Example and challenges of managing the *Pyrus* ECPGR Data Base

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Back to the roots…

Adam und Eva im Paradies
Lucas Cranach (1472 – 1553)

Bloedpeer
X 50
29/09/2005

Conditions for starting the developpment *in kind* of a ECPGR DB

- Is it usefull ?
- For who ?
- Do we bring efficient and adapted responses for potential users? Which users?
- Which are the goals?

    - Sharing data on PGR
    - Sharing PGR
    - Offering specific tools for a better management of PGR
    - Sharing experiences, competences, knowledges
    - Bring PGR information to potential users

- For which users?

    - Colleagues managers of PGR collections and WG's members
    - Farmers, scientists, ethnobotanists, environmentalists,…
    - Breeders
    - Economic actors (enterprises, nurseries,…)
    - Decisions makers
    - NGO's
    - Large public

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Conditions for starting the developpment *in kind* of a ECPGR DB

- **Explicite request and active support from the WG community and experts!**

- Need an adapted professional and official environment:

✓ *Ad hoc* competences and willingness of workers and Institute
on both :
- Data Base and informatic
- PGR and specific crop knowledges and management
- **Communication strategies**

✓ Ad hoc informatic tools (servers,…) and
✓ Capacity of updating tools and
✓ Capacity to create quality and security systems

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Inside the Pyrus WG - What we briefly achieved:

1. For a WG, CCDB plays a role of cement

2. Definition of standardized templates
for passport data and descriptors for
priority C & E;

3. Inventories & collect passport data and

other data (Never end story!);

4. Transfer data from MS Access to MySQL

Country	Number of accessions	Number of collections
Austria	214	4
Belgium	904	3
Bulgaria	120	1
Czech Republic	173	1
France	1272	2
Germany	553	3
Hungary	476	1
Israel	116	1
Italy	2022	16
Lithuania	183	1
Norway	146	1
Romania	362	1
Russia	25	1
Spain	111	1
Switzerland	2371	2
The Netherlands	99	1
United Kingdom	674	3
Yugoslavia	482	6
TOTAL	10303	49

5. Update the *Pyrus* DB Website and development of a PHP interface;

Specific tools :

6. Developpment of a synonym and historical data method & implementation of

a synonym search tool = 'Plant Finder';

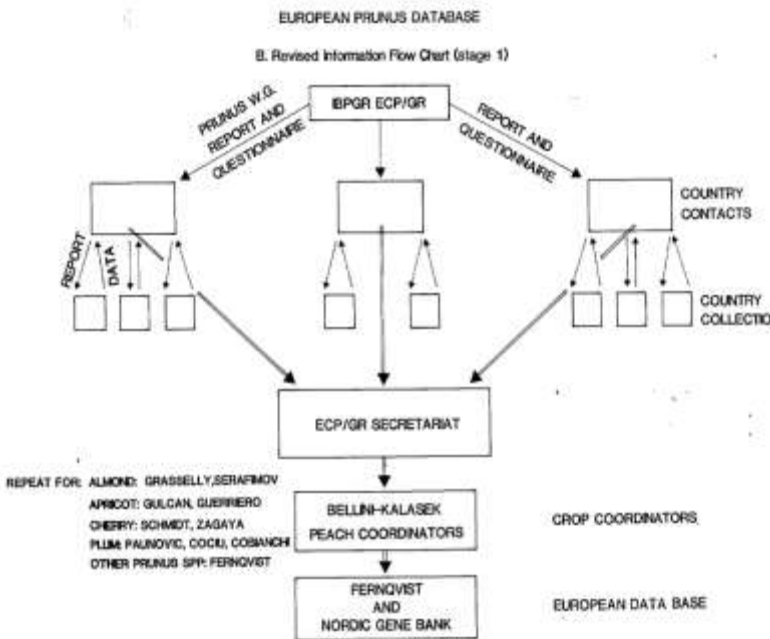7. Incorporation of pictures as a check of DB coherence (Never end story).

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Is it sufficiently durable ?

1983 Example of the *'Prunus' EPDB* = ECPGR – CCDB : 1983 -1988

EUROPEAN PRUNUS DATABASE

B. Revised Information Flow Chart (stage 1)

REPEAT FOR: ALMOND: GRASSELLY,SERAFIMOV
APRICOT: GULCAN, GUERRERO
CHERRY: SCHMIDT, ZAGAYA
PLUM: PAUNOVIC, COCIU, COBIANCHI
OTHER PRUNUS SPP: FERNQVIST

Documentation

1. Dr. S. Blixt, Head of Material at Nordic Gene Bank, as representative of the European Prunus data base (EPDB), provided the meeting with printouts of a draft European inventory. This did not include any additional passport data, nor characterization/evaluation data as recommended by the second meeting. Furthermore, it appeared that a few amended basic passport data, which had been sent to the European Prunus data base by Crop Coordinators, had not yet been included. Dr. Blixt explained why they had been unable to fully realize their commitments for the European Prunus data base (staff shortages and resignation, software changes, etc.). Nonetheless, he assured the meeting that the Nordic Gene Bank was now in a position to provide the necessary staff and facilities for an accelerated development of the EPDB.

2. Diskettes containing the data published in the first edition of the European Prunus catalogue (basic passport data) had been sent from the EPDB to Crop Coordinators in February 1988. This was with the intention to implement regional crop data bases in agreement with the recommendations of the second meeting. It was noted that

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1989 -1992
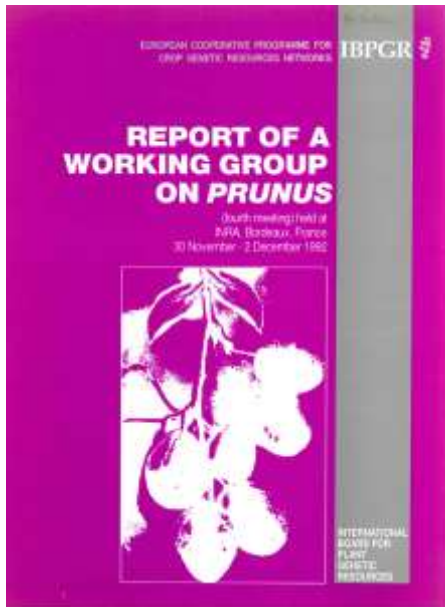
20 requested; only 5 requests were for the disk versions. In 1989 NGB indicated that, because of their lack of experience with Almond, Peach and Apricot, they wished to transfer responsibility for the European *Prunus* Database to another country. So there has been little activity since. Mr Frison explained that INRA Bordeaux has recently agreed to take over the database. The formal transfer is planned for early 1993 after the appointment of the INRA officer responsible for this work.

8. Considerable discussion followed on the format of future catalogues and on the composition of the database.

The Database

13. It was agreed that the database should be updated and made available for computer searching. Various modifications were agreed. The descriptor 'virus status' should contain as options not only 'virus free' and 'unknown' but also 'free from

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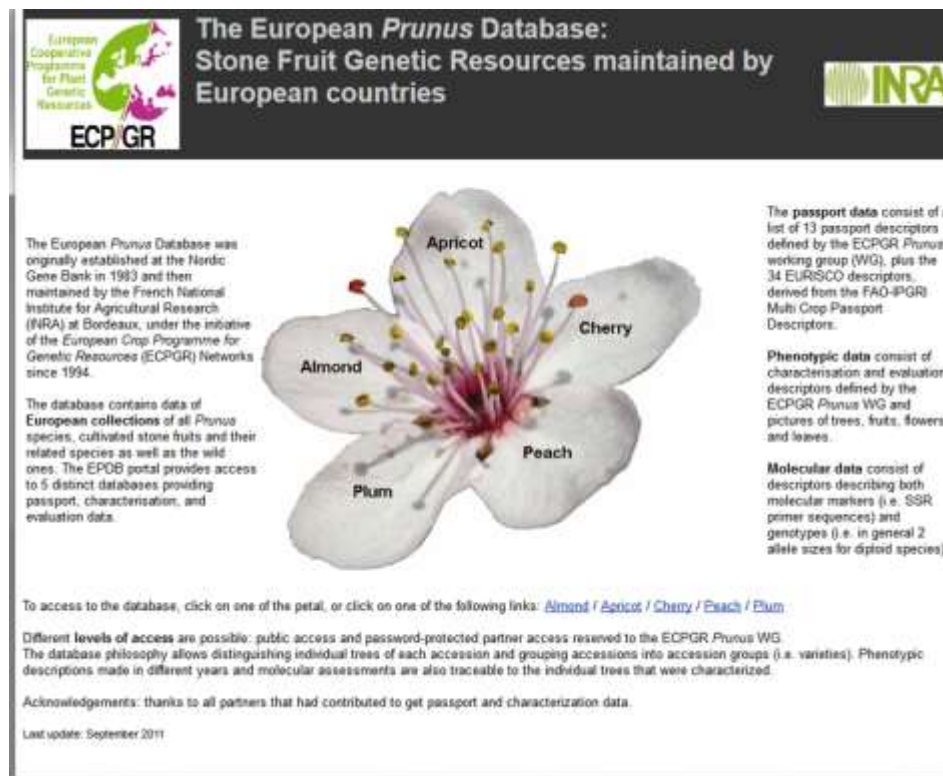
➢ 2011-2012
Thanks to EU funds – and ECPGR Fruit Coordinating Group funds

Last version of the ECPGR
***Prunus* Database**
(Emilie Balsemin & Thomas Pershons)

➢   2012 : Emilie BALSEMIN left INRA Bordeaux…everything will start again…

DB ACTIVITIES

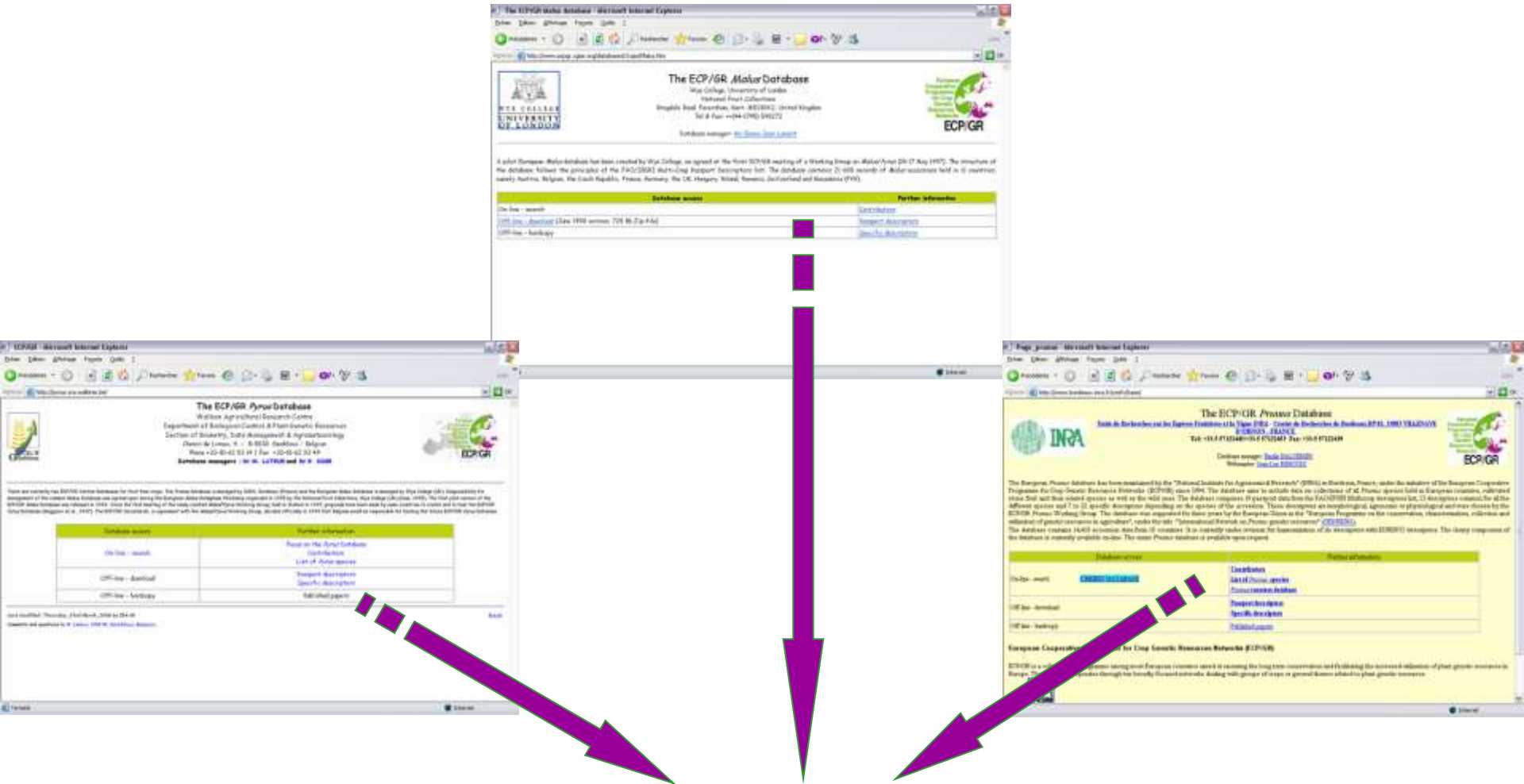End of a technology and/or changement of DB manager, less facilities,…

??
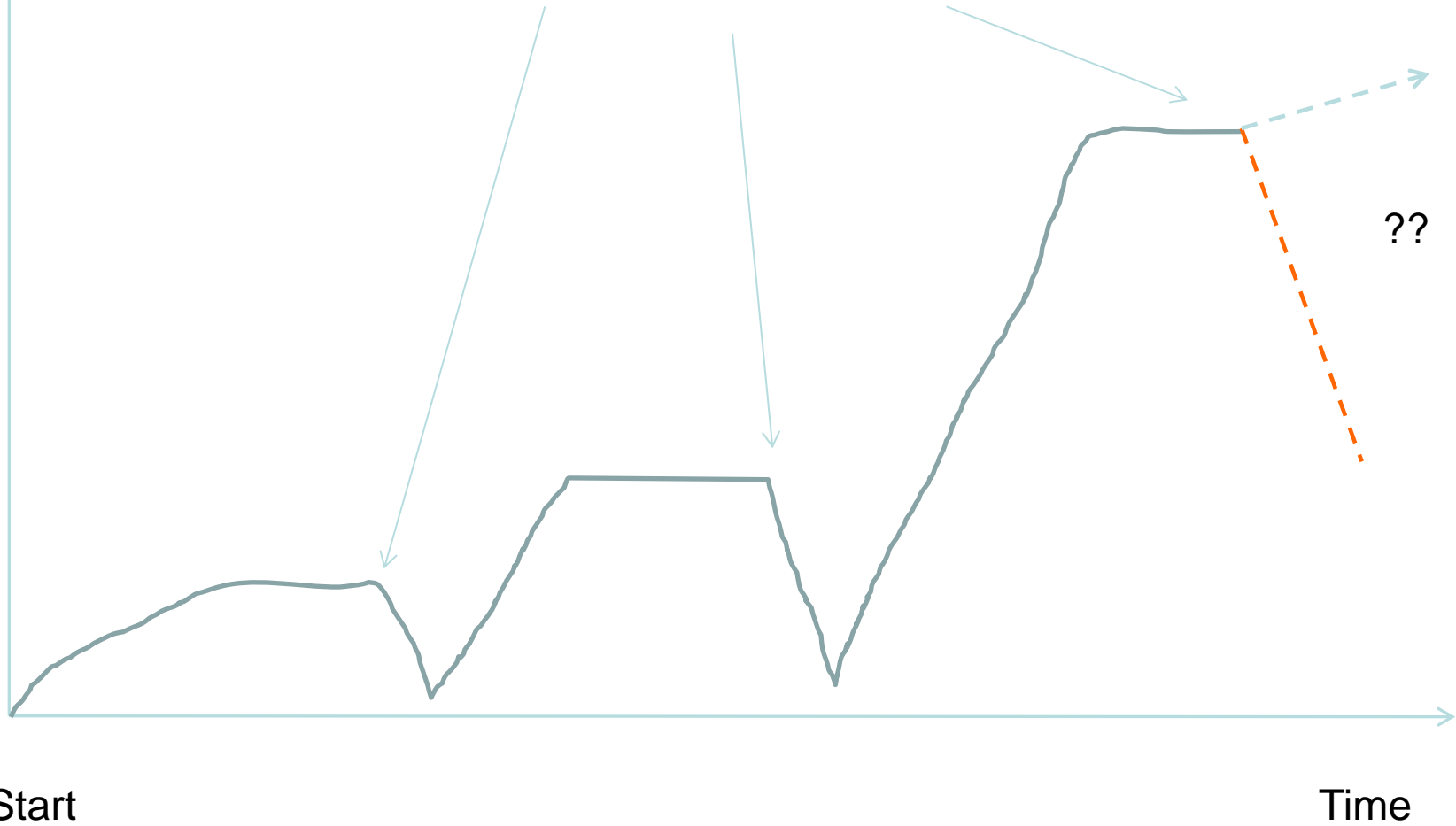
Start

Time

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Merging and sharing competences : Ad hoc ECPGR Fruit CCDB' Managers Meeting: harmonization of the databases interfaces

Create a common interface for the user, sharing tools and competences

1. Decision to strengthen the collaborative work and harmonisation of informatic environment (Open Sources):

(1) MySQL, PHP, Apache – Linux server; (2) Same model of homepage and (3) Same set of passport descriptors (FAO MCPD's, EURISCO, AEGIS)

2. An agreement was achieved that the *Pyrus* DB could move its structure into the new one which was developped at this time by INRA Bordeaux for the Cherry DB ;

3. In 2012 : Adopting an official agreement between CRA-W & INRA & ECPGR for sharing *Prunus* DB structure with *Pyrus* DB.

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Building collaboration protocols between
Prunus & Pyrus **ECPGR DB's**

• Fruit pictures is very important

• Need of a tool for creating an interactive a full screen of fruit pictures galery

• Synonyms topic need to be tackled – use of markers data

• **Need to harmonize the FAO, EURISCO, AEGIS Passport Descriptors**

•

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M1. Reference accession number (ACCENUMBREF)

Accession number identified as a reference for the accession

M2. Accession name type (prolongation of P11. ACCENAME) (ACCENAMETYPE)

Precision on the accession name. From where does the accession name come from?

1. Existing historical name
2. Oral tradition
3. Donor name
4. Collector name

Different types of names

M3. Validation material identity (*) (prolongation of P6. IDENTIF)
   (ACCENAMECHECK)

0. False
1. Valid
2. To be checked
3. Unknown
4. Looks like

Validation of genotypes

M4. Belonging to regional, national or EU collection (*)
(prolongation of P4. EUCOLL) (EUCOLLSCALE)

1. Regional collection
2. National collection
3. EU collection (AEGIS)

AEGIS concept

M5. Historical origin of the accession (*) (different from 13. ORIGCTY) (ORIGCTYHIST)

Code of the **country historical origin**. Use the 3-letter ISO 3166-1 extended country codes.
Example: NLD

M6. Main tree form (*) (different from 20. SAMPSTAT) (TREEFORM)

1. HT   Standard
2. HT/BT   Standard/Dwarf
3. BT   Dwarf
4. BT Espalier   Dwarf Espalier
9. Other, elaborate in remark field

M7. Main tree users (*) (different from 20. SAMPSTAT) (TREEUSERS)

1. Amateur
2. Public – Traditional / Education
3. Private - Commercial / Processing
9. Other, elaborate in remark field

M8. Ploidy level of the accession (*)   (PLOIDY)
  0. Undefined
  2. 2n
  3. 3n
  4. 4n

M9. Ancestral male parent (*) (prolongation of 21. ANCEST) (ANCESTFATHER)
Preferred name (cultivar name) of the male parent (ideally add extra field with the genotype reference

M10. Ancestral female parent (*) (prolongation of 21. ANCEST)   (ANCESTMOTHER)
Preferred name (cultivar name) of the female parent (ideally add extra field with the genotype reference

M11. GeonameID Location of collecting site (prolongation of 14. COLLSITE)
**   (COLLSITEZIP)**
Geo collection site identified by a unique identifier defined in Geoname database
Example: 2743467

Building collaboration protocols between *Prunus & Pyrus* ECPGR DB's (Suite)

- Need to easily insert characterisation & evaluation data
  + specific molecular markers data (SSR's)

- Need a user friendly querry tool

- Need a user friendly system for encoding the data in DB

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The new *Prunus/Pyrus* DB structure

1. **The database is based on recent technologies (open source)**

   MySQL 5.1+ is the database management system

   Apache 2 is the Web Server

   PHP 5.2.4+ is the scripting language

2. **Different levels of access**

   • **Public access** to "public accessions" only

   • **Partner access** with specific login and password for each partner

   - Each partner is responsible of its own accessions. Accessions and/or data could be "public" or "accessible only to partners"

   - Data of chosen descriptors, e.g. molecular data, could be available only to partners

   • **Private access** reserved to the database administrator

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INTERREG collaborative project & agreement between North France and Wallony

The *Centre Régional de Ressources Génétiques du Nord - Pas de Calais*

**The *Centre Wallon de Recherches Agronomiques à Gembloux***

SHARING:

• Management of fruit genetic resources : **common DB**

• Strategies and methods for conservation & use of genetic resources

• Pear and apple breeding programs and participative breeding project

• Trials for old cvs and new breeding lines in evaluation orchards under organic production

• Virus tested bud-wood mother trees for releasing best performing cvs

• Web-site.

 SYNERGIES & COMPLEMENTARITIES

Common communication actions and tools for promoting the use of FTGR
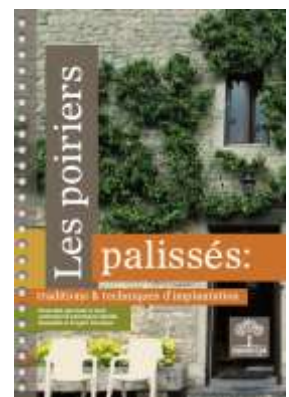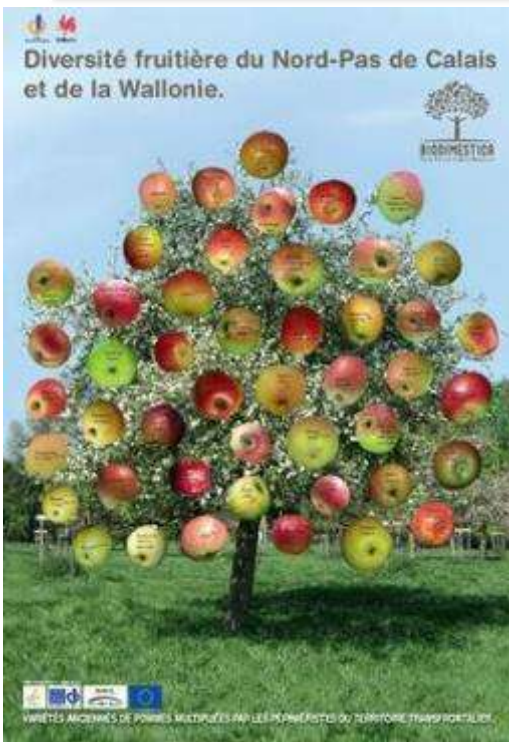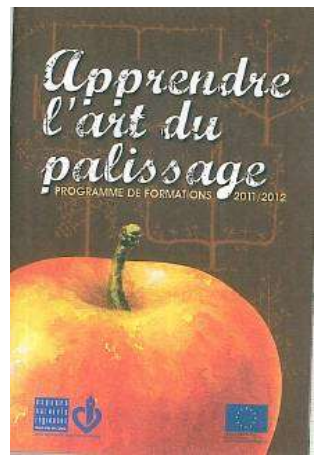
Our transborder strategic choices:

- Building two tools at different levels:

➢ A **Work DB's** designed for our collection management with specific tools dealing with

- traceability from collecting material - nursery to orchards,

- management of repository orchards & evaluation orchards,

- data store, management and scientific querries – analysis of pluri-annual C & E data,

- picking budwood, synonyms, historical data, markers data…

- save conservation strategies : *in situ, ex situ*, on farm, *in horto*,…

➢ A dynamic **Web-site** open to all public and adapted to different users with :

- 'Ready to use and analyzed, summarized, simplified data'

- Querry tools for services, What? How? Where? When?

→ large public, nurseries, fruit processors, farmers,…

Praha – May 2014

WITH COMMON & HARMONIZED STANDARDS !!

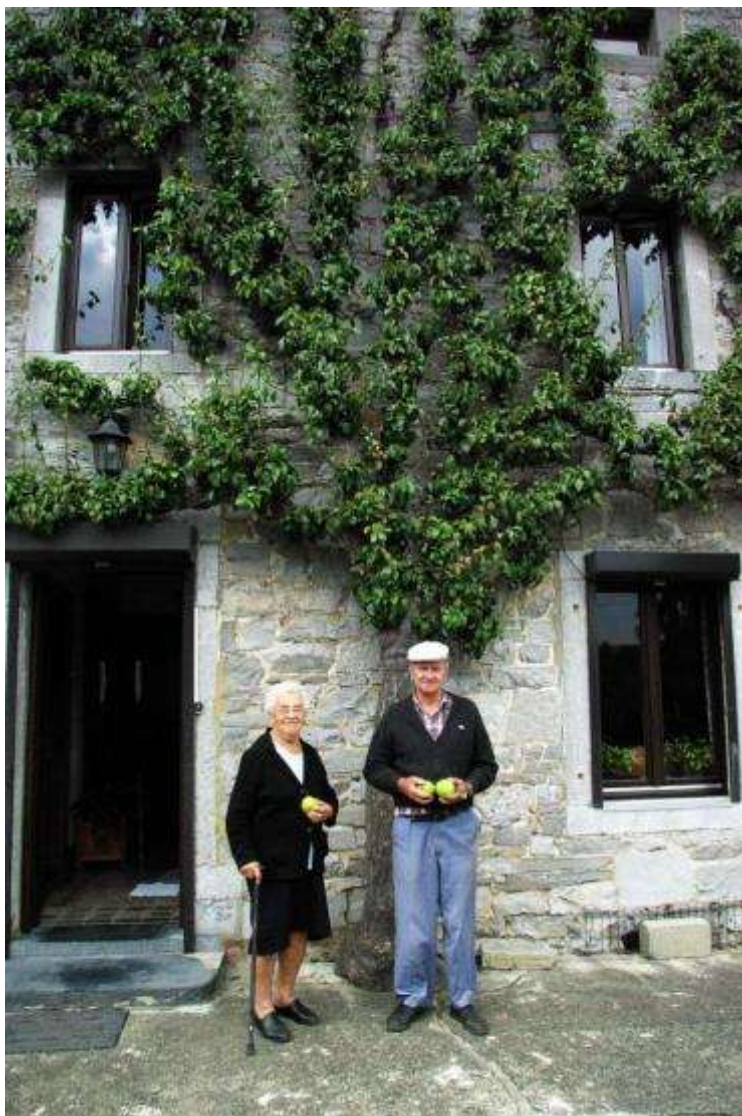ECPGR - Tailoring Doc of PGR in Europe to the needs of users

Some reflections for discussion:

- CCDB's, actively supported by the WG's community, cost not so much and plays a role of « cement » and is nearer the core of ECPGR activities based on crop experts.

- Do we not need different DB's at different levels ?

➢ **Local Work DB's** designed for collection managers with specific management tools. *Common structures could be shared among us…*

➢ **'Ready to use' DB's specifically oriented to users:** managed by ECPGR WG's and **translated locally** where data are analyzed, summarized, simplified and specific designed for a diversity of potential users :

   - scientists, researchers, breeders, nurserymen, fruit processors, large public, farmers, historians, environmentalists, teachers,……

➢ **EURISCO official European PGR Catalog** = Sum of NI's + **AEGIS**

   WITH COMMON & HARMONIZED STANDARDS !!

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Special Thanks to all the past generations of farmers, breeders, local people and the whole PGR community !

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