

Final Workshop of the Activity 'Linkages' "Assessing linkages between genebanks and direct users" Databases used by NGOs and farmers' organisations in the DIVERSIFOOD project

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Introduction



Diversifood project

Capsella project

This work is part of WP4 in Diversifood that works on Community Seed Bank in Europe



Methods

The objective of the questionnaire was to know how NGOs and farmers' organisation from DIVERSIFOOD manage their data.

The questionnaire was send to several partners :

- ProSpecieRara in Switzerland
- Réseau Semences Paysannes in France
- Rete Semi Rurali in Italy
- Red Andaluza de Semillas in Spain
- Arche Noah in Austria



Methods

The questionnaire was divided in four sections :

- 1 Describe organisations from civil society participated to the DIVERSIFOOD project
- 2 How do the organisations deal with their data ?
- 3 Needs of the organisations regarding data management
- 4 Rules regarding data management



Results and discussion

Organisations from civil society participated to the DIVERSIFOOD project

ProSpecieRara is a non-profit and non-governmental organization that has been conserving and actively promoting biodiversity in agriculture since 1982. In close cooperation with farmers, private and public institutions and 3'500 volunteers, ProSpecieRara guarantees the survival and sustainable use of endangered cultivated plants and rare breeds.

Réseau Semences Paysannes is the french Farmers' Seeds Network, established in 2003 brings together a great diversity of more than 90 collectives and people who preserve farmers' seeds in fields, orchards, vineyards and gardens. They are involved in supporting the consolidation of local initiatives to maintain and renew cultivated biodiversity.



Results and discussion

Organisations from civil society participated to the DIVERSIFOOD project

Rete Semi Rurali is the Italian Farmers' Seeds Network, established in 2007 and consists of 30 associations. The commitment of RSR consists in supporting farmers, politically and scientifically, in the creation and dissemination of self- and truly sustainable organic farming systems.

Red Andaluza de Semillas is the Seed Network of Andalusia. It is an organization working for the last 10 years that aims to cope with the loss of agricultural biodiversity in Andalusia and also with the loss of peasant knowledge.

Arche Noah was founded in 1997. The main business objective is the provision of propagation material and other products (e.g. food) derived from plant genetic resources – rare and/or local or regional varieties of Austria and Central Europe. The association involves 14.000 members and supporters in Austria, Germany and other countries.



Results and discussion

Organisations from civil society participated to the DIVERSIFOOD project

- Overall, the organisations work on cereals, forage crops (grass), legumes, potatoes, beet (sugar fodder), oilseed crops, fibre crops, vegetable crops, ornamental crops and trees .
- All the organisations worked with local varieties and landraces or new farmers' varieties. **AN, PSR, RAS, RSP** work also with commercial /registered varieties. Some of them being listed as amateur or conservation varieties in the EU Common Catalogue of Varieties.
- All the partners are working with varieties from the public domain. Some members of **RSP** are working with varieties managed by collective right that are not open to everyone (i.e. not in the public domain).



Results and discussion

How do the organisations deal with their data ?

All organisations use databases to manage their data with different objectives :

- open access database online to display characteristics regarding varieties cultivated by farmers or gardeners (**RSP**)
- store information on relations between seed-lots (reproduction, selection, diffusion, mixture) and link information to relations and seed-lots for internal use of Community Seed Banks or networks of CSBs regarding PPB programmes (**RSP**)
- store information about varieties, and their uses by farmers in different areas and years (**RSR**)
- store information about the farm and agroecological conditions of the farm (**RSR**)
- store information about traditional knowledge linked to the variety



Results and discussion

How do the organisations deal with their data ?

All organisations use databases to manage their data with different objectives :

- record the data of the farmers participating, the name of varieties, their regions of origin and their characteristics, exchange of material among farmers (**RAS**)
- store passeport data and basic descriptions ; data on location ; monitoring germination rates ; monitoring decentralized management links to pictures and characterisation data (**AN**)
- manage the information they have on the varieties enable an efficient workflow (**PSR**)



Results and discussion

How do the organisations deal with their data ?

- All organisations manage data on varieties in several locations and several years.
- The databases are often used for daily business
 - **AN** and **PSR** : the database is the core of the functioning of the organisation.
 - **RSR**, **RSP** and **RAS** : the database become more and more important in their organisation.

In all cases, databases are seen has one of the key point of the different organisations.

- The databases are based on local server (**RSR**, **AN**, **PSR**), a server in another place for **RSP** or on local computer for **RAS**. The data base are either working on Linux (**RSP**, **RSR**), Windows (**RAS**, **AN**) or Mac (**PSR**).

Results and discussion

How do the organisations deal with their data ?

The following information are stored in the databases :

- Agronomic (**all**)
- Organoleptic (**all**)
- Country of source (**all**)
- Personal data of the farmer (**all**)
- Country of origin (**all** but not **RSR**)
- Information on sources (**all**)
- Date of entry of the accession (**all**)
- Seed lots (**all** but not **RAS**)
- Plants within seed lots (**all** but not **RAS**)
- Photos (**all**)



Results and discussion

How do the organisations deal with their data ?

The following information are stored in the databases :

- Location of multiplication, origin (**all**)
- Field within location (**all** but not **AN**)
- History of seed lots within a network (diffusion, reproduction, mixture, selection, . . .) (**all** but not **RAS**)
- Climate where the accession are grown (**all** but not **RAS** and **PSR**)
- **Traditional knowledge linked to the varieties** (**all** but not **PSR**)
- **Traditional uses** (**all** but not **PSR**)
- Local names (**all**)
- result of Nagoya compliance check (**AN**)



Results and discussion

How do the organisations deal with their data? **Specific descriptors**

- **AN** uses EURISCO passport descriptors for all accessions and – for some crops - UPOV and Bioversity International descriptors that have been adapted to their needs.
- **RSR** use Bioversity International descriptors and the descriptors developed by the national guidelines on conservation of agricultural genetic resources in Italy developed by the Ministry of Agriculture.
- **RSP** and **RAS** use none of these descriptors but have elaborated their own descriptors.
- **PSR** have passport data for every variety. Further descriptors depend on the culture, especially with the fruits and berries which are based on UPOV.

Each organisation has its own descriptors corresponding to their local needs. Some of them are close to institutional standards.

Results and discussion

How do the organisations deal with their data ?

Each database rely on different programm (postgresql, python and django, Mysql, Access, FileMaker) and under different licence (AGPL, open source licence, filemaker licence)

Exemple of database with interfaces :



Results and discussion

How do the organisations deal with their data ?

Exemple of database with interfaces :

Prepare & upload files Manage data Search/Export data About

Upload a file

We have the possibility to submit a file to insert data into the database.

Submit a file

File : No file selected.

Method : No file selected.

Cross
 Diffusion
 Mixture
 Reproduction
 Intra seed lot selection
 Individual data

Chromosome Species :

Results and discussion

How do the organisations deal with their data ?

Valorize data through

- queries (on location, varieties, farmers, year of cultivation, etc)
- plots (barplot, radar plot, box plot, biplot, maps, . . .) with R or excel
- tables with R or excel
- variety portraits and seed catalogue

Within DIVERSIFOOD

- **RSP** is developing an R package (PPBstats) that can make descriptive and statistical analysis dedicated to PPB programme
- Objective to disconnect the analysis from the data base, each data bases can format their data to be run by the R package.



Results and discussion

Needs of the organisations regarding data management

Lots of needs regarding data storage and data analysis . . .



Results and discussion

Rules regarding data management

All the organisation have specific rules to manage their data. There are two approaches :

- open the data to everyone
- restrict the data to a group regarding edition or querying of data with a password.

Nevertheless, several report based on data freely available.

No one encrypt their data.



Results and discussion

Rules regarding data management

Each organisation use MTA when exchanging seeds :

- **RSR** developed a simplified material transfer agreement (sMTA) for sharing seeds within the network.
- **AN** with regards to traceability and documentation ; procedures aiming at Nagoya compliance in the network are being prepared.
- **PSR** makes an MTA when seeds are for research uses or commercial uses.
- **RSP** and **RAS** use MTA in their exchange of seeds.



Conclusions and further steps

- CSB gather several information especially regarding agronomic data and users knowledge on varieties.
- No one has the same software based system neither the same structure of the information. Nevertheless, there are similarities in the information stored.
- All the organisation deal with the same kind of outputs (graphs, tables, ...)



Conclusions and further steps

- interaction with outside :
 - research programme
 - data management plan
 - MTA and sMTA
 - Questionnaires
 - Consortium Agreement
 - publication,
 - IP on results,
 - etc
 - the whole world and biopiracy risk (patent mainly)
 - Nagoya and ITPGRFA (cf numerical data on genetic sequences)
 - quid link with Eurisco ?
 - quid licence on data ?
 - financial support is needed to maintain database of organisations
 - keep the system updated and improve it



Conclusions and further steps

- internal organisation :
 - quid big data and data mining in CSB functioning ?
- need for further juridic work regarding data status and property
- work on quality of data

The political environnement regarding patents on gene based on numerical data is a threat for biodiversity cultivation and use.



Thanks for your attention !

