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3-C1

In-situ- and on-farm-management of plant genetic resources

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For establishing an effective maintaining programme for plant genetic resources, an integrated system is necessary considering the three principal ways of germplasm management - *ex situ, in situ* and on farm. On-farm-conservation is a relatively new concept which desires a special discussion.

Differences in conservation and management strategies are defined here with respect to three countries. Germany is used as an example for an industrialised country, relatively poor in landraces. Italy may suit as example for an industrialized country with high diversity in agricultural products and production techniques, and Cuba is an example for a tropical country, scarcely industrialized and extremely rich in plant genetic resources.

The definition of specific categories with respect to the unequal status of these countries seems to be extremely helpful in valuation of *ex-situ-, in-situ-* and on-farm-measures regarding their effectiveness and necessary finances in the context of realization of the CBD requests to protect the diversity in countries and regions. But first of all, management of germplasm including breeding and selection in the hands of the farmers has to be secured.

On-farm-management is a dynamic approach. But the present expectations are rather high and tend to overload this concept. More realistic is an integrated approach considering the respective country and local conditions including farmers' preferences and application of all conservation systems.

3-C2

***Ex situ* conservation of biodiversity**

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The ongoing loss of genetic resources requires systematic activities for their conservation. In addition to *in situ* and *on farm* procedures, the *ex situ* conservation forms the basis of a modem management of plant genetic resources. Notwithstanding the mode of conservation, a two dimensional approach is needed to cover the biodiversity of cultivated plants. On one hand, the preservation of interspecific variability requires a large number of plant species to be maintained, while on the other hand the conservation of genetic variability within a given species necessitates the preservation of a sufficiently large number of individual genotypes. Both variables are reflected in the structure of the collection held at the Genebank of the Institute of Plant Genetics and Crop Plant Research, which, at present, comprises more than 100.000 accessions belonging to about 2150 species. The scope of the collection ranges from major crop species and their wild progenitors to endangered and neglected species. About 20% of the accessions originate from more than 130 collections that have been performed since the 1920ies. While the long term storage of seed material is efficiently managed at low temperatures, vegetatively propagated plants require labour intense efforts ranging from field cultivation to in vitro culture and cryo-conservation. The availability of molecular marker techniques has initiated the development of new strategies regarding the characterization of genetic resources ranging from molecular fingerprinting to gene mapping. Together with an appropriate documentation of genetic and phenotypic data this is expected to form the basis for a more efficient deployment of genetic resources in plant breeding.

3-C3

Diversity in relation to flood prone rice adaptation in South and South-east Asia: a critical analysis

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More than 15 m ha lands in South and Southeast Asia are subject to various type of uncontrolled flooding characterised by medium to deep (50cm to 400 cm) from rivers and from tides in river mouth deltas. Unlike other ecosystems, full range of varieties from very primitive to improved types are under cultivation in different sub eco cultural types viz.: flash flood, stagnant semi deep and deep, floating, tidal wet lands and boro rices. Factors that contribute to great diversity to fit the complex environmental matrix are deepwater survival strategy, soil types, maturity requirement, temperature, plant stature and photo-period sensitivity. The variant on these choices add upto 126 mutually exclusive options in order to cover full range of prevailing diversity in the ecosystem None of the variety could sustain these stresses, therefore, each variety group is adapted only to a specific set of environmental conditions. Photo-period responses needed in different DW areas for example 12 to 12.5 day length hour. (latitude upto 14.0^0 N) in Thailand and 13 to14 day length (latitude 22.5 to 27^0 N in India further limit the adaptation of varieties in their regions only . However genetic wealth of cultivated and wild rices in this ecosystem is rich and diverse . It is most surprising that only 733 accessions related to flood prone rice are documented in the rice germplasm bank of IRRI. Bangladesh contributed maximum 443 land races followed by Srilanks (82) , India (42) and Thailand (34). There is little genetic erosion owing to poor adaptation of new releases . This paper discusses major issues concerning present diversity and its relation to adaptation, extent of genetic erosion and possibilities of tracing unexplored areas for collecting land races in FP ecosystem.

1 POSTER 3-C

A database for agricultural activities at farm scale for a metropolitan agricultural park

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The metropolitan agricultural park "South Milan Agricultural Park", in northern Italy, has launched a 3-year project to build an agricultural information system, both for large scale planning and for daily operations. The information system will include a georeferenced farm database (described here) and many existing maps (hydrology, nature conservation, soils, climate). The farm database includes farm-scale data about livestock and machinery and field-scale data about crops. The conceptual model presented here was designed to include both data derived from interviews with farmers and data already included in existing, external databases. The model is based on the entity-relationship framework. It includes 49 entities and several hundreds of fields. The main entities are 'farm', 'labour', 'farm manager', 'parcel', 'land owner', 'source of irrigation water', 'soil analysis bulletin', 'production buildings', 'farm house', 'agricultural machinery', 'actual crop', 'rotation', 'crop in rotation', 'field operation', 'harvested material', 'applied substance', 'harvested material utilization', 'cattle-breeding', 'food ration', 'animal category'. The 'parcel' entity refers to the field represented in the cadastral map and will allow to create very detailed maps of the database contents. The buildings used for production activities, the crops cultivated in a given year and the rotation(s) applied are related to parcels. The model is flexible because it allows to register the same information at different levels of detail. Many domains were created for those answers that should be chosen from a closed list. The database was implemented with Microsoft Access and is now used to enter data collected during the interviews to the farmers.