INTERREG III

Cross-border fruit tree genetic resources and biodiversity

Management and development of Franco-Walloon fruit tree biodiversity

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**Action 1**  
**Cross-border fruit biodiversity management and valorisation**
- Creation of a common database ⇒ to optimise the management and the valorisation of fruit trees collections of the partners  
- Standardisation of the assessment and development methods  
- Identification and study communally fruit trees in two core orchards  
  ⇒ **Rationalisation of collections**  
- Creation 2 trial orchards ⇒ studying and valorisation of most interesting varieties  
- Creation and marketing of new pear varieties

**Action 2**  
**Economic and educational valorisation of fruit tree genetic resources**
- Diversifying the supply on the market  
- Offering consumers fruit of a better organoleptic quality, with fewer phytosanitary treatments.  
- Support for the creation of a certified quality fruit tree production sector (professional nurseries)  
- Involving local people in the cross-border area in the issues connected with conserving their rural resources and developing sustainable agriculture
Caracterisation of collections

- Realisation of assessment fruit trees and fruits (scab, *Nectria* canker, powdery mildew, flowering, taste, conservation, ...)
- Harmonisation of assessment scales in common
- Photos of pears and apples
  - CRRG : 900 apple, pear and plumds fruit photos
  - CRA-W : 255 pear photos
  - For each photo -> 5 views of fruits
Sharing responsibilities for long term conservation

- Same database
- Identification of gaps, duplicates and redondant cvs
- Merging the two collections by sharing responsibilities
Trial orchards

- **Objectives**: experimentation of
  - interesting old cvs evaluated formerly by the partners
  - new apple varieties previously created by the two institutions, “Super-Elites”

  ⇒ Organoleptic quality, disease resistance, adaptation to local conditions, sustainable agriculture

- **Collaboration and division of tasks**
POMEXPO 2005
Pear breeding programme

- Fabulous heritage of biodiversity collected in Gembloux and in Villeneuve d’Ascq = basic step
- Belgium and especially the Hainaut played a precursor role in creation of smelting pear cvs from 1740 (Hardenpont in Mons) to 1850
  - more than 1100 ‘bourgeois’ varieties
  - followed by France creating about 1500 varieties.
Pear breeding programme

- **Objectives:**
  - To offer original alternatives to the monoculture of the ‘Conference’ variety
  - To permit genetic progress enabling growers to reduce the phytosanitary treatments
  - Collaboration with Jo MOORS (private breeder)
Pear breeding program

- **Common criteria to select:**
  - **Low disease susceptibility:**
    - Pear scab ⇒ moderated susceptibility on leaves and fruit tolerated but showing resistance to wood infection
    - Fire blight
  - **High gustative quality**
  - **Nice or original look**
  - **Storability**
  - **Productivity**
  - **Parthenocarpy**
**New trends on the market** + **Heavy plant protection schemes** ➔ **Environment impact**

**Fire Blight** ➔ **Health impact**

**Scab** ➔ **Economic impact**

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**Durable Solution** =

**Breeding new commercial Cvs**

**with durable partial resistance**

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**Breeding strategy** ➔ **GENETIC RESSOURCES**

**Good choice of the parents** ➔ **Manual pollination** ➔ **Young seedlings**

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**DIVERSITY** ➔ **First scab screening test** ➔ **Further selection process (Disease resistance, pathosystem, yield, quality,…)**

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**Multilocal trials** ➔ **Collaboration Key partners** ➔ **Marketing (« Clubs » ?,…)**

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**PEAR BREEDING INTERREG Project CRRG/CRAW**
Pear cross breeding

Female parent are commercial varieties

- Pollinisation 2004:
  - 6,420 pollinised flowers
  - 26 cross breedings 20 parents
  - 3,722 seeds (mean: 2.4 seeds per fruit)

- Pollinisation 2005:
  - 9,436 pollinised flowers
  - 33 cross breedings
  - 21 parents
  - 276 seeds! (bad pollinisation conditions?)

- Pollinisation 2006:
  - 15,542 pollinised flowers
  - 46 cross breedings
  - 33 parents
  - ?? seeds
Inoculation and incubation

Inoculation & incubation

→ Pear scab - *Venturia pirina*

(strains diversity)
Evaluation and selection

→ In nurseries (done by the CRRG)
  ✓ Evaluation
  ✓ Elites selection
  ✓ Grafting

→ In orchards (done by the CRA & the CRRG)
  ✓ Evaluation of tasting qualities
    disease susceptibility
    blooming period ...
Results

Examples of interesting crosses for scab resistance

- 2004-26 (n=208)
  Doyenné du Comice X Pomme-Poire

- 2004-19 (n=101)
  Doyenné du Comice X Missuit
Results

Examples of uninteresting crosses for scab resistance