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Farmer's Pride

Networking, partnerships and tools to enhance *in situ* conservation of European plant genetic resources

Case studies, best practices and toolkits for *in situ* management of plant genetic resources

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1.0 Introduction

To support and promote *in situ* conservation and sustainable use of plant genetic resources (PGR), the Farmer's Pride project collaborators have published a large number of case studies and developed best practice PGR *in situ* management guidelines and practical toolkits for the involved actors—including farmers and protected area managers. These are summarized here with links to the resources.

2.0 Best practice management guidelines

2.1 *In situ* landraces: Propagation management and access guidelines

[D2.4 In situ landrace propagation management guidelines.pdf](#)

Based on a wide collection and analysis of diverse (open-field, garden and tree crops) case studies of European *in situ* maintained landraces of different species, together with a review of the existing literature, guidelines to improve landrace propagation management were developed. For each crop group (open-field, garden and tree crops), these guidelines encompass fundamentals of plant material multiplication, including isolation, selection, circulation/exchange of the material among users, population size, number of users and the extent of the cultivated area.

The document provides the user community with clear prescriptions to carry out, or develop, proper multiplication and diffusion strategies with the principal aim of maximizing within landrace population diversity while keeping its identity. Cases where introduction of landraces into a completely new environment are needed are also considered.

2.2 Crop wild relative *in situ* population management guidelines

[D2.1 CWR population management guidelines.pdf](#)

These guidelines provide protected area managers, conservation practitioners, farmers and any other professionals or volunteers responsible for the conservation of crop wild relative (CWR) populations with a practical step-by-step guide to the management of CWR populations and the genetic reserves where they are being conserved. The guidelines provide a quick and accessible tour to all the elements that one should consider for the design and the implementation of a management plan, including habitat characterization, population threat assessment, management interventions, monitoring schemes, management of information and legislative requirements, among other issues.

The guidelines contemplate the different situations in which a CWR genetic reserve can be established and provide specific management tips to take into account when considering their placement within protected areas, in public land outside protected areas, in farmlands and other types of private property. Furthermore, particular considerations are also provided concerning the management needs to address climate change. Finally, the essential coordination needs with CWR *ex situ* conservation activities are detailed, connecting with the stakeholders that can be the end users of these plant genetic resources.

2.3 Crop wild relative network showcases – analysis and best practices

[D1.5 CWR network showcases.pdf](#)

A review and analysis of networks conserving CWR *in situ* was undertaken to identify the attributes that have contributed to their success. The review resulted in 29 CWR genetic reserve network initiatives, nine showcases classified as potential genetic reserve networks, three people and institution networks and 17 networks associated with projects. The analysis of the information gathered on CWR genetic reserve networks provided a clear description of the typical genetic reserve network, based on a set of

descriptors that had previously been set. Subsequently, a SWOT analysis revealed that the main strengths, weaknesses, opportunities and threats of the genetic reserve networks.

Through selected good examples of design and implementation, a record of evidence-based best *in situ* management practice has been generated to develop best practice indications that will serve as a model for the European network for *in situ* conservation and sustainable use of plant genetic resources, as well as for the CWR stakeholder community in general.

3.0 Toolkits

3.1 Best practice evidence-based database: a tool for promoting landrace conservation *in situ*

ecpgr.cgiar.org/in-situ-landraces-best-practice-evidence-based-database

This tool is for landrace maintainers or those considering the cultivation of landraces to diversify their crop production system. It provides access to evidence-based information on the benefits, opportunities and practices of landrace cultivation to help in decision-making and to promote their *in situ* maintenance as a means of conserving and diversifying PGR for food, nutrition and livelihood security.

It includes 105 examples of *in situ* management practices and of adding value to landraces of a range of different crops and in different socio-cultural, environmental and economic contexts from 14 European countries. This information can help to enhance landrace cultivation and make it sustainable and profitable at the same time, while conserving biodiversity for future generations.

The tool is published in the website of the European Cooperative Programme for Plant Genetic Resources (ECPGR) to ensure its long-term maintenance, and to facilitate future updates.

3.2 *In situ* crop wild relative population look-up tool

ecpgr.cgiar.org/cwr-tool

Based on extensive data collated of *in situ* population occurrences of priority CWR taxa in Europe ([D1.2 In situ PGR in Europe crop wild relatives.pdf](#)) and subsequent analysis of their occurrence in the Natura 2000 network ([MS19 Crop Wild Relatives in the Natura 2000 Network.pdf](#)), a tool was developed to promote the *in situ* conservation of CWR in existing protected areas throughout the region.

This searchable database allows users to search by a species name, a country, a protected area, or habitat type, as well as allowing searches on multiple fields. The tool is published in the website of the European Cooperative Programme for Plant Genetic Resources (ECPGR) to ensure its long-term maintenance, and to facilitate future updates.

3.3 Crop wild relative *in situ* population management guidelines: online toolkit

cwrpopulation-toolkit.cropwildrelatives.org/

The afore-mentioned crop wild relative *in situ* population management guidelines (see 2.2) have been web-enabled to provide a user-friendly platform for users of the guidelines.

3.4 CAPFITOGEN tools for crop wild relative and landrace conservation planning

capfitogen.net/

CAPFITOGEN3 is the new version of the CAPFITOGEN toolbox, developed to provide support to the global PGR conservation and sustainable use community by providing software tools designed to perform spatial and ecogeographic diversity analyses for more efficient and effective conservation and

sustainable use planning. The new version is composed of 15 tools usable in two ways: directly on a server via an online portal or in local mode on a computer hard drive. In addition to deploying the CAPFITOGEN tools on a server, a new tool for undertaking predictive characterization has been developed, and a number of other tools in the suite completed, tested and optimized for use on the server. CAPFITOGEN3 is currently available on the server until June 30 2022, and in the meantime, opportunities for a permanent host for the server application are being explored.

3.5 Landrace repatriation tool

Prototype prepared and web-enabling in progress.

The landrace repatriation tool allows users (e.g. farmers and gardeners) who would like to cultivate crop landraces with a bio-cultural connection to the area in which they are growing their crops, to search for these varieties by entering the crop species and their location, and retrieving a list of qualifying varieties and how to obtain reproductive material. To illustrate this concept, a stand-alone Excel-based interactive tool was constructed that allows searches for old Dutch apple varieties based on a location. With an increasing range from very local to regional, varieties are listed with a description, information of where to obtain them, and when available, a story elaborating why this variety is connected to the location.

4.0 Case studies

4.1 Landrace *in situ* conservation case studies

One hundred and five case studies are published in the above-mentioned 'In situ *landraces: best practice evidence-based database*' (see 3.1).

4.2 Landraces newsletter

Other landrace case studies and examples of activities carried out, or in progress, to promote landrace *in situ* conservation, have been published in Issues 4, 5 and 6 of the 'Landraces' newsletters: [farmerspride/key-documents/newsletters/](https://farmerspride.org/key-documents/newsletters/). Links to these newsletters are also provided in the ECPGR website at: ecpgr.cgiar.org/working-groups/on-farm-conservation/landraces-newsletter to increase visibility of work carried out by Farmer's Pride and to promote landrace *in situ* conservation activities.

4.3 Crop wild relative *in situ* conservation case studies

[farmerspride/wp-content/uploads/sites/19/2020/09/Crop_wild_relative_in_situ_conservation_case_studies.pdf](https://farmerspride.org/wp-content/uploads/sites/19/2020/09/Crop_wild_relative_in_situ_conservation_case_studies.pdf)

An extensive list of experiences related to *in situ* conservation of CWR was published. It includes 57 initiatives with the names of the networks, the type of network, the countries in which they occur, target CWR taxa and source information, including bibliographic references, contact institutions and/or web links.

4.4 Crop wild relative newsletter

Besides the CWR conservation examples published in the above-mentioned report, other case studies and examples of initiatives related to CWR *in situ* conservation have been published in Issues 11 and 12 of the 'Crop Wild Relative' newsletter: [farmerspride/key-documents/newsletters/](https://farmerspride.org/key-documents/newsletters/)