BIOVERSITY INTERNATIONAL REPORT FACT SHEET

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FULL TITLE of REPORT/PROJECT	New technical developments of the database model dedicated to the management of genetic resources of perennial fruit crops such as *Prunus* and *Pyrus*	
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ABSTRACT	INRA has developed a Fruit Database model from the 1st November 2009 to the 15th October 2010 that could benefit directly to the ECPGR *Prunus* Database, and indirectly to the ECPGR *Pyrus* Database. The objectives of this LOA were to improve the Fruit Database model by funding the staff development of new functionalities such as the photo search tool and the advanced search tool that were not functional in October 2010. Much functionality was added thanks to this contract. Now the Fruit Database model is clearly improved and the application is quite finished. Nevertheless the technical work planned was over estimated and all the tasks were not fully achieved due to the lack of time.	
KEYWORDS	Country/Region: countries part of the ECPGR *Prunus* and *Malus/Pyrus* working groups Crop(s): *Prunus, Pyrus* Subject: ECPGR, database development, genetic resources, *Prunus, Pyrus*	

New technical developments of the database model dedicated to the management of genetic resources of perennial fruit crops such as *Prunus* and *Pyrus*

1. *Objectives*

The ECPGR *Prunus* Database is being maintained by the French national Institute for Agricultural Research (INRA) in Bordeaux, France, under the initiative of the ECPGR Networks since 1994. This database manages passport, characterisation and evaluation data of *Prunus* genetic resources. It includes all European *Prunus* accessions from many European countries.

In 2009, INRA has decided to improve the existing *Prunus* database tool (cherry database: http://cbi.labri.fr/outils/EPDB/index.html). A completely new tool has been developed since November 2009 by Thomas Persohn, a temporary contract person specifically hired by INRA for that task (EU GEN RES GenBerry project). T. Persohn has built the Fruit Database model which can manage Strawberry genetic resources (deliverable of GenBerry project, work package 6, from the 1st November 2009 to the 15th October 2010). With a few additional functionalities, the Fruit Database model can be adapted to *Prunus* species (particularly cherries) and to other perennial fruit crops such as pears (*Pyrus sp.*). The Strawberry database will also directly inherit from those new functionalities.

The additional work planned into this present Letter of Agreement was to develop new functionalities to the Fruit Database model, which will benefit the ECPGR European *Prunus* Database and consequently the ECPGR European *Pyrus* Database without starting developing two completely new tools. Moreover those two databases will naturally be closer to each other, which is one of the objectives of the ECPGR Fruit Network (harmonisation of Fruit databases). The ECPGR Fruit Network has included in its budget for Phase VIII a budget line for the development of the Fruit databases and the work here described has been approved by the *Prunus* Working Group and by the Coordinators of the Fruit Network for the use of these funds.

2. *Programme, Outputs, Degree of Achievement of objectives, Constraints*

- Develop the **photo search tool** which was not functional in October 2010

Outputs: The main part of the time was dedicated to develop this new functionality. Now the photo search tool was successfully developed. First a search page was created giving the possibility to the user to find pictures that he/her wanted to find. The following four descriptors were chosen as selection criteria:

- Accession name
- Accession number
- Holding institute (code, name)
- Photo category (e.g. fruit)

Then a results page was created giving results of the search summarized in a table with as many added columns as the existing categories of pictures (e.g. two columns for fruit and flower pictures). Only accessions presenting at least one picture are listed in the table. Small pictures are included in the table and it is possible to have a look to the large ones.

Another technical development was dedicated to the upload process of photographs. This functionality was not functional in October 2010. Now the partners will be able to add pictures, using a dedicated web interface.

Degree of achievement of objectives: fully achieved

Constraints: this task was time consuming

- Develop the **advanced search tool** in order to allow to public and partner people a useful way to find the information they are searching for, because the advanced search tool was not as convivial as it could be in October 2010

Outputs: The advanced search tool was developed for passport and characterisation/evaluation data as well as for molecular data.

First the passport and characterisation/evaluation search tools allow the user to select search criteria among the list of existing descriptors. As many descriptors could be listed, the administrator can create groups of descriptors such as "EURISCO descriptors" or "*Prunus* specific descriptors" for passport descriptors. The results are represented in a table listing accessions that correspond to the selected search criteria.

Then regarding molecular data, the user will be able to select specific search criteria such as the type of markers (e.g. SSR), the name of the marker(s) selected among a list of existing ones, the linkage group, etc. The results will be summarized in a table giving overall statistics on the number of the genotyped accessions per molecular marker, the minimum and the maximum values of the allele size for SSR markers, etc.

Degree of achievement of objectives: 95% achieved

Constraints: this task was particularly time consuming and some additional developments will be needed to finalize the advanced search tool.

- Add the following synthetic fields that have to be automatically generated for characterisation and evaluation data:
    - For quantitative descriptors: number of year of observation, average, standard deviation, minimum value, maximum value

Outputs: All the five fields were actually added to the accession table of results concerning characterisation and evaluation data. It corresponds to five new columns added at the right side of the characterisation and evaluation per year column(s). These new information is automatically calculated from the data per year for every characterisation and evaluation descriptor such as fruit size.

Degree of achievement of objectives: fully achieved

Constraints: none

    - For qualitative descriptors: the most representative value

Outputs: The column summarising the most representative value for qualitative data was actually added. If there is only one year of observation, the most representative value will be the same value. At the opposite if there are several years of observation the most representative value will be chosen among all values per year as the most representative one. If two different values were equally represented, the most representative value will be not deduced.

Degree of achievement of objectives: fully achieved

Constraints: none

- Collaborate with the "Centre de recherche agronomique Wallon" (CRA-W) of Gembloux, Belgium, to obtain an external point of view of the new functionalities (and adjust if necessary)

Outputs: One month and a half were too short to present the new functionalities to the CRA-W. As a consequence, it was not realised during the contract. It will be achieved before March 2011.

Degree of achievement of objectives: not achieved

Constraints: lack of time

- Write a user handbook that could help users to both use the search tools and upload/download data into the database

Outputs: For the same reasons of lack of time, the user handbook was unfortunately not written during the contract. It will be achieved before March 2011.

Degree of achievement of objectives: not achieved

Constraints: lack of time

- Write an administrator handbook that could help future administrators to administrate their database. This document will be analyzed by both INRA contact scientist and CRA-W and it will be revised if necessary.

Outputs: The administrator handbook was written, particularly for:

- Application installation on Linux or on Windows XP (how to deploy the application and the database)
- Package creation (how to create a package from the last updated version of the application)
- Application customisation (how to change the theme of the application)

Nevertheless it will be necessary to complete the document with technical guidelines on how to add descriptors, data and partners.

Degree of achievement of objectives: partially achieved

Constraints: lack of time

3. Conclusions/Recommendations

Much functionality was added thanks to this contract. Now the Fruit Database model is clearly improved and the application is quite finished. Nevertheless the technical work planned was over estimated and all the tasks were not fully achieved due to the lack of time.

Anyway the Fruit Database model will be finalized before March 2011. The European *Prunus* Database will consequently be online and the database model will be deployed to the CRA-W of Gembloux (Belgium) in a view to create the European *Pyrus* Database.