Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Increasing diversity for food and agriculture
The EU Farmer's Pride project

Shelagh Kell and Nigel Maxted

University of Birmingham, UK

Euroseeds 2020

UNIVERSITY OF BIRMINGHAM

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

- Introduce the Farmer's Pride project and our goal to establish a European network for *in situ* conservation and sustainable use of plant genetic resources
- Explain why *in situ* conservation of plant genetic resources is needed
- Briefly touch on the policy context for our work
- Introduce some of the project activities towards establishing the European network
- Outline options for providing access to material conserved *in situ*

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

A key objective of the Farmer's Pride project is to establish a permanent network for Europe-wide *in situ* conservation of plant genetic resources (including crop landraces/farmers' varieties and crop wild relatives), and to promote and facilitate the use of more plant diversity for the benefit of society. Read why here.

For more information about the network, please read our proposal:

Language versions available: English, Italian, Spanish, Swedish

We have laid the foundations for the network and are now gathering expressions of interest in joining it.

If you are a farmer, [public or private] protected area manager, market or home gardener, seed producer, or other land manager of unprotected wild or semi-wild habitats and would like to nominate a site/locality for inclusion in the European network, please complete our short survey.

Take Our Survey

farmerspride/network/

Our aim

Enhance and promote ***in situ* conservation** and **use** of plant genetic resources in Europe to provide **greater diversity** for food, nutrition and economic security

Our primary objective

Establish a European network for ***in situ*** (including on-farm) **conservation** of plant genetic resources (crop wild relatives and landraces) to ensure significantly **greater diversity** is available and accessible **for use by the seed sector and farmers**

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Farmer's Pride national partners

University of Birmingham, UK (Coordinator)

Danish Seed Savers, Denmark

Hellenic Agricultural Organization – Demeter, Greece

Leibniz Institute of Plant Genetics and Crop Plant Research, Germany

Centre for Genetic Resources, The Netherlands

Instituto Nacional de Investigação Agrária e Veterinária, Portugal

Universidad Rey Juan Carlos, Spain

Pro Specie Rara, Switzerland

Universitat Politècnica de València, Spain

Arche Noah, Austria

Research Institute of Organic Agriculture, Hungary

Natural Resources Institute, Finland

Aegean Agricultural Research Institute, Turkey

Università Degli Studi di Perugia, Italy

Farmer's Pride International partners

Bioversity International

Euroseeds

Eurosite

NordGen

Nordic Genetic Resource Centre

Plantlife International

Farmer's Pride External Advisory Board

- Andrea Carboni, Research Centre for Industrial Crops
- Stef de Haan, International Potato Centre
- Ahmed Jahoor, Nordic Seed
- Chikelu Mba, Food and Agriculture Organization of the United Nations
- Paola Roveglia, Slow Food
- Max Schulman, European Farmers and European Agri-Cooperatives
- Eva Thörn, European Cooperative Programme for Plant Genetic Resources
- Merja Veteläinen, Boreal Plant Breeding (Chair)

Farmer's Pride Ambassadors

- Imre Albert, Asociatia Bioagricultorilor, Romania
- Regine Andersen, Fridtjof Nansens Institut, Norway
- Külli Annamaa, Estonian Crop Research Institute, Estonia
- Susanne Barth, Agriculture and Food Development Authority, Ireland
- Anders Borgen, Agrologica, Denmark
- Claudio Buscaroli, Centro Ricerche Produzioni Vegetali, Italy
- Miguel Carvalho, Universidade da Madeira, Portugal
- Isabella Dalla Ragione, Fondazione Archeologia Arborea, Italy
- Lothar Frese, Julius Kühn-Institut, Germany
- Vojtech Holubec, Crop Research Institute, Czech Republic
- Hrvoje Kutnjak, University of Zagreb, Croatia
- Paul Olson, KWS SAAT SE, Germany
- Rob Plomp, Stichting De Oerakker, The Netherlands
- Maria Scholten, Independent Researcher and Advisor, Scotland
- Tamara Smekalova, NI Vavilov Research Institute of Plant Industry, Russian Federation (RIP)
- Aleksandar Tabaković, Ministry of Agriculture, Forestry and Water Management, Serbia
- Paul Townson, Lion Seeds, United Kingdom
- Jens Weibull, Swedish Board of Agriculture, Sweden
- Nihan Yenilmez-Arpa, Ministry of Forestry and Water Affairs, Turkey

Collaborators

>40 **national and international organizations** representing stakeholder groups with an interest in the conservation and sustainable use of plant genetic resources – including the **plant breeding/seed sector**; public research institutes, protected area community; farmer, agrobiodiversity, conservation and civil society NGOs

Funded by the Horizon 2020 Framework Programme of the European Union

farmerspride/who-we-are/

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

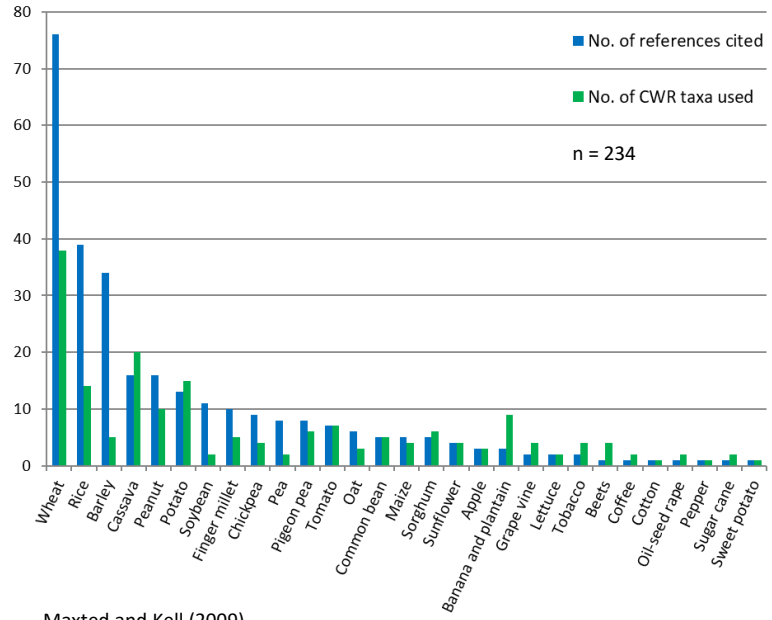
@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Why *in situ* conservation of plant genetic resources?

Increased demand by plant breeders for diverse traits

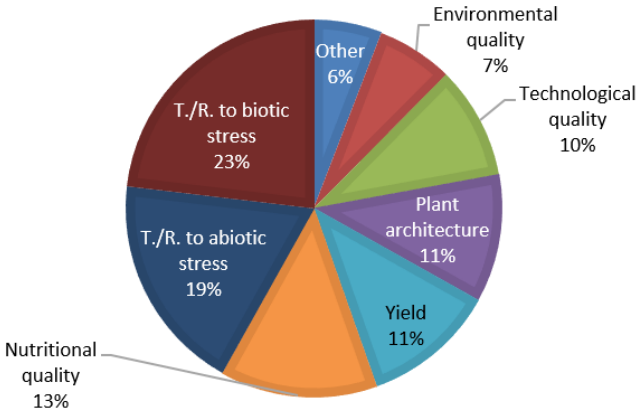
Increasing use of crop wild relatives



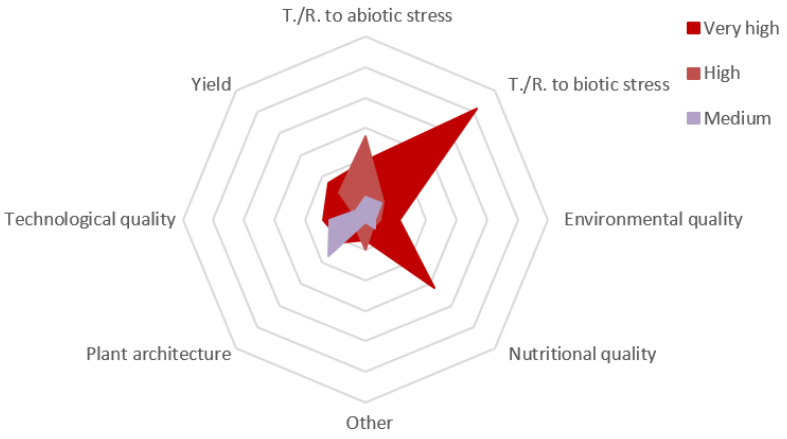
Maxted and Kell (2009)

Citations:
- 2% <1970
- 13% 1970s
- 15% 1980s
- 32% 1990s
- 38% >1999

Use:
- 39% pest resistance
- 17% abiotic stress resistance
- 13% yield increase



Relative importance of traits



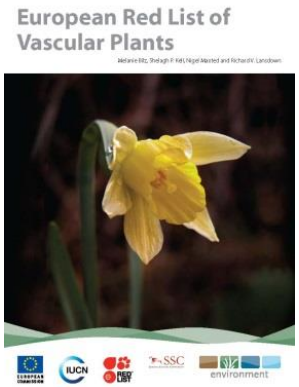
64 respondents, 24 countries, 61 crops

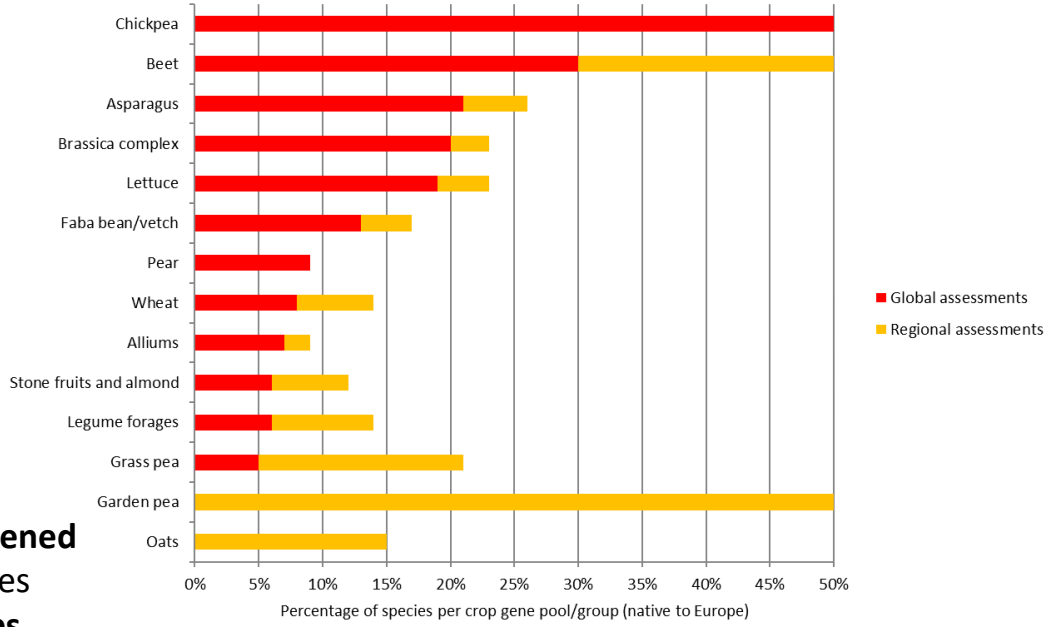
Funded by the Horizon 2020 Framework Programme of the European Union

Why *in situ* conservation?

Plant genetic resources are threatened – we are losing diversity

Crop wild relatives – threatened by intensive agriculture, pollution, land use transformation, habitat destruction, and climate change





Percentages of **globally and regionally threatened** (CR, EN or VU) or Near Threatened (NT) species native to Europe in **14 crop gene pools/groups**

Kell *et al.* (2012)

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Why *in situ* conservation?

Plant genetic resources are threatened – we are losing diversity

Traditional crop varieties (farmers' varieties, or 'landraces') – threatened by under-use or abandonment

Mix 48

Crop: *Hordeum vulgare* L.
Barley

Italy

View added values | View Detail

Morada de Morella

Crop: *Lactuca sativa* L.
Lettuce

Spain

View added values | View Detail

Nabo de Morcín

Crop: *Brassica rapa* L. subsp. *rapa*
Turnip

Spain

View added values | View Detail

Nagyszékely

Crop: *Papaver somniferum* L.
Seed poppy

Hungary

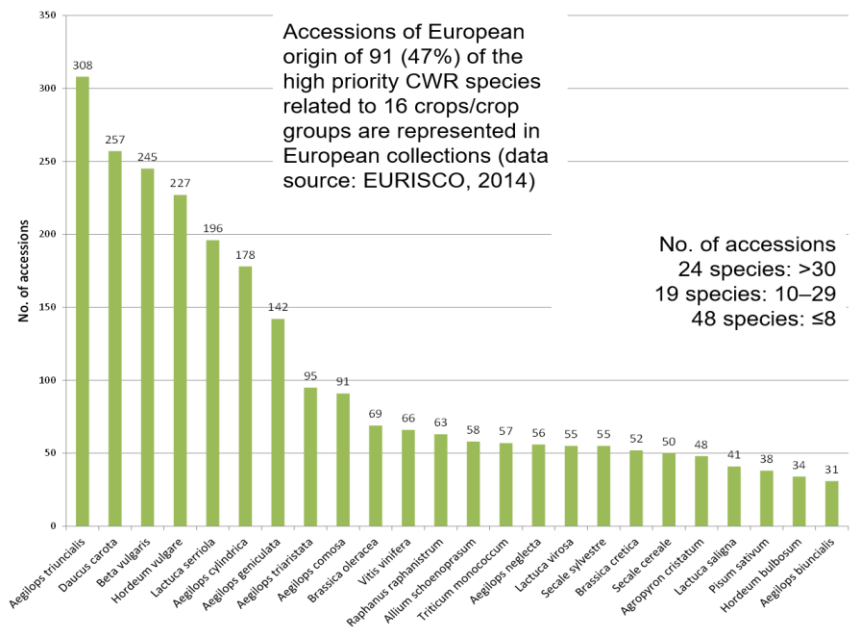
View added values | View Detail

in-situ-landraces-best-practice-evidence-based-database

Funded by the Horizon 2020 Framework Programme of the European Union

Why *in situ* conservation?

Breadth of *in situ* diversity is not and cannot be conserved *ex situ*



- Crop wild relatives and landraces under-represented in gene banks
- Gene banks have insufficient space and resources
- Crop wild relatives are difficult to regenerate
- Changes in genetic diversity *in situ* not adequately captured *ex situ*

Policy context for PGRFA conservation and sustainable use

- International Treaty on PGRFA [ITPGRFA]
- Second Global Plan of Action for PGRFA [Second GPA]
- Convention on Biological Diversity [CBD]
  - Strategic Plan for Biodiversity 2011–2020 (Aichi Biodiversity Target 13)
  - Global Strategy for Plant Conservation 2011–2020
  - Programme on Agricultural Biodiversity—in particular, the International Initiative on Biodiversity for Food and Nutrition

Target 2.5
By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed


EUROPEAN COMMISSION

Brussels, 20.5.2020
COM(2020) 381 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A Farm to Fork Strategy
for a fair, healthy and environmentally-friendly food system


EUROPEAN COMMISSION

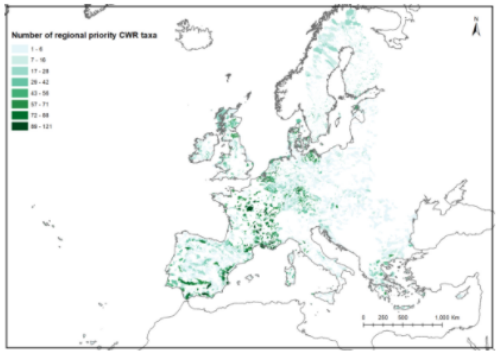
Brussels, 20.5.2020
COM(2020) 380 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

EU Biodiversity Strategy for 2030

Bringing nature back into our lives

Crop wild relatives in the Natura 2000 network



In this report, Farmer's Pride project partners assess the potential of the Natura 2000 network to secure crop wild relative (CWR) diversity. They present results of analyses showing the priority CWR populations that occur within the limits of the network and analyse the coverage and efficiency of the Natura 2000 network as a tool for CWR *in situ* conservation.

farmerspride/key-documents/crop-wild-relatives/

Funded by the Horizon 2020 Framework Programme of the European Union

In situ plant genetic resources in Europe: landraces

This report details the work of Farmer's Pride project partners to create the largest ever produced database of *in situ* maintained landraces. It has a total of 19,335 records, including forage, cereal, pulse and garden crops and fruit trees. As the first example of an inventory for an entire region of the world, it can serve to better plan landrace conservation activities and policies.

---

farmerspride/key-documents/landraces/

Farmer's Pride

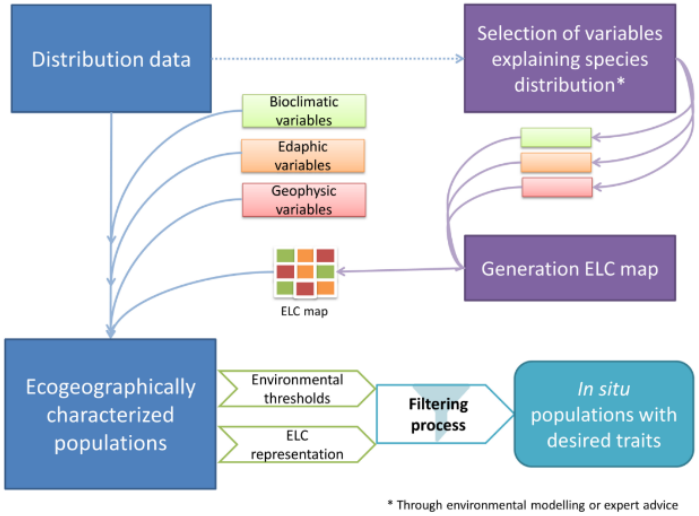
Conserving plant diversity for future generations

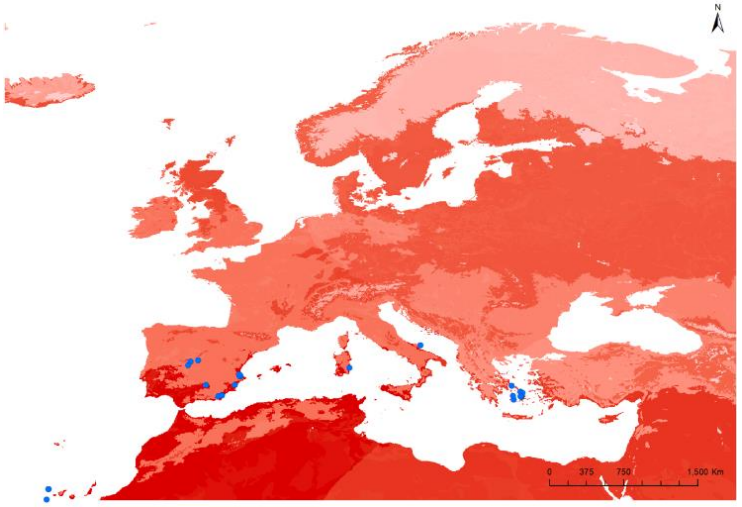
www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Predictive characterization of *in situ* populations





Farmer's Pride
Conserving plant diversity for future generations
www.farmerspride.eu
@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

A key objective of the Farmer's Pride project is to establish a permanent network for Europe-wide *in situ* conservation of plant genetic resources (including crop landraces/farmers' varieties and crop wild relatives), and to promote and facilitate the use of more plant diversity for the benefit of society. Read why here.

For more information about the network, please read our proposal:

Language versions available: English, Italian, Spanish, Swedish

We have laid the foundations for the network and are now gathering expressions of interest in joining it.

If you are a farmer, [public or private] protected area manager, market or home gardener, seed producer, or other land manager of unprotected wild or semi-wild habitats and would like to nominate a site/locality for inclusion in the European network, please complete our short survey.

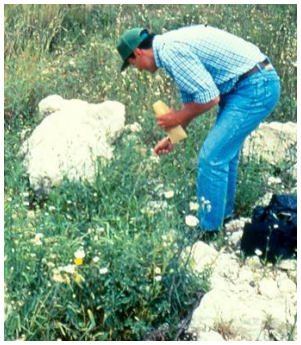
Take Our Survey

farmerspride/network/

Enhance and promote ***in situ* conservation** and **use** of plant genetic resources in Europe to provide **greater diversity** for food, nutrition and economic security

We are establishing a European network for ***in situ*** (including on-farm) **conservation** of plant genetic resources to ensure significantly **greater diversity** is available and accessible **for use by the seed sector and farmers**

Access to *in situ* conserved diversity in the European Network



In nature / On-farm

Genetic Resources Centre

Germplasm user

Option 1

All populations must be backed-up *ex situ*

Periodic population sample collection

MOU

Black Box

No immediate access

Option 2

User identifies in situ *material they would like to use from pre-characterization data*

Fresh population sample collection

MOU

Material passes directly through PGR Centre

SMTA

User 'delayed' access to *in situ* material based on seed seasonal availability

Option 3

All population managers are encouraged to make material available for potential use

Periodic population sample collection

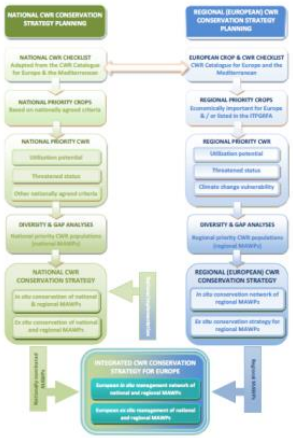
MOU

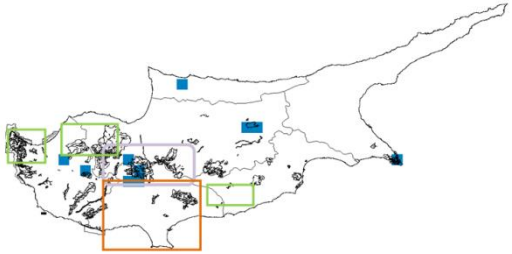
Material goes into normal or amended seed storage in PGR Centre

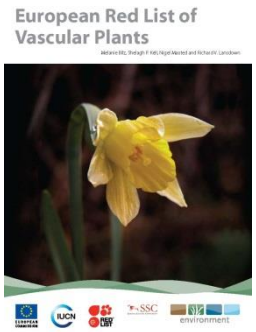
User identifies in situ *material they would like to use from pre-characterization data*

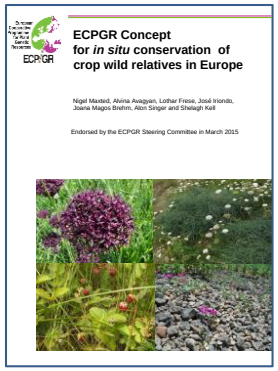
SMTA

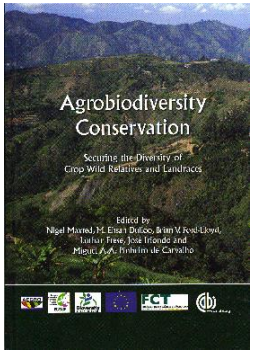
User 'immediate' access to *in situ* material based on seed availability

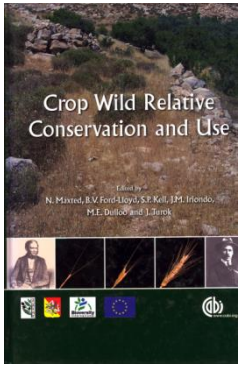

NATIONAL CWR CONSERVATION STRATEGY PLANNING
REGIONAL (EUROPEAN) CWR CONSERVATION STRATEGY PLANNING
NATIONAL CWR CHECKLIST
EUROPEAN CROP & CWR CHECKLIST
NATIONAL PRIORITY CROPS
REGIONAL PRIORITY CROPS
NATIONAL PRIORITY CWR
REGIONAL PRIORITY CWR
DIVERSITY & GAP ANALYSES
NATIONAL CWR CONSERVATION STRATEGY
REGIONAL (EUROPEAN) CWR CONSERVATION STRATEGY
INTEGRATED CWR CONSERVATION STRATEGY FOR EUROPE

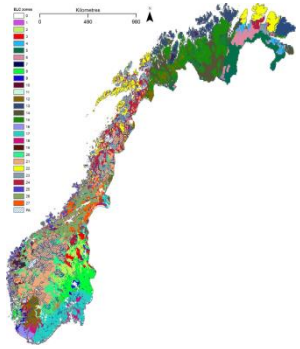


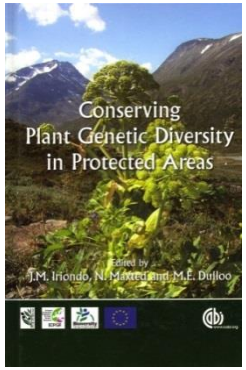

European Red List of Vascular Plants

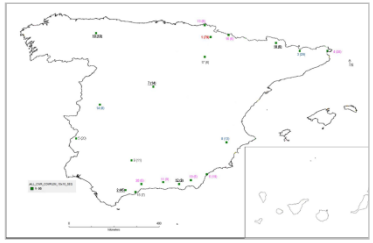

ECPGR Concept
for *in situ* conservation of
crop wild relatives in Europe
Nigel Maxted, Alvina Avagyan, Lothar Frese, José Iriondo, Joana Magos Brehm, Alon Singer and Shelagh Kell
Endorsed by the ECPGR Steering Committee in March 2015

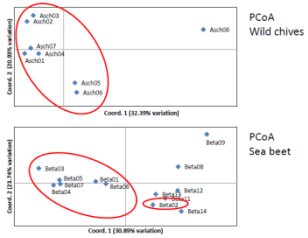

Agrobiodiversity Conservation
Securing the Diversity of Crop Wild Relatives and Landraces
Edited by
Nigel Maxted, M. Ehsan Dulloo, Brian V. Ford-Lloyd, Lothar Frese, José Iriondo and Miguel A. A. Pinheiro de Carvalho

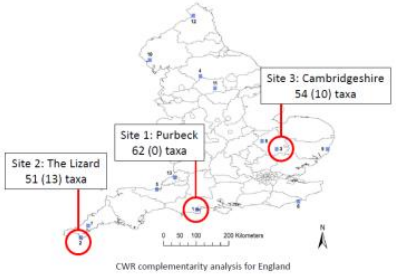

Crop Wild Relative Conservation and Use
Edited by
N. Maxted, B.V. Ford-Lloyd, S.P. Kell, J.M. Iriondo, M.E. Dulloo and J. Turok

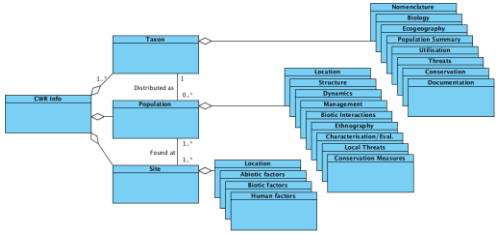


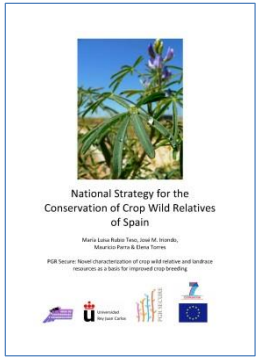

Conserving Plant Genetic Diversity in Protected Areas
Edited by
J.M. Iriondo, N. Maxted and M.E. Dulloo

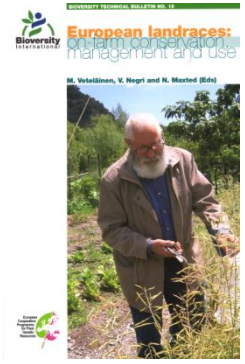


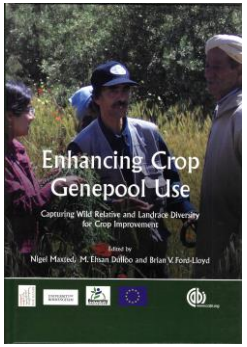

PCoA
Wild chives
PCoA
Sea beet


Site 3: Cambridgeshire
54 (10) taxa
Site 1: Purbeck
62 (0) taxa
Site 2: The Lizard
51 (13) taxa
CWR complementarity analysis for England


Taxon
CWR Info
Population
Site
Nomenclature
Biology
Ecogeography
Population Summary
Utilisation
Threats
Conservation
Documentation
Location
Structure
Dynamics
Management
Biotic Interactions
Ethnography
Characterisation/Eval.
Local Threats
Conservation Measures
Abiotic factors
Biotic factors
Human factors


National Strategy for the Conservation of Crop Wild Relatives of Spain


European landraces:
on-farm conservation, management and use
M. Veteläinen, V. Negri and N. Maxted (Eds)


Enhancing Crop Genepool Use
Capturing Wild Relative and Landrace Diversity for Crop Improvement
Edited by
Nigel Maxted, M. Ehsan Dulloo and Brian V. Ford-Lloyd

Farmer's Pride

Conserving plant diversity for future generations

www.farmerspride.eu

@PGRInSitu | #EUfarmerspride

Funded by the Horizon 2020 Framework Programme of the European Union

Increasing diversity for food and agriculture

The EU Farmer's Pride project

Thank you

Euroseeds 2020

s.kell@bham.ac.uk
n.maxted@bham.ac.uk

UNIVERSITY OF BIRMINGHAM