Genetic reserve conservation of crop wild relatives (CWR) and landraces in Europe

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AEGRO

… and supporters

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Habitat

In situ conservation

Evolution

Farm Environment

On-farm conservation

AEGRO

In contrast to genebanks …, genetic wildlife conservation must recognize the long-term needs – the need for continued evolution within natural environments, … (Jain, 1975)

Breeder's field

Genebank

Ex situ conservation

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PGR Forum project (2002-2005):

Development of methodologies for CWR in situ conservation in Europe
Creation of the CWR Catalogue for Europe and the Mediterranean (CWRIS)
Promotion of the genetic reserve conservation technique

Genetic reserve conservation
involves the location, management and monitoring of genetic diversity in natural wild populations within defined areas designated for active, long-term conservation (Maxted et al., 1997).

Council regulation 870/2004 included

… action promoting the in situ conservation … of genetic resources
… establishment of a web-based inventory of genetic resources …
… establishment of a European … web-based inventory of in situ facilities (resources) …

In situ facilities can be understood as

genetic reserves for crop wild relatives and
locations where landraces are managed on-farm

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AEGRO project objectives

1. Development of in situ management workplans for crop wild relatives (CWR) and landrace conservation.

2. Identification and recommendation of sites suited to the establishment of genetic reserves for selected model crops (*Avena, Beta, Brassica, Prunus*).

3. Description of the organizational, legal and technical framework conditions for genetic reserves in the project partner countries.

4. Development of procedures required to establish multi-CWR-species sites to allow maximum use of the recommended sites.

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AEGRO project objectives

5. Development of technical guidelines and quality standards for genetic reserves.

6. Development of data base tools required for population management and monitoring and integration of these tools in existing information systems.

7. Finally and most important, elaboration of a methodology for generation of the aforementioned strategies based on existing generic methodologies and experiences extracted from the four crop and landrace studies.

8. The promotion of the development of national CWR and landrace conservation strategies within the EU member states as components of an integrated EU strategy is the overarching goal of this project.

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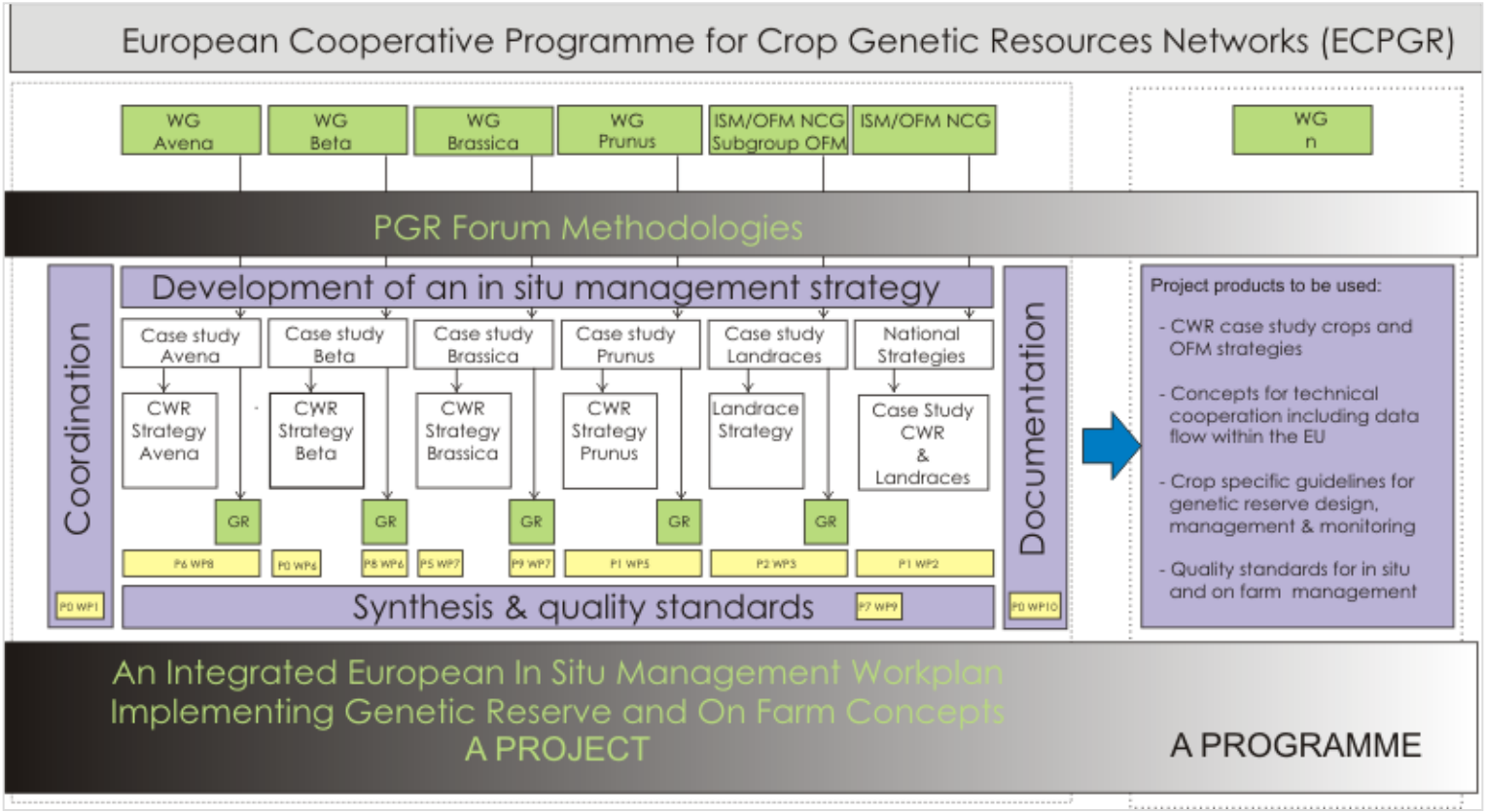
AEGRO project structure (10/2007- 03/2011)



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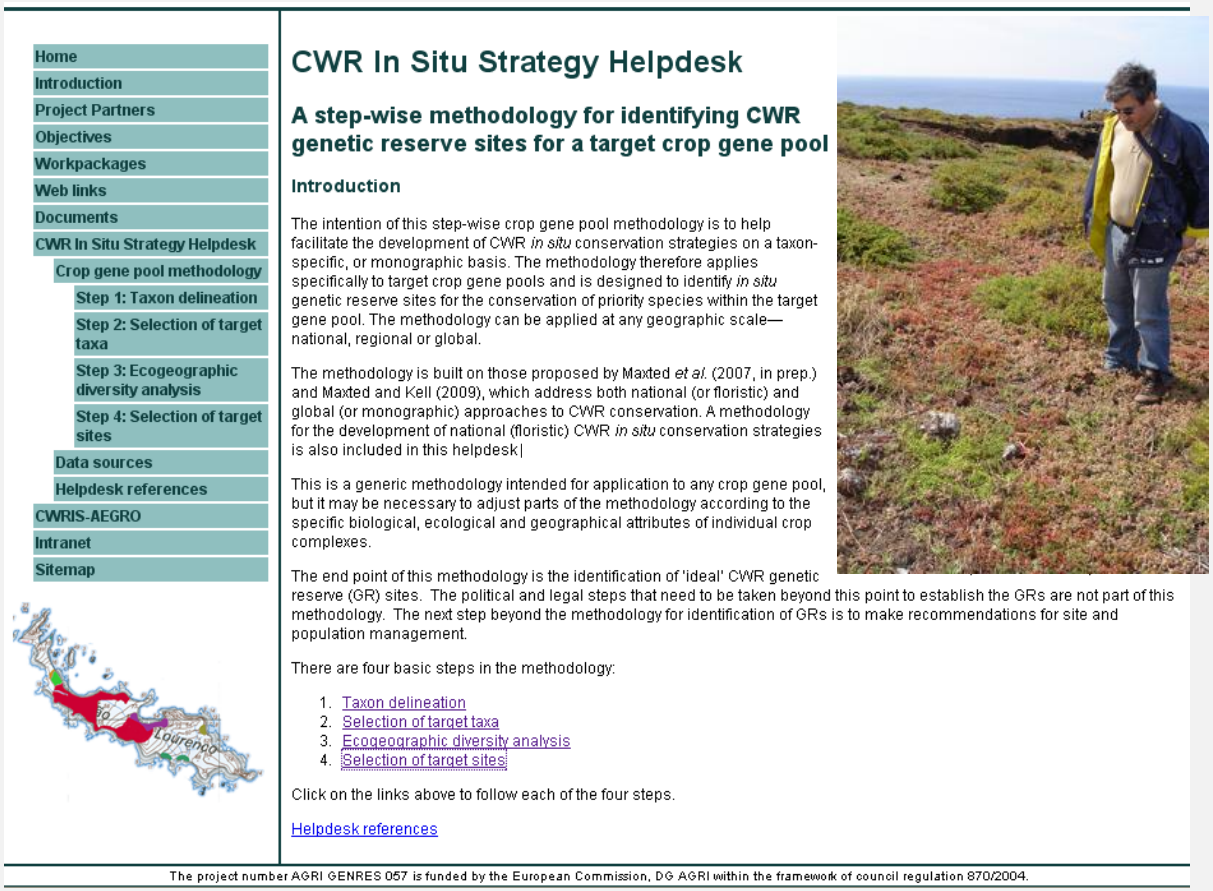
Results (Symposium, Helpdesk)



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Results (CWRIS AEGRO Population Level Information System (PLIS))

- Home
- Introduction
- Project Partners
- Objectives
- Workpackages
- Web links
- Documents
- CWR In Situ Strategy Helpdesk
- CWRIS-AEGRO-PLIS
- Intranet
- Sitemap

The Crop Wild Relative Information System (CWRIS) provides a structure for the management of species level as well as population level information. Within the AEGRO project four independent modules collectively called "Population Level Information System" are being developed for *Avena*, *Beta*, *Brassica* and *Prunus* allowing the search for occurrence within a specific species. PLIS exemplarily extends CWRIS. PLIS combines different data sources and uses harmonized data. It allows:

- Search for occurrences by taxon information
- Search for occurrences by geographic information
- Combined search for occurrences by geographic information (Eurostat administrative units, NUTS, LAU) and Natura 2000 protected areas
- Search results can be displayed on a map or downloaded as a file

AVENA

enter CWRIS-AEGRO-PLIS for AVENA

Sites of *Avena longiglumis*

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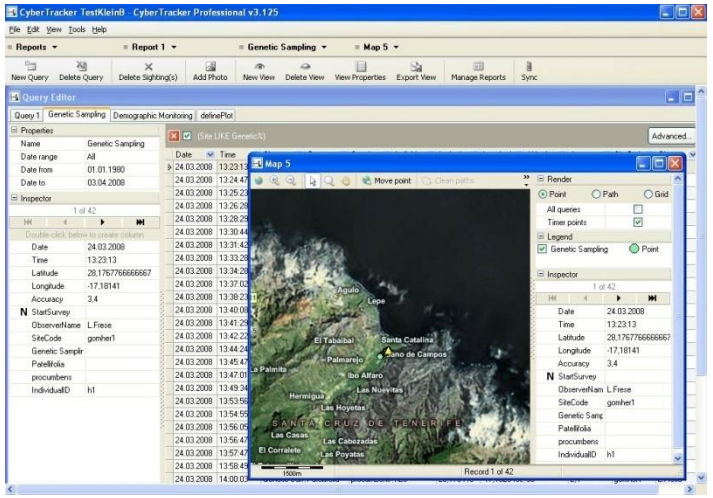
Results (Tool for recording of georeferenced data in the field)



CyberTracker application

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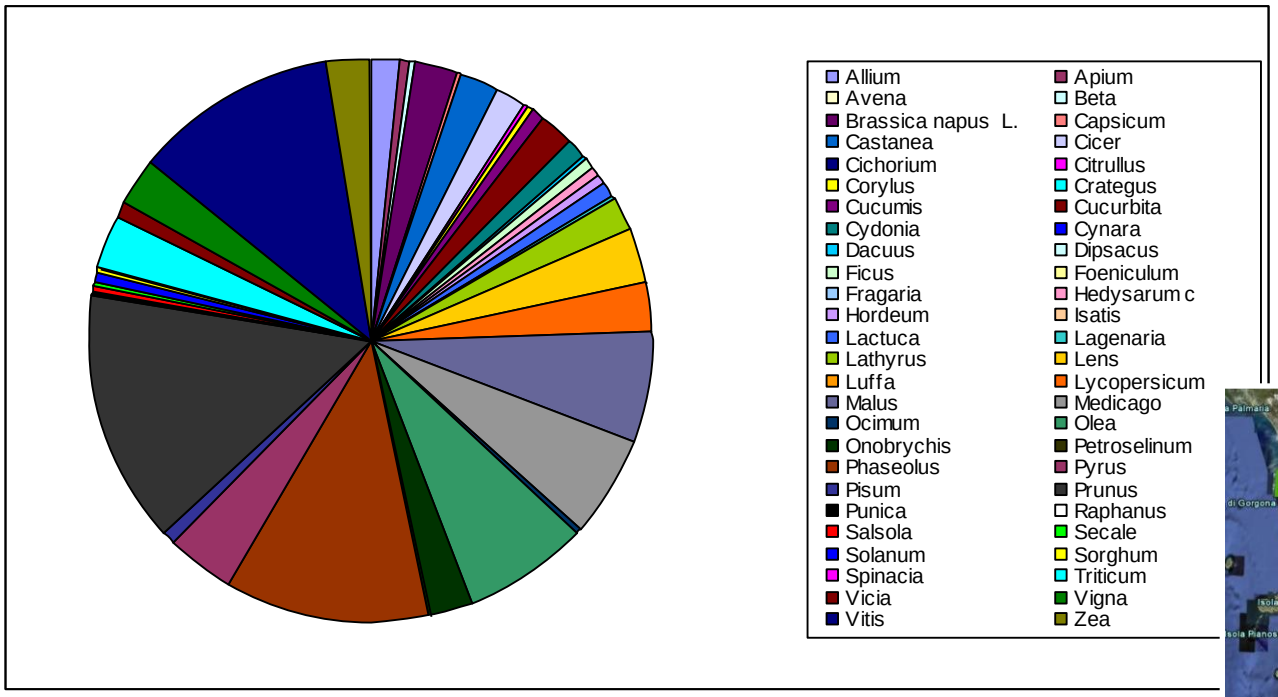
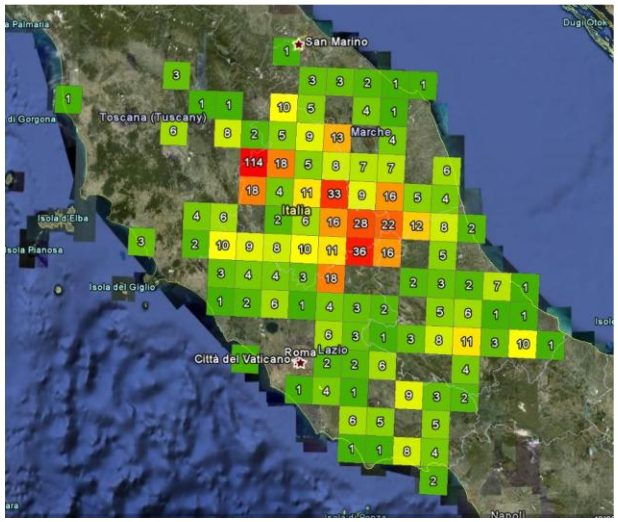
Results (Exemplary inventory of landraces in Italy)





Definition of criteria to be taken into account in planning conservation activities. Testing of strategies to identify the Most Appropriate Areas (MAA) where to carry out conservation activities.

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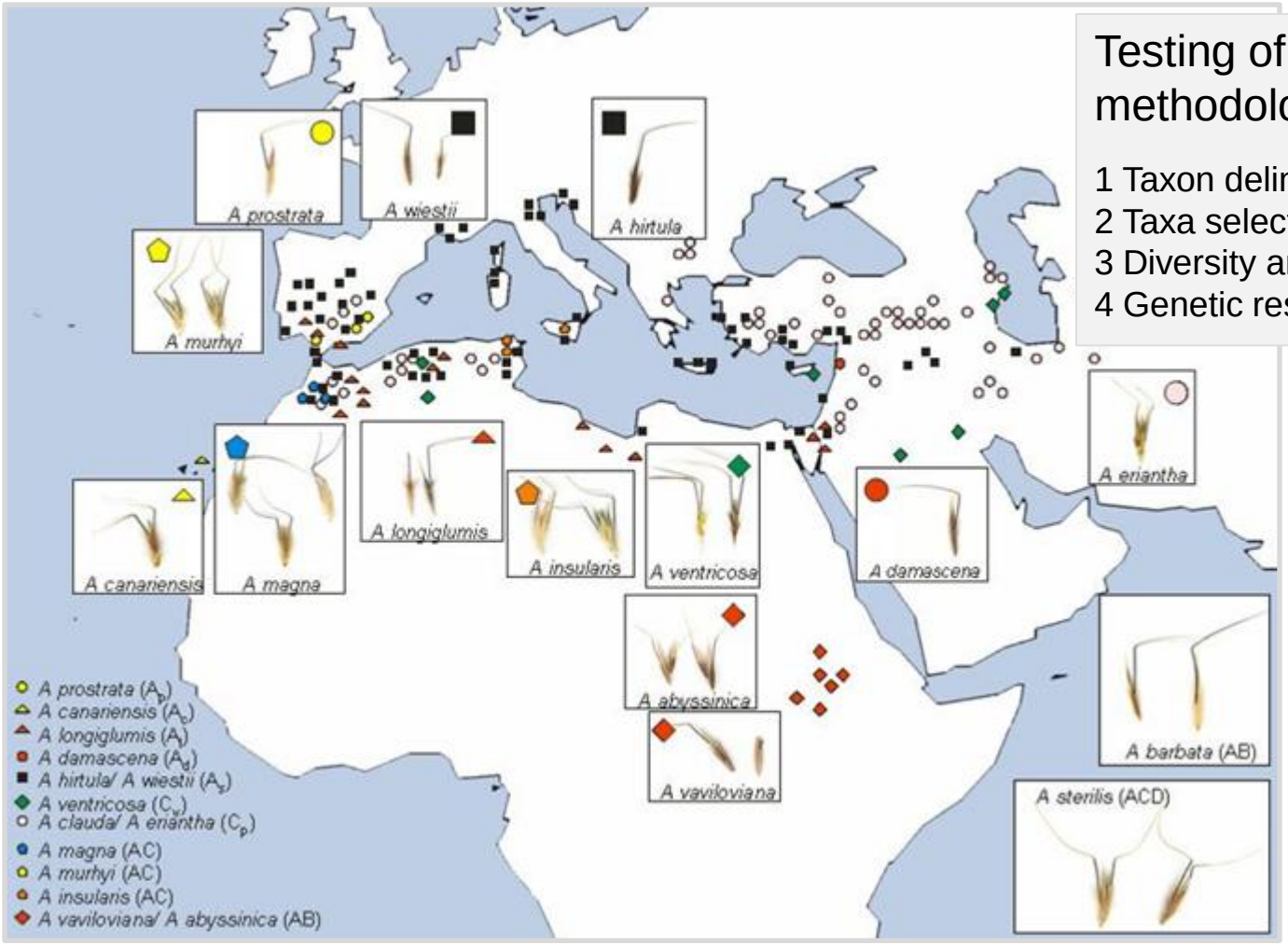
Results (Crop case studies – Avena, Beta, Brassica, Prunus avium)



Testing of the four steps methodology

1 Taxon delineation
2 Taxa selection
3 Diversity analysis
4 Genetic reserve site selection

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Results (Crop case studies)

Crop case studies

In situ management workplans for CWR conservation were produced for *Avena*, *Beta*, *Brassica* and *Prunus* to illustrate the application of a clear, step-wise methodology that can be applied to other crop gene pools in the future.

Landraces: A strategy to identify areas suited to manage a high amount of landrace diversity was developed and successfully tested in a case study area.

Prunus: Ecogeographic data compiled for the complete geographic range in Europe will allow reserve sites to be identified. Two of them are located in the UK and Germany.

Beta: Six taxa distributed within the EU were prioritized and so far a total of 15 reserve sites recommended. A monitoring baseline for *B. patula* was established.

Brassica: Five taxa distributed within the EU were prioritized and so far a total of 23 reserve sites recommended. For *Brassica macrocarpa* a monitoring baseline was established.

Avena: The EU level case study arrived at the conclusion that genetic reserves should be established for 5 species.

Brassica macrocarpa

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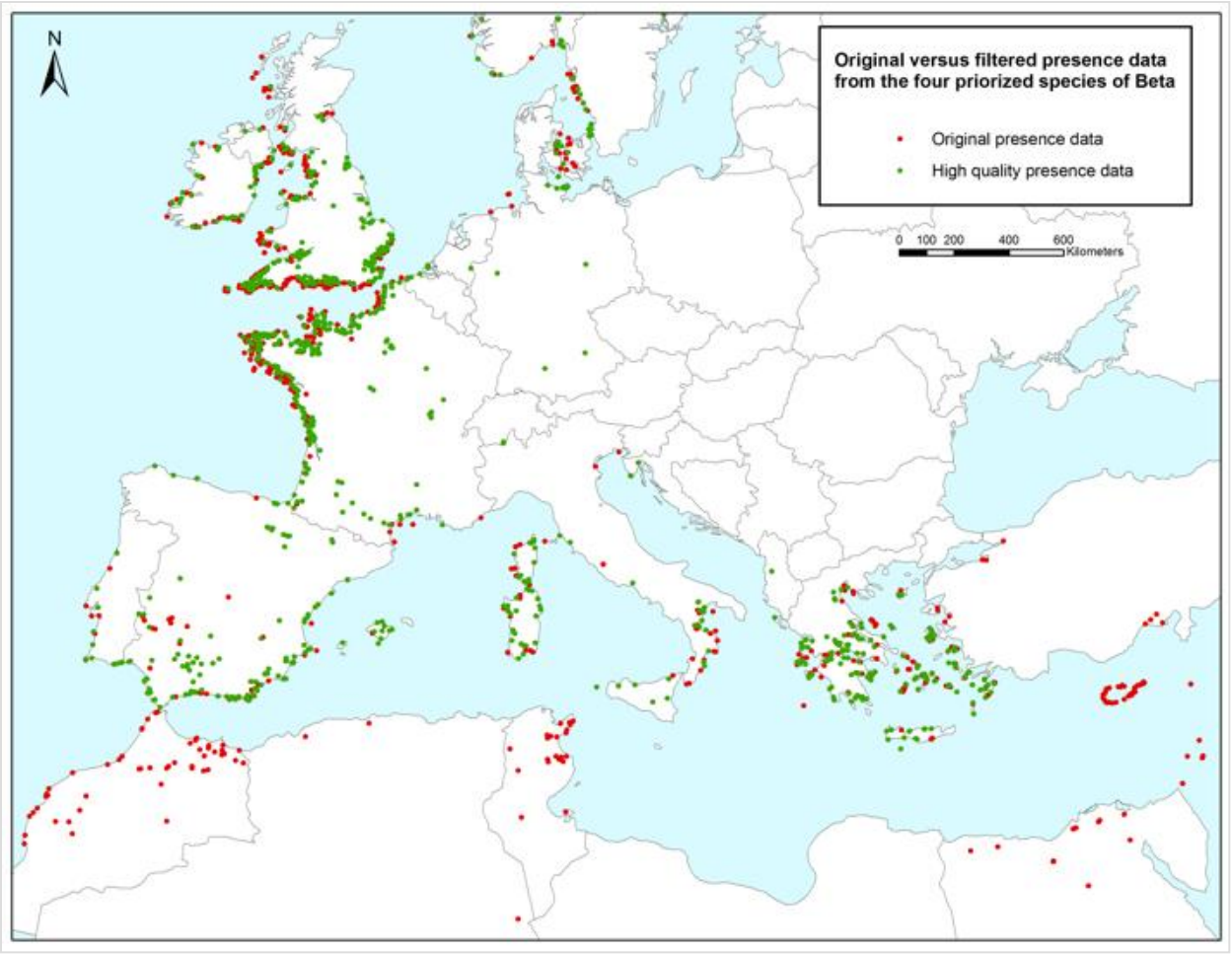
Results (Geographic Information System, multi-species sites)



… data layers for *Avena, Brassica, Prunus*, and landraces …

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Conclusions and perspectives

The project team received a total budget of with 829.305 € for a 3,5 years project The contribution of the European Commission is 413.077 €.

A network of genetic reserves for CWR will grow in Europe.

The Italian inventory can be considered a first component of a network of decentralized national landrace inventories forming altogether a EU catalogue.

The four crop case studies can be used as blueprints by ECPGR working groups and others interested in the development of in situ management workplans.

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Conclusions and perspectives

Additional crop specific modules can be added to the Population Level Information System (PLIS) according to the needs of ECPGR working groups and others (if the required funds are supplied).
PLIS should be better integrated into CWRIS with the aim of improving the online functionalities of CWRIS

The GIS platform can assist ECPGR working groups to identify sites located within Natura 2000 protected areas suited for the establishment of species specific genetic reserves.

The GIS platform can assist the ECPGR in identifying multi-species genetic reserve sites and by doing so improve the cost-value ration of the genetic reserve conservation technique.

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Conclusions and perspectives

This project has relevance to all three major targets of the Council Regulation No. 870/2004. The project

- contribute to an improved maintenance and use of plant genetic resources for food and agriculture
- supplements and promotes already ongoing actions in the member states in the field of in situ management and
- intensifies the coordination of in situ management work at the EU level.

The action has initiated a process that brings together more European institutions, national services, and experts working for a common aim: the conservation of biodiversity of which agrobiodiversity forms an important element.

Project staff and co-workers:

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WP10 (information management)
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Thank you for your attention

Resources fostered in the past

Means of livelihood for the future

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