obtain update and complete data by curators is the first step but the hardest one because it is time-consuming and all depending of the willingness of curators. The second sensible point could be the transfer of data to the national inventory focal point (non availability, too much data …).
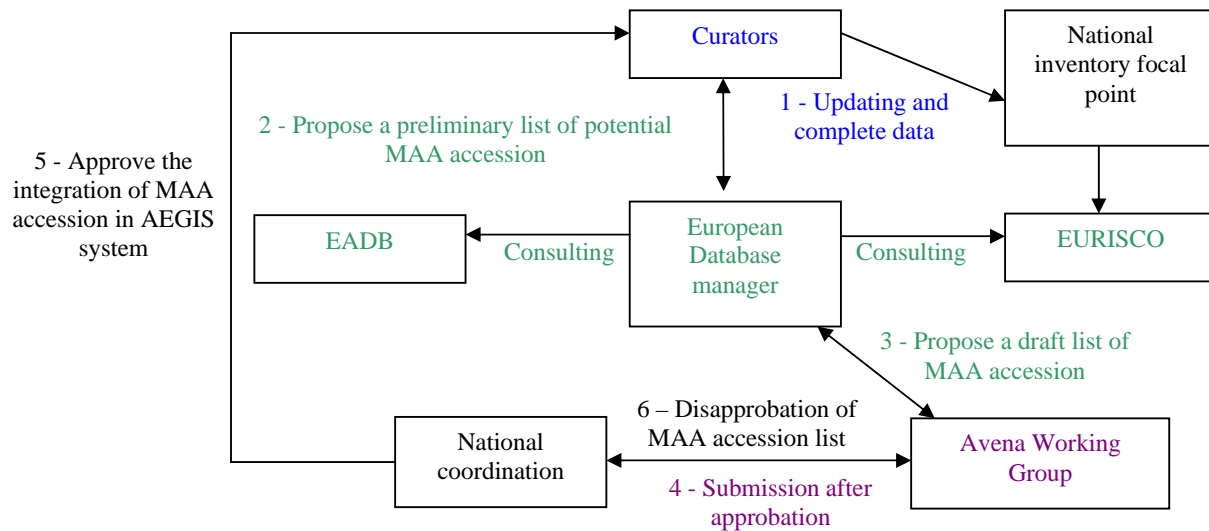
Scheme 1: Procedures to establish the MAAs list

After the update, the European database manager will be able to elaborate a preliminary list of potential MAAs (2). By several exchanges with curators, European database manager will validate the draft list of Avena MAAs and submit it to the Avena working group (3). The working group will take the first decision to approve the list. Two possibilities are considered, the first one and simplest is that the Avena working group transfers the final MAA list to the national coordinators for approval (4). Exchanges are expected between the Avena WG and the national coordinators to solve potential problems. The second possibility, the most probable is that the ECPGR secretary does the intermediate between both. Finally the national coordinators approve the list (5) and give it back to the curators. Several problems can occur at this stage, first of all the approbation by the national coordinator of the MAA list, depending of the national policy and of the signature of the MoU. Another one is the availability and the implication in the national program of the national coordinator.

The needs in meeting and/or coordination for each step of the elaboration of MAAs list have been listed in the following table.

	Step	Number	Who	Details
Meeting	1	1	All curators + CCDB manager	To explain the needs of AEGIS and give/explain criteria for the MAA selection
	3	1 or 2	Avena WG	Approval of the draft list
	6	1 or 2	Avena WG	Resolution of potential or temporary problem with the approval of the final MAA list
Coordination	1	As much as necessary	All Curators + CCDB manager	Contact by email between database manager and curators
	2	As much as necessary	Voluntary curators + CCDB	Contact by email between database manager and curators
	4	As much as necessary	Avena WG chairman or ECPGR Secretary? + national coordinator	Approval of the final list
	5	As much as necessary	National coordinator + curators	Approve the integration of MAA accession in AEGIS system
	6	As much as necessary	Avena WG chairman or ECPGR Secretary? + national coordinator	Return list for several reasons (MAA accession could not be included in the national program, non signature of the MoU,…)

Table 1: Needs in meeting and/or coordination to establish the MAAs list

> ➢ **Generated list of MAAs (for the model crop in question and based on Central Crop Database)**

The working group was not able to give a final list to the ECPGR secretary. Furthermore, we strongly believe that several meetings and correspondence between curators and CCDB manager will be necessary before the generation of the list.

> ➢ **Experiences with the use of the selection criteria while establishing the list** (I. Loskutov)

Database manager was absent at this meeting and AW group presents practical approaches to create the list of Most Appropriate Accessions based on VIR Oat collection.

N. I. Vavilov Institute of Plant Industry is harbored one of the largest oat collection. There are more than 12 700 accessions there. It presents world genetic diversity of *Avena* genera with wide variability of morphological, agronomical and biochemical characters for oat breeding and crop industry.

Tools for identification MAA and duplicates in this case we use VIR Oat database in Paradox 9 for Windows software amounted to 18 178 Kb and contained over 12 700 records in 43 fields.

Types of accessions included in collection are:
- Wild populations
- Landraces (local)
- Obsolete (old) improved varieties
- Advanced improved varieties
- Breeding/research materials/genetic stocks

		*Wild species	*landraces (local) or/and obsolete (old) improved varieties	*advanced improved varieties	*breeding/research materials/genetic stocks
Taxonomical Information		Has to be corrected	Has to be corrected	Has to be corrected	Not so important
Geographical Information	Country of origin (ORIGCTY)	National or European or non-European countries	National or European or non-European countries	National or European or non-European countries	National or European or non-European countries
	Donor country (DONORCODE)	The same that origin country	The same that origin country	The same that origin country	The same that origin country
Numeric Information	Collecting number (COLLNUMB)	Preferably filled	Preferably for landraces		
	Acquisition date (ACQDATE)	Same dates (year)	Has to be unique for obsolete varieties		
	Collecting date of sample (COLLDATE)	Same dates (year)	Preferably for landraces		
	Donor accession number (DONORNUMB)	Have to be empty	Has to be empty	Has to be empty	Has to be empty
	Other identifications (numbers) (OTHERNUMB)	Have to be empty	Has to be empty	Has to be empty	Has to be empty
	Accession name (ACCENAME)			Has to be unique	Has to be unique
	Accession number (ACCENUMB)				Has to be unique
Genetic group	Ancestral data (ANCEST)			Preferably filled	Preferably filled

*Selection unique accessions that have been collected or bred where they are being conserved or/and in European countries or/and in non-European countries.
Table 2: Information needed to establish a selection of MAA sample

For this selection we use the list of the most important fields of descriptors:

1. Taxonomical group
- Genus (GENUS) I-V
- Species (SPECIES) I-V
- Species authority (SPAUTHOR) I-V
- Subtaxa (SUBTAXA) I-IV
- Subtaxa authority (SUBTAUTHOR) I-IV

2. Geographical group
- Country of origin (ORIGCTY) I-V
- Location of collecting site (COLLSITE) I-II

- Donor (country) institute code (DONORCODE) I-V

3. Name and Numeric group
- Accession number (ACCENUMB) I, V
- Collecting number (COLLNUMB) I, II
- Accession name (ACCENAME) III, IV
- Acquisition date [YYYYMMDD] (ACQDATE) I-V
- Collecting date of sample [YYYYMMDD] (COLLDATE) I, II
- Donor accession number (DONORNUMB) I-V
- Other identification (numbers) associated with the accession (OTHERNUMB) I-V

4. Genetic group
- Ancestral data (ANCEST) III-IV and some genetic information V