European Cooperative Programme for Plant Genetic Resources

ECP//GR

Triticale and Rye Genetic Resources in Europe

***Ad hoc* Meeting, 28 September 2006, Nyon, Switzerland**

G. Kleijer, R. Häner and H. Knüpffer, *compilers*

Bioversity International

IPGRI and INIBAP operate under the name Bioversity International

Supported by the CGIAR

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Bioversity International is an independent international scientific organization that seeks to improve the well-being of present and future generations of people by enhancing conservation and the deployment of agricultural biodiversity on farms and in forests. It is one of 15 centres supported by the Consultative Group on International Agricultural Research (CGIAR), an association of public and private members who support efforts to mobilize cutting-edge science to reduce hunger and poverty, improve human nutrition and health, and protect the environment. Bioversity has its headquarters in Maccarese, near Rome, Italy, with offices in more than 20 other countries worldwide. The Institute operates through four programmes: Diversity for Livelihoods, Understanding and Managing Biodiversity, Global Partnerships, and Commodities for Livelihoods.

The international status of Bioversity is conferred under an Establishment Agreement which, by January 2007, had been signed by the Governments of Algeria, Australia, Belgium, Benin, Bolivia, Brazil, Burkina Faso, Cameroon, Chile, China, Congo, Costa Rica, Côte d'Ivoire, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Greece, Guinea, Hungary, India, Indonesia, Iran, Israel, Italy, Jordan, Kenya, Malaysia, Mali, Mauritania, Morocco, Norway, Pakistan, Panama, Peru, Poland, Portugal, Romania, Russia, Senegal, Slovakia, Sudan, Switzerland, Syria, Tunisia, Turkey, Uganda and Ukraine.

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The European Cooperative Programme for Plant Genetic Resources (ECPGR) is a collaborative programme among most European countries aimed at facilitating the long-term conservation and the increased utilization of plant genetic resources in Europe. The Programme, which is entirely financed by the member countries, is overseen by a Steering Committee composed of National Coordinators nominated by the participating countries and a number of relevant international bodies. Bioversity International provides the Coordinating Secretariat. The Programme operates through nine networks in which activities are carried out through a number of permanent working groups or through *ad hoc* actions. The ECPGR networks deal with either groups of crops (cereals; forages; fruit; oil and protein crops; sugar, starch and fibre crops; vegetables, medicinal and aromatic plants) or general themes related to plant genetic resources (documentation and information; *in situ* and on-farm conservation; inter-regional cooperation). Members of the working groups and other scientists from participating countries carry out an agreed workplan with their own resources as inputs in kind to the Programme.

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Cover illustration: Rye landrace in Ferden, Switzerland, 1375 m elevation. Rye was a traditional crop in this part of Switzerland. Courtesy of © G. Kleijer, Agroscope Changins-Wädenswil, Switzerland.

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CONTENTS

SUMMARY OF THE MEETING

Introduction

Welcome

The first *ad hoc* meeting on triticale and rye of the European Cooperative Programme for Plant Genetic Resources (ECPGR) took place at Agroscope Changins-Wädenswil (ACW) in Nyon, Switzerland, on 28 September 2006.

The meeting was opened by Gert Kleijer (ACW) who welcomed the participants, who came from France, Germany, Poland, the Russian Federation, Switzerland and Turkey. The list of participants is provided in Appendix III.

G. Kleijer presented a short overview of some of the activities of ACW. ACW hosts the Swiss national genebank, with about 10 000 accessions of wheat, barley, rye, triticale, vegetables and grapevines. Other activities of ACW are variety testing of a wide range of crops, and breeding programmes for wheat, triticale, soybean, grapevine and apple.

G. Kleijer also gave a short introduction to ECPGR, noting that 38 European countries take part in this programme with six other associated countries. The principal aims of ECPGR were highlighted, such as:

- To facilitate the long-term *in situ* and *ex situ* conservation of plant genetic resources in Europe
- To facilitate the increased utilization of plant genetic resources in Europe
- To strengthen links between all plant genetic resources programmes in Europe and to promote the integration of countries which are not members of ECPGR
- To encourage cooperation between all stakeholders, including non-governmental organizations (NGOs) and private breeders
- To promote the planning of joint activities, including the development of joint project proposals to be submitted to funding agencies
- To encourage the sharing of conservation responsibilities for plant genetic resources for food and agriculture (PGRFA) in Europe
- To increase awareness, at all levels, of the importance of PGRFA activities including conservation and sustainable use
- To seek collaboration with other relevant regional and global initiatives.

G. Kleijer further mentioned the recent change of the name of the former European Cooperative Programme for Crop Genetic Resources Networks (ECP/GR) to European Cooperative Programme for Plant Genetic Resources (ECPGR), decided by the ECPGR Steering Committee at its Tenth Meeting (5-8 September 2006, Riga, Latvia).

The agenda was adopted without modifications (Appendix II). Helmut Knüpffer (Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany) and Gert Kleijer chaired the sessions. The participants briefly introduced themselves.

Aims of the meeting

H. Knüpffer introduced the aims of this meeting. A questionnaire had been sent out before the meeting to the participants to get feedback on the most important achievements expected from this meeting. Both rye and triticale have their greatest importance in Europe. Most of the world's rye production is carried out in Europe and 90% of the rye germplasm is conserved in European genebanks. Triticale breeding and cultivation is important in Europe as well, and two-thirds of triticale germplasm is maintained in European genebanks.

The main aims of the meeting were:

- To review conservation and utilization activities of triticale and rye genetic resources in Europe, including the status of the respective Central Crop Databases (CCDBs)
- To determine gaps in conservation activities and discuss possibilities for filling these gaps
- To draft new Bioversity[1] descriptor lists and discuss additional descriptors for the CCDBs
- To discuss coordination and collaboration in characterization and regeneration, and to find ways of implementing the initiative for "A European Genebank Integrated System" (AEGIS) to initiate task sharing.

Complementary topics and aims suggested by the participants were:

- Wild species
- Duplicates
- Core collections
- Joint European evaluation projects
- Different types of triticale.

The Rye Central Crop Database

Marcin Zaczyński

General information

The ECPGR European *Secale* Database (ESDB) is operated using the database management system PostgreSQL. All information on accessions is concentrated into a single table. For communication between the database and Internet the PHP Hypertext Preprocessor scripting language is used. The content of the database is available on Internet at the following address:

http://www.ihar.edu.pl/gene_bank/secale/secale.html

To simplify the work with data, a querying tool is available. Multiple criteria and selected descriptors can be used for querying.

Data collection

The ESDB currently provides 13 707 records from 25 countries and 36 institutes. In 2006, the content of the database was verified and updated using the European Plant Genetic Resources Search Catalogue (EURISCO) as a source of accession information.

Database structure

The database contains 28 descriptors. Recently, the data format for some of the descriptors was changed to make them compatible with the EURISCO format.[2] In most cases the format change was an easy exercise but sometimes the whole content could not be transformed (for

[1] With effect from 1 December 2006, IPGRI and INIBAP operate under the name "Bioversity International", Bioversity for short. This new name echoes their new strategy, which focuses on improving people's lives through biodiversity research.

[2] For definitions of EURISCO descriptors, see www.ecpgr.cgiar.org/epgris/Tech_papers/EURISCO_Descriptors.doc

example, some donor institute abbreviations are lacking the proper FAO INSTCODE).[3] Eighteen descriptors are identical or similar to those of the EURISCO descriptor list; the remaining ten descriptors are either in a different format or they are non-standard descriptors. The following descriptors are used:

EURISCO descriptors

1. Institute code (INSTCODE)
2. Accession Number (ACCENUMB)
3. Accession Name (ACCENAME)
4. Year of inclusion into the collection (INYEAR)
5. Country of origin (ORIGCTY)
6. Donor institute code (DONORCODE) – ECPGR acronyms are used for donor codes instead of FAO acronyms
7. Donor number (DONORNUMB)
8. Other number(s) associated with the accession (OTHERNUMB)
9. Status of sample (SAMPSTAT)
10. Pedigree (PEDIGREE) – the same as Ancestral data
11. Source of sample (COLLSRC)
12. Breeding Institution (BREEDER)
13. Collecting institute(s) (COLLCODE)
14. Collecting date of original sample (COLLDATE)
15. Collector's number (COLLNUMB)
16. Location of collecting site (COLLSITE)
17. Elevation of collecting site (ELEVATION)
18. Latitude of the collection site (LATITUDE)
19. Longitude of the collection site (LONGITUDE)
20. Comments (REMARKS)

Non-standard descriptors

1. Botanical name (BOTNAME) – this descriptor provides the whole taxonomic name (e.g. *Secale cereale* var. *clausopaleatum*) instead of the separate EURISCO descriptors GENUS, SPECIES, SUBTAXA
2. Life cycle (LIFECYCLE)
3. Availability of material for exchange (AVA)
4. Ploidy level (PLOIDY)
5. Donor country (DONORCTY)
6. Growth habit (HABIT)
7. Year of release of the variety/year of registration (REGYEAR)
8. Ecological characterization of the collection site (ECOLOGY)

Details about descriptors used in the ESDB can be found at:
http://www.ihar.edu.pl/gene_bank/secale/descriptor.html

Database content

The ESDB records passport data for 13 707 accessions. For 91% of the accessions at least the species name has been identified. Regarding sample type, accessions recorded in the CCDB are distributed as follows: wild or semi-wild (85), traditional cultivars or landraces (1231),

[3] EURISCO descriptor 31 (Decoded donor institute) can be used when the FAO Institution Code for the donor institute is not (yet) available.

breeding material (1176) and advanced cultivars (2282). Regarding the geographical origin, 79% of accessions are from Europe and 16% from Asia.

The conservation of rye accessions is mainly carried out in three European countries: Poland (28% of rye accessions), the Russian Federation (22%) and Germany (16%). The biggest collections can be found in the following genebanks: Plant Breeding and Acclimatization Institute (PBAI), Radzików, Poland; Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany; and N.I. Vavilov Research Institute of Plant Industry (VIR), St. Petersburg, Russian Federation. Another important genebank conserving 4% of the accessions recorded in the ESDB is the Plant Genetic Resources Department of the Aegean Agricultural Research Institute (AARI), Izmir, Turkey.

Gaps in the database

Several descriptors show considerable data gaps. Table 1 lists the descriptors with highest frequency of data.

Table 1. Descriptors with highest frequency of data in the ESDB

Descriptor	Frequency (%)
Country of origin	77
Acquisition date	42
Growth habit	42
Ploidy level	37
Biological status of accession	36
Life cycle	29
Location of collecting site	27

Identification of duplicates

A superficial survey of the ESDB shows that the number of duplicated accessions depends on the type of collection. Big collections of rye accessions have quite a high number of duplicates. Other collections are focused on local material. The unique parts of every collection are the most important for conservation purposes.

The Triticale Central Crop Database

Gert Kleijer

General information

The European Triticale Database (ETDB) was established in 1999 as an initiative within the (then still informal) ECPGR Working Group on Wheat, and recorded 5203 accessions from nine different genebanks. The EURISCO descriptors were used for the ETDB. Three additional descriptors were included: growth class, ploidy level and availability. An update was carried out in 2006, using EURISCO as the source: 14 genebanks previously not included in the ETDB contained triticale accessions. For two genebanks, accessions were included in the ETDB but not in EURISCO. The ETDB currently records 11 721 accessions from 18 countries and 23 genebanks. Two-thirds of the accessions (7788) originate from Europe. The two most important genebanks holding triticale accessions are VIR, St. Petersburg, Russian Federation (3860 accessions) and the International Maize and Wheat Improvement Center (CIMMYT), Mexico (2056 accessions).

Descriptors

The frequency of data of the different descriptors is very variable and considerable gaps exist for several descriptors (Table 2).

Table 2. Descriptors with highest frequency of data in the ETDB

Descriptor	Frequency (%)
Accession name	93.0
Country of origin	91.7
Status of sample	81.1
Growth class	64.4
Availability	53.0
Ploidy level	45.0
Storage	43.1
Acquisition date	40.4
Duplication site	32.8
Ancestor	29.5

A detailed analysis of the descriptor "Status of sample" indicated clearly that triticale is a man-made crop and a young species. The frequency of breeding material and breeding lines is very high: 69%. One accession has been classified as wild, 57 as traditional cultivars/landraces and 30 as hybrids. These denominations need to be clarified.

The identification of duplicates is very difficult. Sometimes this is due to spelling errors, in other cases accessions with apparently the same accession number show different countries of origin. Sometimes the ancestor's name is used as the accession name with up to 14 accessions derived from the same cross, and these are probably not duplicates.

Future work

Several elements were mentioned which are important for the future of the ETDB:

- Contact with the individual database managers to check the data and the number of accessions.
- Update of the ETDB. The last update was made from EURISCO, but there is no guarantee that these data are the most recent ones.
- Inclusion of new descriptors (see below).
- Internet access: the ETDB will be on-line as soon as possible. The system used is Zope/Plone, which is open-source software.
- Implementation of AEGIS.

Additional descriptors, new international descriptor lists for rye and triticale

Marcin Zaczyński (for rye) and Gert Kleijer (for triticale)

Complete draft descriptor lists for rye and triticale were presented. These descriptor lists contain all the EURISCO descriptors plus additional passport, characterization and evaluation descriptors, in total 63 for rye and 60 for triticale. Most of these additional descriptors are identical for rye and triticale, but there are some species-specific descriptors. The participants did not discuss all these descriptors in detail, but a number of points were noted and are included in the revised version. The idea was to harmonize the lists between these two crops as much as possible, and also to harmonize them with the wheat descriptor list.

It was recognized that sometimes a different scale has to be used for the different species.

The agreed follow-up is:

- Requesting feedback from Bioversity;
- Getting feedback from a larger group of triticale and rye specialists; and
- Asking Bioversity to prepare new versions of the "Bioversity Descriptors for Rye" and the "Bioversity Descriptors for Triticale".[4]

The participants discussed briefly the additional descriptors for the Rye and Triticale CCDBs. A number of descriptors were identified, but it was agreed that this list would be finalized by email. After email consultation, the final list of additional descriptors is as shown in Table 3.

Table 3. Additional descriptors for the Rye and Triticale CCDBs

Descriptor	Rye	Triticale
Plant height	x	x
Susceptibility to powdery mildew	x	x
Susceptibility to yellow rust		x
Susceptibility to stem rust	x	x
Susceptibility to leaf rust	x	x
Susceptibility to septoria		x
Susceptibility to fusarium head blight	x	x
Susceptibility to eyespot	x	x
Thousand kernel weight	x	x
Grain protein content	x	x
Grain shrivelling		x
Test weight		x

The general feeling was that most of these descriptors are largely dependent on the environment. Screenings should be carried out in the presence of standard varieties, and information about the conditions of evaluation (at least the year and location but also other specific circumstances such as nitrogen, frost, drought, etc.) should be linked to the data, if possible.

It was suggested that line drawings and photographs could be used to illustrate descriptor states.

Discussion on the genus name of triticale

Helmut Knüpffer

Introducing the problem of the correct scientific name of triticale, G. Kleijer mentioned that within EURISCO alone, five different name variants are used for triticale (*Triticale*, ×*Triticale*, *Triticosecale*, ×*Triticosecale* and × *Triticosecale*). In the past, several names have been proposed, some also based on the species level for the different ploidy groups, but at the moment, the most commonly used name is ×*Triticosecale*. H. Knüpffer informed the participants that two publications are in preparation (in Russia and in Germany) dealing with this problem. Both teams of authors will suggest retaining triticale in a separate genus from wheat (*Triticum*). The meeting recommends ×*Triticosecale* Wittm. for the time being, and as the common name: triticale (English and French), Triticale (German). The publications mentioned will also

[4] After the meeting, Bioversity agreed to contribute revising the new Rye and Triticale descriptors. A "working version" will then be uploaded on the ECPGR Web site. On the other hand, the preparation of new Bioversity Rye and Triticale descriptors will require identifying funds to cover the cost of publication – either in print or electronic.

propose species names (corresponding to the three ploidy levels) and infraspecific names (convarieties, botanical varieties). The designation of species under a hybrid genus is not allowed under the present version of the International Code for Botanical Nomenclature (ICBN). Therefore, it will be difficult to publish valid species names for the different ploidy levels under ×*Triticosecale*, without amending the Code. The group will consider using the proposed names after their publication.

A European Genebank Integrated System (AEGIS)

Gert Kleijer

An overview of the AEGIS project was presented to the participants. The main objective of AEGIS is the sharing of responsibilities for long-term conservation. A feasibility study has been carried out for four model crops, *Avena*, *Brassica*, *Allium*, and *Prunus* and a strategic framework for the implementation of AEGIS has been developed. The most important elements of AEGIS are:

- The designation by a specific country of European accessions for which this country takes responsibility for conservation
- The acceptance by the particular ECPGR Crop Working Group of these specific European accessions
- The development of quality standards
- The signature of a Memorandum of Understanding by the countries willing to take part in AEGIS.

Future work

The Central Crop Databases (CCDBs)

The group discussed the relationship between the CCDBs and EURISCO. Overlapping (e.g. duplication of tasks) must of course be avoided. There are several reasons for the CCDBs to exist:

- Problems in the handling of characterization and evaluation (C&E) data cannot be solved by EURISCO
- The CCDB will be a very helpful tool, and even a prerequisite, for the implementation of AEGIS for a particular crop
- The CCDB is more suited for the introduction of C&E data from different institutions and different years.

The CCDBs should be made ready to support the on-line designation of Most Appropriate Accessions (MAAs) by genebank curators.

Gaps in the passport data are a real problem and these gaps have several causes. Some institutions do not have the financial resources to prepare the data for the CCDB; others have the data available but not in the proper form. Information is not always easily accessible, e.g. for accessions which were received from collections that no longer exist.

Recommendation

- *Local database managers should complete their passport data and strive to make their data available for the CCDBs in a standardized form.*

Extension of EURISCO descriptors

In the discussion it was suggested that the present EURISCO descriptor "Status of sample" (SAMPSTAT) should be split into two descriptors. "Status of sample" should be defined as "Source of variation", whereas the new descriptor would be "Breeding method". It is expected that this proposal for change will be taken in consideration for the next revision of the EURISCO descriptors.

Core collections

The group discussed the possibility of the establishment of a core collection. The criteria for this core collection have to be discussed and determined. Molecular markers could be a possible additional approach. It will be useful to follow a two-step approach in the creation of core collections. First, the Most Appropriate Accessions (MAAs) should be designated (AEGIS process). The CCDB manager could then make a proposal for a core collection, based on these MAAs. This will allow the analyzing of whether regional gaps are present (for rye). Collecting missions could then be organized to fill these gaps.

Evaluation data

The additional descriptors were already partly discussed (see above, pp. 5-6). For evaluation of genebank accessions it is important to agree upon the number of locations, the use of standard varieties, the number of plants and the use of standardized methods. Standardized guidelines are also needed for the regeneration and conservation of accessions. However, a distinction has to be made between basic characterization and evaluation carried out by the genebanks themselves, and the detailed evaluation procedures by breeders.

Recommendations

- *To develop a system for standardized descriptors and their standardized use. The ECPGR Documentation and Information Network is requested to develop a software solution to convert data from C&E trials into a standardized system.*
- *Several C&E descriptors should be added to the present minimum descriptors in the Triticale and Rye CCDBs.*
- *CCDBs should analyze their data to identify regional gaps (especially for rye) so as to plan necessary collecting missions.*
- *The CCDB managers should make a first proposal for European core collections of rye and triticale, respectively, based on the available data, preferably using the "most appropriate accessions" (MAAs) to be defined in the AEGIS process (see below).*
- *The following descriptors are important for triticale and need to be defined: outcrossing rate, primary or secondary triticale.*[5]
- *Methods for (secondary) evaluation need to be standardized.*

[5] The following definitions were proposed after the meeting:
- Primary triticale: newly synthesized allopolyploids from wheat and rye, i.e. the immediate products of chromosome doubling.
- Secondary triticale: all genotypes derived from intercrossing primary triticale or from crosses of primary triticale with rye, wheat or secondary triticale.

The outcrossing rate being a very difficult character to assess, it was proposed that this point be noted for further discussion during the next meeting.

AEGIS

The importance of the implementation of AEGIS was underlined but it was decided to wait for the completion of the work on the four AEGIS model crops. In the meantime, it was decided to start preliminary work for the implementation of AEGIS. Two approaches were identified:

1. Searching for duplicates within the CCDBs, recognizing the difficulties of this task and the possible help needed from the use of molecular markers.
2. Encouraging each genebank manager to propose a list of the most original accessions of their genebank that they are willing to take care of.

The sharing of responsibilities was recognized as a very important element of AEGIS and in this context, the mutual knowledge of the partners and the trust in the quality of the work of others is essential.

Recommendations

- *Genebank managers are requested to identify the most important and original accessions in their respective collections to prepare for the implementation of AEGIS.*
- *The implementation of AEGIS recommendations on triticale and rye will depend on the completion of the work on the four AEGIS model crops.*

European projects and fund-raising

The group found it difficult to set up a project with triticale or rye to be submitted to the 7th Framework. COST ("an intergovernmental framework for European Cooperation in the field of Scientific and Technical Research") allows the coordination of research activities and can provide money for meetings. The most important activity to be financed is evaluation.

The question of the costs for international seed exchange was raised. Some genebanks do not have sufficient money to carry on the exchange of material.

Continuation of the work

The participants highly appreciate the possibility of meeting to discuss work and coordination in relation to genetic resources of triticale and rye. The participants agreed that the group should resolve to continue its work and agreed to make progress on the different recommendations by input in kind and email exchange. Within the ECPGR Cereals Network there will be a possibility of meeting again in one or two years. The group also decided that the two crops triticale and rye should remain together, but be independent of the wheat working group.

The group will then assess the progress made and decide whether to submit a formal request to the ECPGR Steering Committee to become a formal Working Group on Triticale and Rye.

Recommendation

- *The participants need to meet again in two years' time to review progress and to start implementation of AEGIS. This meeting could be organized in the framework of the next full meeting of the Cereals Network (planned in Turkey in spring 2008). In the meantime, email communication will be used to assure and assess progress.*

Concluding remarks

The participants thanked ECPGR for organizing and financing the meeting. They expressed their thanks to the hosting institute and to Gert Kleijer for the excellent organization of the meeting and the cordial hospitality. Ertug Firat invited the next meeting to Turkey.

APPENDICES

Appendix I. Acronyms and abbreviations

AARI	Aegean Agricultural Research Institute, Izmir, Turkey
ACW	Agroscope Changins-Wädenswil, Switzerland
AEGIS	A European Genebank Integrated System
Bioversity	Bioversity International *(formerly IPGRI and INIBAP)*
CCDB	Central Crop Database
CIMMYT	International Maize and Wheat Improvement Center, Mexico
ECP/GR	European Cooperative Programme for Crop Genetic Resources Networks
ECPGR	European Cooperative Programme for Plant Genetic Resources *(formerly ECP/GR)*
ETDB	European Triticale Database
EURISCO	European Plant Genetic Resources Search Catalogue
FAO	Food and Agriculture Organization of the United Nations, Rome, Italy
INIBAP	International Network for the Improvement of Banana and Plantain *(now Banana and Plantain Section of Bioversity International)*
IPGRI	International Plant Genetic Resources Institute *(now Bioversity International)*
IPK	Leibniz Institute of Plant Genetics and Crop Plant Research, Gatersleben, Germany
MAA	Most Appropriate Accession
NGO	Non-governmental organization
PBAI	Plant Breeding and Acclimatization Institute, Radzików, Poland
PGRFA	Plant genetic resources for food and agriculture
VIR	N.I. Vavilov Research Institute of Plant Industry, St. Petersburg, Russian Federation

Appendix II. Agenda

Ad hoc *Meeting on Triticale and Rye Genetic Resources*
28 September 2006, Agroscope Changins-Wädenswil, Nyon, Switzerland

Chair: Helmut Knüpffer

08:45	Welcome *(Gert Kleijer)* and short presentation of the participants *(All)*
09:00	Aims of the meeting *(Helmut Knüpffer)*
09:15	Presentation of the Rye Central Crop Database *(Marcin Zaczyński)*
09:45	Presentation of the Triticale Central Crop Database *(Gert Kleijer)*
	Discussion
10:30	*Coffee break*
11:00	Additional descriptors, rye *(Marcin Zaczyński)* and triticale *(Gert Kleijer)*
	Discussion
12:15	*Lunch*

Chair: Gert Kleijer

13:30	Discussion on the genus name of triticale *(introduced by Helmut Knüpffer)*
14:00	Presentation of AEGIS *(Gert Kleijer)*
	Discussion
14:45	Future work *(All)*
15:30	*Coffee break*
16:00	Future work, continued *(All)*
17:30	Conclusions/end of the meeting

Appendix III. List of participants

Ad hoc *Meeting on Triticale and Rye Genetic Resources 28 September 2006, Agroscope Changins-Wädenswil, Nyon, Switzerland*

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