



The German National Inventory PGRDEU in the national, European and international context

Sarah Sensen

Information- and Coordination Centre for Biological Diversity (IBV)

Federal Office for Agriculture and Food (BLE)

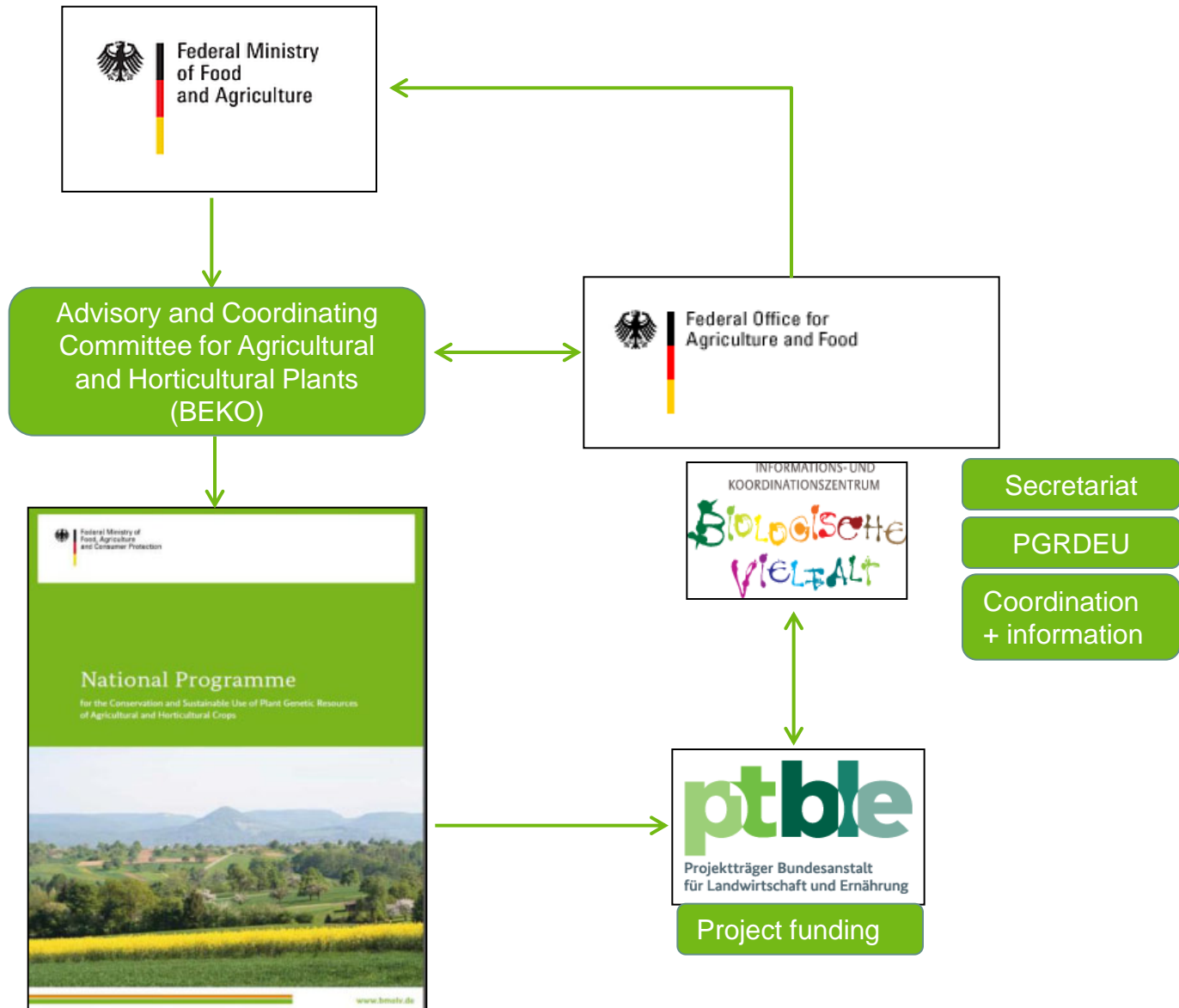
Bonn, Germany

Overview

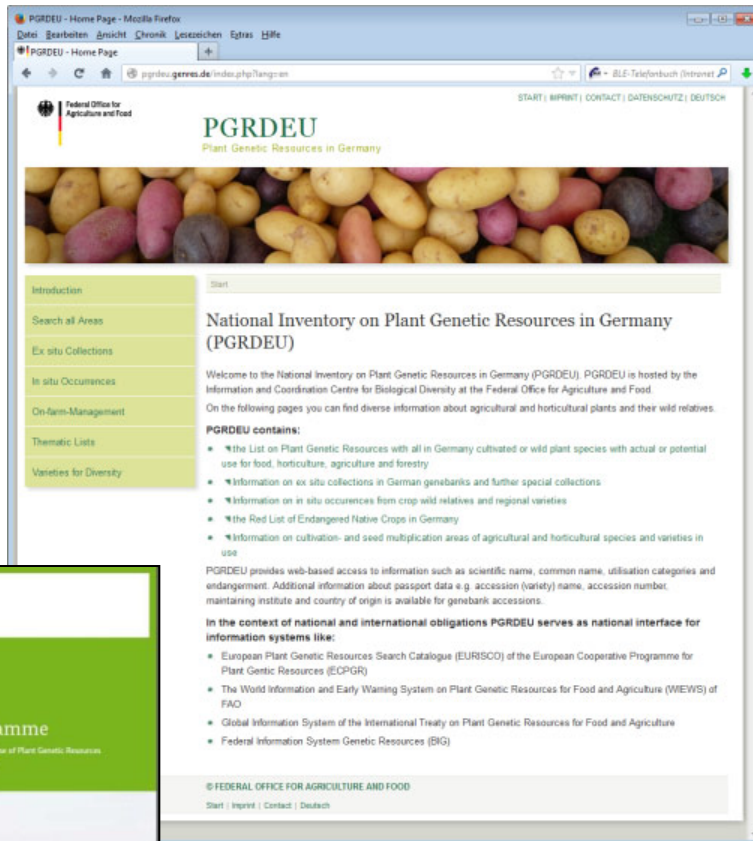
- PGRDEU in the national context
 - Policy framework
 - Ex situ and in situ conservation in Germany
 - On-farm-management in Germany
 - Sustainable use of PGR
- PGRDEU in the European context
 - ECPGR: AEGIS and EURISCO
- PGRDEU in the international context
 - CBD and Treaty



Policy framework for PGRFA in Germany



Policy framework: National Programme PGR



- National Programme for Genetic Resources of Agricultural and Horticultural Crops (2012)
 - provides the framework and main measures in the area of PGRFA in Germany
- Central national documentation of PGRFA in the National Inventory PGRDEU
 - is defining the scope of the National Programme
 - contains ex situ, in situ and on farm data on PGR as well as thematic lists
 - Serves as national, regional and international reporting tool on PGR

➤ <http://pgrdeu.genres.de>

German National Inventory PGRDEU: Scope

Federal Office for Agriculture and Food

PGRDEU
Plant Genetic Resources in Germany

START | IMPRINT | CONTACT | DATENSCHUTZ | DEUTSCH

Introduction

Search all Areas

Ex situ Collections

In situ Occurrences

On-farm-Management

Thematic Lists

List of Plant Genetic Resources in Germany

Search by species

Search forms of utilisation

Endangerment

Varieties for Diversity

Start > Thematic Lists > List of Plant Genetic Resources in Germany

List of Plant Genetic Resources in Germany

For Germany, within the framework of the National Programme, a comprehensive list of German plant species (crops and wild plant species) categorised according to their utilisation has been compiled.

The present database contains information of all plant species (including crop wild relatives and wild plants) and where appropriate their intraspecific taxa with current or potential value for food, agriculture and forestry occurring in Germany. The current List of Plant Genetic Resources (PGR List) comprises 3,600 species grouped into different categories of use, whereas the categories "horticultural plant" and "breeding" have not been completed yet.

The PGR List provides summarised information about species and their utilisation and enables users to search and access detailed information about species or corresponding categories of utilisation.

Plant genetic resources of agricultural and horticultural crops are defined as propagating material of plants used in the past, present or with potential utilisation value including...

The PGR List substantiates the given definition of crops. As a result all plant genetic resources are correlated to a specific form of utilisation. The PGR List is divided into the following categories:

AG: medicinal and aromatic plants

3.600 PGRFA species (CWR & cultivated crops) in total,

thereof : 2.900 CWR (*in situ*)

thereof : 1000 CWR without exclusive ornamental and breeding uses

Search forms of utilisation

MEDICINAL AND AROMATIC PLANTS:

PROTEIN PLANTS:

FOREST PLANTS:

FORAGES:

SUGAR / STARCH PLANTS:

OIL PLANTS:

FRUIT AND VEGETABLES:

POLLEN, NECTAR PLANTS:

TECHNICAL USE (E.G. FIBRE):

PROTECTION (SUN/WIND):

ORNAMENTAL PLANTS:

BREEDING AND BREEDING RESEARCH:

CROP WILD RELATIVES :

➤ <http://pgrdeu.genres.de>

National context: Ex situ conservation



http://www.daserste.de/information/wissen-kultur/w-wie-wissen/sendung/2010/samenbank-fuer-alte-nutzpflanzen-100-_v-standard368_00da0f.jpg

Genebanks in Germany




- IPK-Genebank
- German Genebank for Fruit Crops
- German Genebank for Grapevine
- German Genebank for Ornamentals
- Genebank for CWR
- Genebank for Tobacco

Ex situ documentation of PGR in German Genebanks

Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) – Federal Genebank

3,000 species
150,000 accessions

National Inventory PGRDEU



German Genebank for Grapevine JKI

German Genebank for Fruit Crops JKI

collections of apples, cherries, strawberries...

Tobacco Genebank
Agricultural Technology Center

German Genebank for Ornamentals
Federal Plant Variety Office

Roses Rhodo Generativ

German Genebank for CWR
BG Osnabrück

> 4,400 acc.

> 1,000 acc.

ca. 800 acc.

> 3,000 acc.

> 12,000 acc.

Memorandum of Understanding:

- rights & obligations
- standards for data exchange
- standards for material exchange
- ...

Botanic Gardens in Germany



- Ca. 95 botanical gardens are located in Germany
 - Ca. 300,000 accessions of PGR conserved.
- Ex situ conservation cultures of the association of botanical gardens
 - Conserving endangered native wild plants in ex situ cultures and making them ready for reintroduction into nature.
 - In contrast to the CWR genebank the plants are not conserved as diaspores but as living collections.

Portal for ex situ conservation cultures of native wild plants



The screenshot shows the website interface for the portal. At the top left is the logo of the 'Verband Botanischer Gärten'. Below it is a navigation menu with links: Home, Pflanzenarten, Botanische Gärten und andere Halter, Wiederansiedlung, Forum, Links & Downloads, Literatur, and Suche. The main header reads 'PORTAL FÜR ERHALTUNGSKULTUREN EINHEIMISCHER WILDPFLANZEN'. Below the header is a search bar with a list of letters from A to Z. On the left side, there is a list of species names, each preceded by a right-pointing arrow. The species listed are: Abies alba, Achillea setacea, Adenophora liliifolia, Adonis aestivalis, Adonis flammea, Adonis vernalis, Aethionema saxatile, Agrostemma githago, Agrostis rupestris, Aira caryophyllea, Ajuga chamaepitys, Ajuga genevensis, Ajuga pyramidalis, Alchemilla aggregata, Alchemilla baltica, Alchemilla cymatophylla, Alchemilla effusa, Alchemilla glabra, Alchemilla impexa, Alchemilla incisa, Alchemilla micans, Alchemilla othmani, Alchemilla plicata, and Alchemilla rubristipula. The main content area features a large photograph of a purple iris flower. Below the photo, there is text in German: 'Hier finden Sie Erhaltungskulturen von 600 Arten in über 3.000 Akzessionen. Zu den 90 fett gedruckten Arten informieren wir ausführlich über Biologie, Kultursprüche, haltende Gärten/Einrichtungen und Wiederansiedlungen.' Below this text, the species name 'Allium angulosum (Kanten-Lauch)' is displayed in red. To the right of the text is a photograph of a purple Allium angulosum flower. Below the photo, there is a copyright notice: '© A. Herrmann, LUGV Brandenburg. Der hochauflösende Download ist unter einer Creative Commons Namensnennung zur nicht-kommerziellen Nutzung verfügbar.' At the bottom of the page, there are four small thumbnail images of different plant species and the URL 'http://www.ex-situ-erhaltung.de/'.

→ BMEL promoted the build-up of an online portal for this ex situ cultures

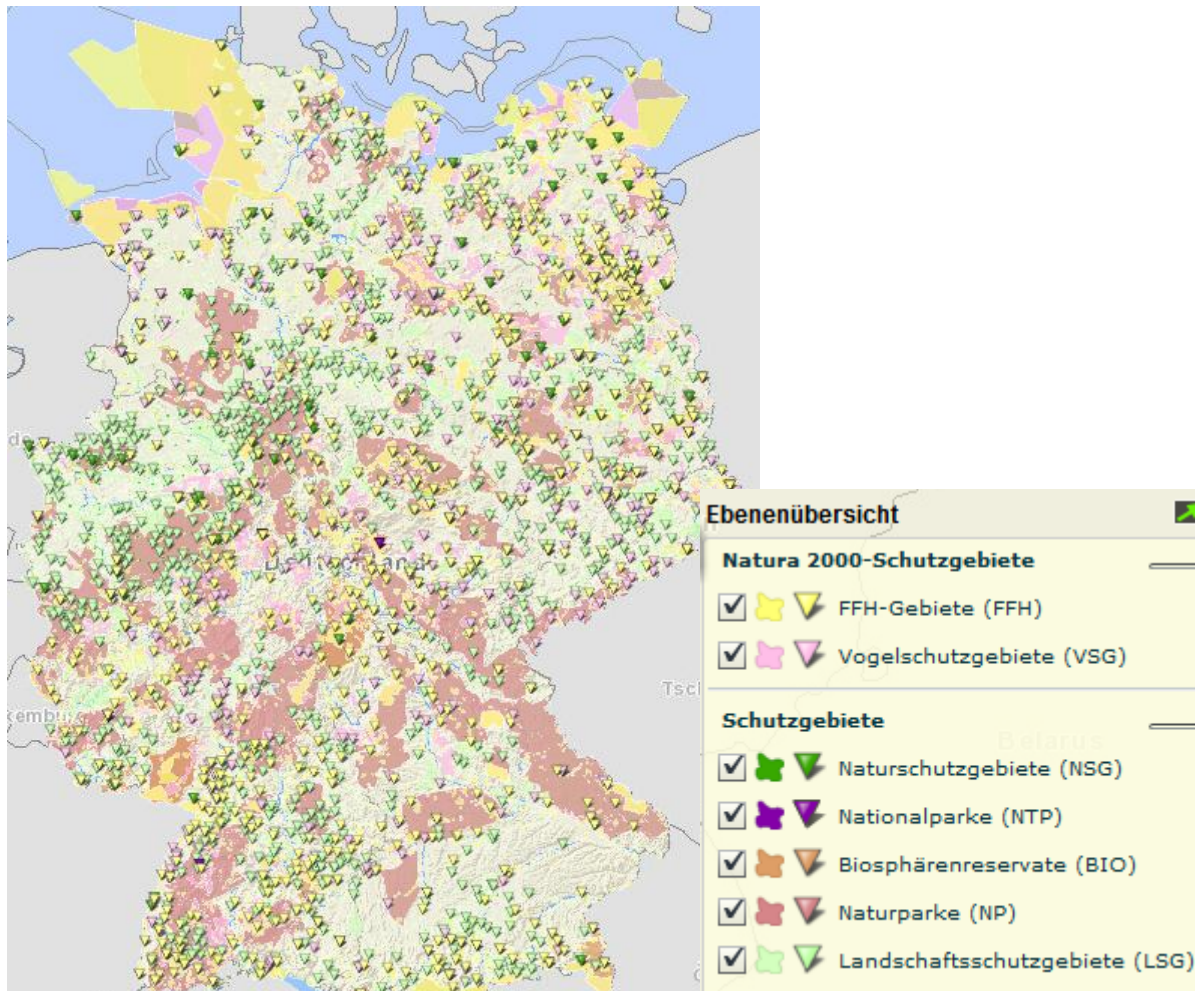
- The whole stock of plants held by the conservation cultures are presented.
- For 75 selected species, including 56 especially relevant for food and agriculture detailed profiles of characteristics are compiled.

→ Passing-on of data to PGRDEU

National context: In situ conservation



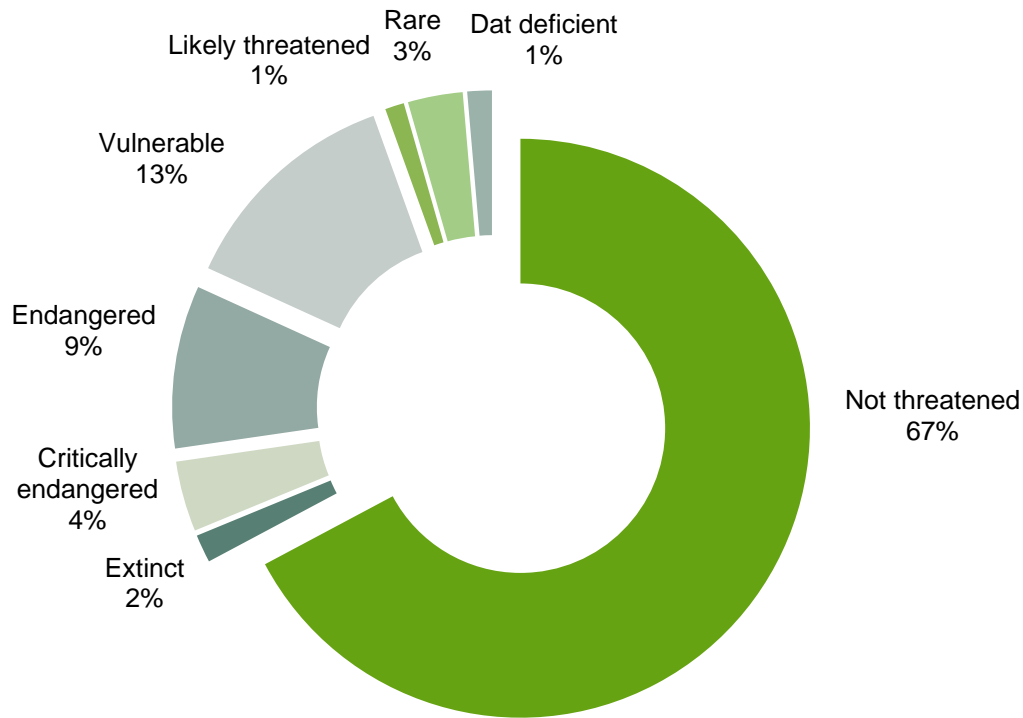
Nature conservation sites



- FFH-areas and bird protection areas: 5.253 (~15,4 %)
- Nature conservation areas: 8,589 (1,3 Mill. ha, 3,8 %)
- National parcs: 16 (~1 Mill. ha)
- Men and biosphere: 16 (~1,9 Mill. ha, 3,5 %)
- Nature parcs: 104 (25 %)
- Landscape protection areas: 8,210 (~10,2 Mio. ha)

Endangerment of plants in Germany

Red list of vascular plants in Germany



- Native species that are considered threatened are found mostly in wetlands, forests and grasslands.
- Habitat loss, fragmentation and degradation are the most significant threats for the native plant species in Germany.

→ 31,4 % of vascular plants in Germany are endangered

Crop Wild Relatives and wild food plants in Germany



CWRs of fruit crops

- 2,874 CWR taxa on the German PGR-list
- 545 CWR on a priority draft list
 - 16 % threatend
 - 30 % in ex situ conservation (genebanks)
 - 20 % > 5 Accessions
 - 10 % endemic (some species of *Rubus*)



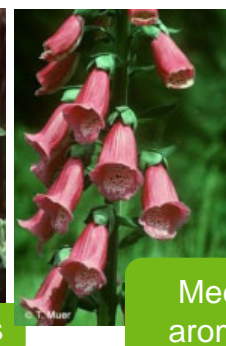
CWRs of
ornamentals



CWRs of
vegetables



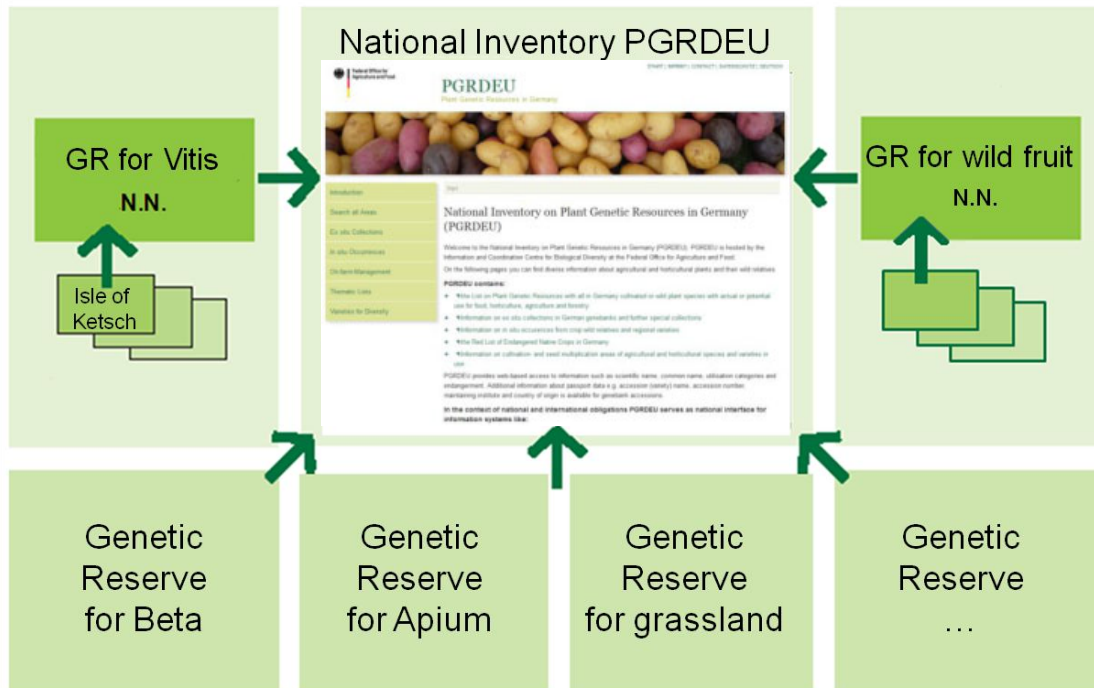
CWRs of feed crops and grasses



Medicinal and
aromatic plants

Concept for *In situ* conservation of PGR in Germany

Network of Genetic Reserves in Germany



Establishment of CWR network of networks (genetic reserves):

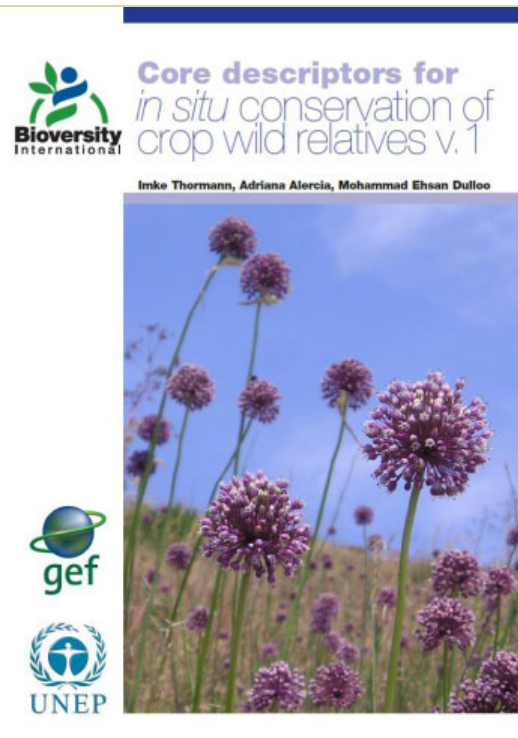
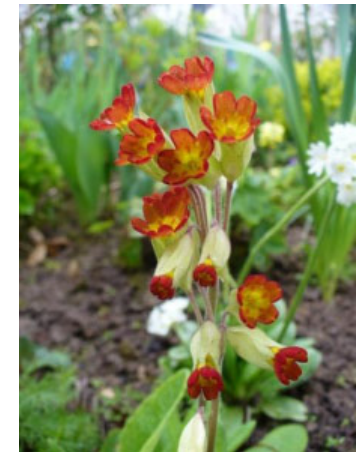
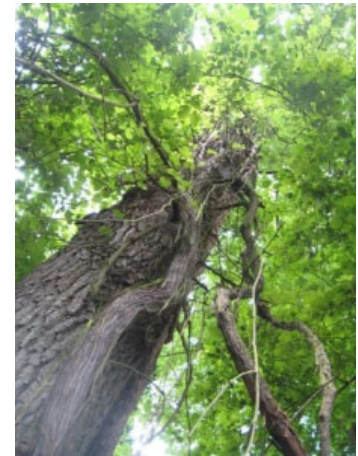
based upon knowledge of important occurrences / locations

- *Vitis vinifera* L. ssp. *sylvestris* C.C. Gmel.
- *Malus sylvestris* (L.) Miller
- *Beta vulgaris* L. subsp. *maritima* (L.) Arcang.
- *Apium* species
- selected pastures / forages
- others (stepwise)

Actually *In situ* documentation in PGRDEU

→ *In situ* data included from:

- projects funded by BLE / BMEL, e.g.:
 - Development of a Reporting and Monitoring System for the *In situ* Conservation of Genetic Resources of Crop Wild Relatives in Brandenburg (2007 - 2010)
 - Securing the Viability of the Wild Grape *Vitis vinifera* L. ssp. *sylvestris* C.C. Gmel. in the old Rheinaue wetlands through targeted *In-situ*-Management (2008-2013)
- selected publications
- EURISCO



Linking *ex situ* and *in situ* documentation



Start | In situ Occurrences | Occurrences of Crop Wild Relatives | Observation list | Characteristics

Search for: **Vitis vinifera L. sylvestris C.C. Gmel.**

Zurück

GENUS: **Vitis**

SPECIES: **vinifera**

CROP: **Vitis vinifera L. sylvestris C.C. Gmel.**

ACCESSION NAME: **DEU494**

Search

Clear search

Characteristics of observation: Vitis vinifera L. sylvestris C.C. Gmel.

Zurück

Taxonomic information	
Botanical name	Vitis vinifera L. sylvestris C.C. Gmel.
Common crop name	Wilde Rebe; Wildrebe; Europäische Wildrebe
Terms of utilisation	Fruit and vegetables, Breeding and breeding research
Status	einheimisch (1)
Category of Endangerment on the Red List of Plants in Germany	(1 (Baden-Württemberg und Rheinland Pfalz); 0 (Hessen))
Legal protection	Art in Anhängen der FFH-Richtlinie nicht aufgeführt (nein)
EU-VOICITES	(nein)
Federal Nature Conservation Act	streng geschützt
Location	
Geographical classification	Baden-Württemberg; Rhein-Neckar-Kreis
Description of locality	Boden; Pararendsina; Vegetation: Hainbuchenwälder (Carpinion Verband), Eichen-Hainbuchenwald (Carpinion betuli Issler 1931); ehemalige Nutzung: Mittelwald; Überschwemmung: aktuell keine
Locality lies in reserve	Yes
Reserve Category	NSG: Ketscher Rheininsel
Land use	Laubwald
Ownership	Public property (2)

Risk factors at the site	Mangel an Keimungs- und Etablierungsplätzen, Forstliche und pflegerische Maßnahmen, Verbiss
Measures for the locality	Förderung der Naturverjüngung, Schutz der vorhandenen Wildreben
Information on population	
Origin of population	natural (1)
Vitality of occurrence	damaged (2)
Estimation of species abundance	rare (1)
Gathering institution	Frau Dr. Ledesma-Krist (WWF-Auen-Institut, IfGG, KIT); Herr Heene (Botanisches Institut I, KIT)
Number of males	35
Number of females	37
Information on the collection of the accession	
Collective number	KE 114
Collecting institution	
Data Status	May 14, 2014
Conservation of the species outside of its natural habitats (ex situ conservation)	
Collecting samples of the population is maintained ex situ	Yes
Maintaining institute	
Maintaining institute code	DEU494
Connecting to accessions	Akzessionen in Einrichtung DEU494 (Anzahl: 1) Link 1

Actually for *Vitis sylvestris*
Link on COLLNUMB

National context: On farm management



On farm management in Germany

- Quite a number of private initiatives and non-governmental organisations (NGOs) in Germany are aiming at conserving and improving the diversity of landraces
- In the context of the seed marketing act, it was difficult to commercially market seed from old plant varieties
 - These varieties were not able to fulfil the exacting requirements of registration testing (distinctness, uniformity and stability)
 - Therefore the EU regulation on conservation and amateur varieties were conducted – implemented in German law in December 2010
 - The current status of applications for registration of conservation and amateur varieties can be viewed on the internet pages of the Federal Plant Variety Office.
 - <http://www.bundessortenamt.de/internet30/index.php?id=233>
 - 30 registered conservation varieties, 38 registered amateur varieties (12th May 2015)

On farm documentation of PGR in Germany

→ Scope :

- landraces as defined by EU seed legislation
 - conservation varieties
 - amateur varieties
 - “old” varieties
- “non-defined” landraces growing on farm land

→ On farm data in PGRDEU included from:

- projects funded by BLE / BMEL, e.g.:
 - Survey on Grapevine Genetic Resources in Germany 2007-2009
- Cultivation data of regional crop landraces from *Länder* programmes of some *Länder*
- Cultivation and seed propagation areas of species and varieties in use



Linking on farm and ex situ information

Vitis variety „Albana“

On farm

Taxonomic Characteristics

► Zurück

German variety name	Albana
Historical conductivity name	ALBANA BIANCA (Goethe 1887)
International name	ALBANA_Pulliat 1888_Galet 2000, ALBANA BIANCA_Calo et al. 2006, (falsche) GARGANEGA BIJELA_Mirosevic 2003
Berry colour	weiß
Remarks	Garganega (Calo 2006) dürfte mit Kiralyzölö (Nemeth 1970) identisch sein
Variety in ex-situ conservation	Accessions in institution DEU098 Number: 1 ► Link 1
Variety in vineyard (s)	Baden: ► Link 1 to variety Albana in vineyard Baden

Assessment of the virus status - Vineyard Baden

Varieties: Albana

Virus infection	40-60 %
Fanleaf	20-40 %
Roll virus	20-40 %

Ex situ

Characteristics of Accession: DEU098-1988-001

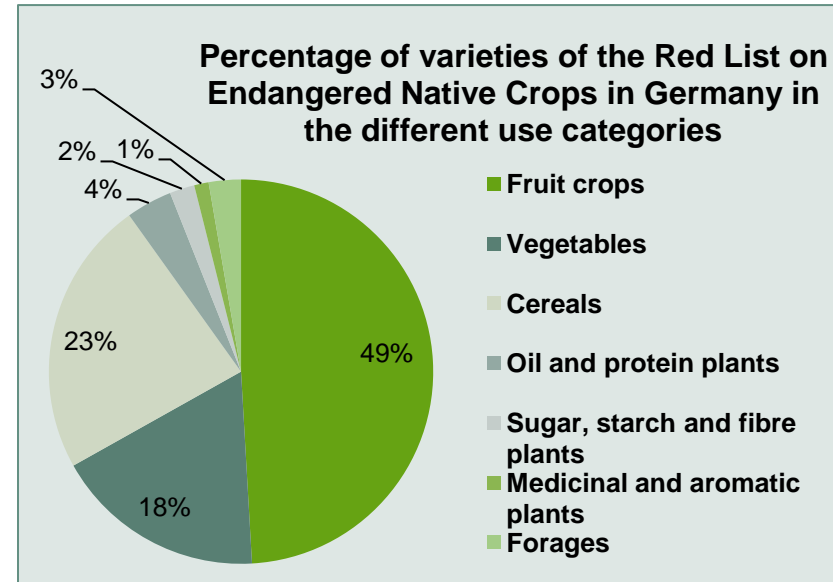
► Zurück

Maintaining institute	
Genebank/Genebank Network	Deutsche Genbank Reben
Maintaining institute name	Federal Research Centre for Cultivated Plants - Institute for Grapevine Breeding Gellweilerhof
Maintaining institute code	DEU098
Taxonomic information	
Botanical name	Vitis vinifera L. subsp. vinifera
Common crop name	wine grape
Accession name	ALBANA
Berry colour	green
Detail information of accession	
Accession number	DEU098-1988-001
Acquisition date	2011
Biological status of accession	Traditional cultivar/landrace (300)
Type of germplasm storage	Field collection (20)
Accession URL	► http://www.deutsche-genbank-reben.jki.bund.de/
Information on the collection of the accession	
Collecting/ acquisition source	Institute, Experimental station, Research organization, Genebank (40)
Information on the donor	
Name	CRA-Centro di Ricerca per la Viticoltura (ITA388)
Information about the ancestor and the breeder	
Ancestral date	GARGANEGA
More information	
Date Status	Feb 13, 2014

Red list of German endangered native crops in Germany

- 1,815 „old“ native varieties are listed
- List compiled by the advisory committee on PGR
- Criteria used:
 - Native („old“ german variety, local adaptation)
 - endangered (no or less cultivation on farm)
 - Important (use or development potential)
 - Legal status (no variety protection)
- Available in PGRDEU:
<http://pgrdeu.genres.de/rlist/list>

- **Actual:** Scientific survey of vegetables for the Red List (at the University of Berlin)
 - 105 species of vegetables were surveyed in the historic literature between 1840 – 1950
 - ~ 30.000 varieties have been found
 - ~ 30-50% of the varieties are still existing in German Genebanks or NGOs

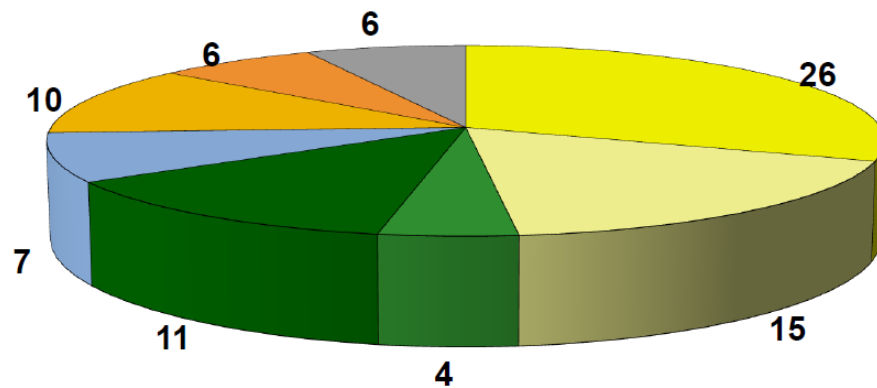


National context: Sustainable use of PGR

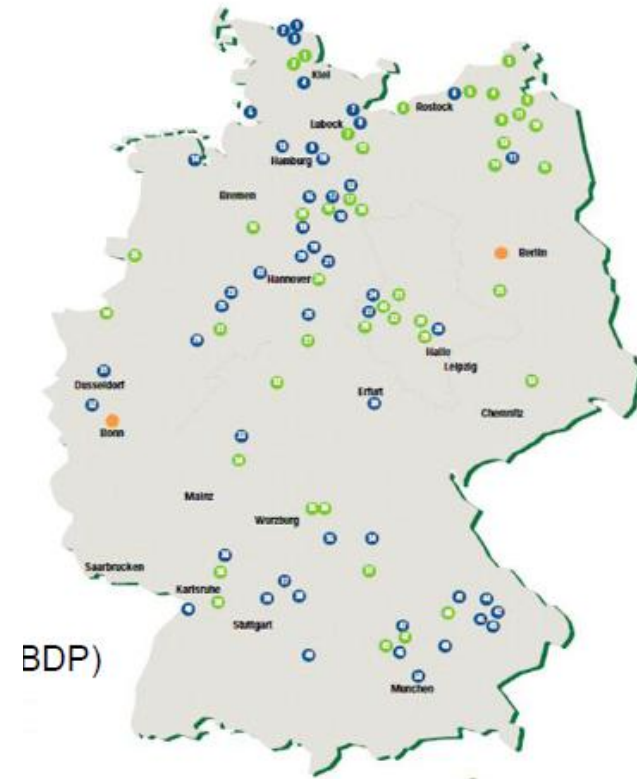


Source: GFP

Number of companies with breeding programmes



- Cereals
- Oil- and Protein Plants
- Fodder Plants
- Maize
- Ornamental Plants
- Potatoes
- Vegetables
- Sugarbeet



Situation in Germany

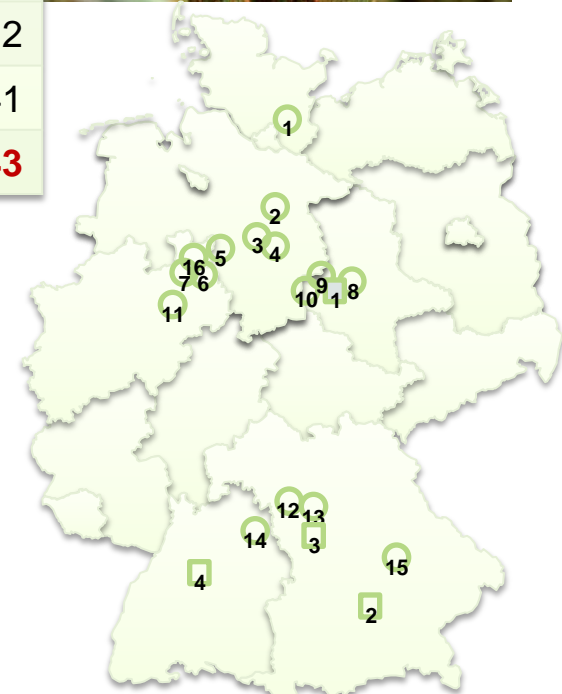
Protected varieties

	Newly listed	total of listed varieties
Agricultural Crops	207	2,405
cereals (excluding maize)	45	393
maize	24	246
potato	12	208
forage crops (forage and turf grass)	52	908
oil and protein plants	27	245
sugar beet	42	285
grape vine	5	119
Horticultural crops (vegetables)	27	525
Other		1
Total	234	2,930

National Evaluation Programm for PGR of cereals (EVA II)

- Evaluated crops are winter / spring wheat and winter / spring barley
- The evaluated genotypes come from genebanks, research stations and breeding companies
- 15 breeding companies and 3 research institutes are collaborating in EVA II
- Coordinated by the Institute for Resistance Research and Stress Tolerance of the Julius Kühn-Institute
- Data on German genebank accessions are included in PGRDEU

Sortiment	Number
Winter wheat	639
Spring wheat	251
Winter barley	412
Spring barley	541
All	1843



<http://eva2.jki.bund.de/portal/public/classic/>



IPK Nr. BRA 2868



Project „on farm conservation of old varieties of vegetables through the establishment of a network“

- Project funded by the BLE
- Project running: December 2012 – November 2016
- Parties: Federal Plant Variety Office, University of Berlin, Agro-NGO VERN
- Aim: Evaluation of genebank accessions of vegetables and distribution within a seed-network
- First step: Cultivation and technical description of the varieties
- Results of the project will be included in PGRDEU

European context



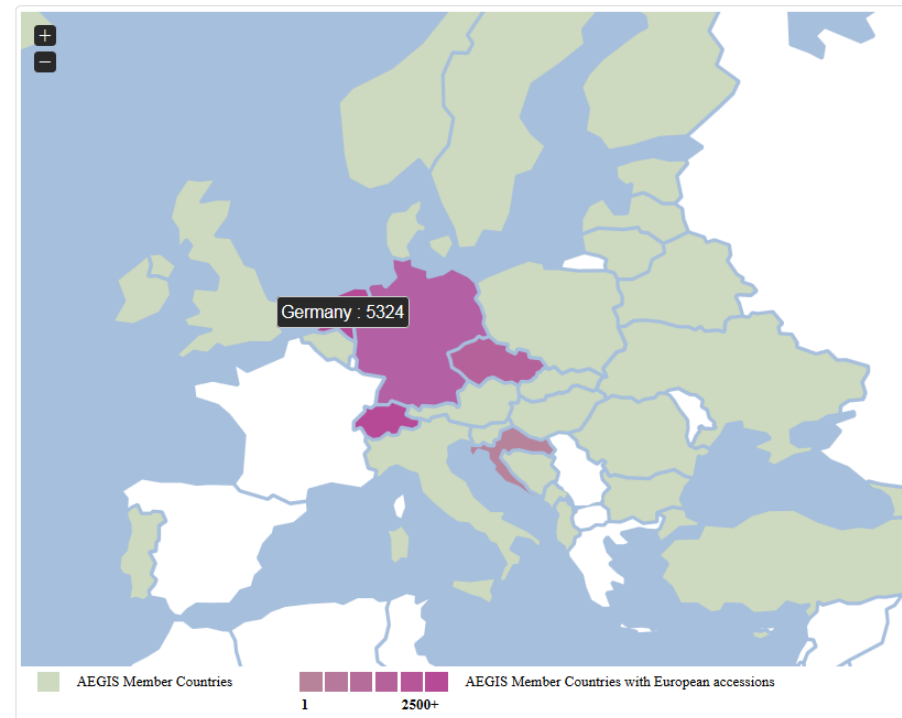
European Cooperative Programme for Plant Genetic Resources (ECPGR)

Associate Members

Germany

The MoU was signed on 05 November 2009 by Federal Ministry of Food, Agriculture and Consumer Protection, Germany

- [Federal Plant Variety Office](#)
Contact: Udo von Kröcher ✉
Date of signature of Associate Membership: 09 December 2011
- [Leibniz Institute of Plant Genetics and Crop Plant Research \(IPK\)](#)
Contact: Andreas Graner ✉
Date of signature of Associate Membership: 14 December 2009
- [Federal Research Centre for Cultivated Plants - Julius Kühn-Institut](#)
Contact: Georg F. Backhaus ✉
Date of signature of Associate Membership: 17 December 2009



Upload to EURISCO: Experiences

- Challenges
 - We are not the data owner
 - Wrong formatting, missing genre, empty space after semikolon...
 - Decision on deletion candidates
- WIEWS-Codes
 - Changes from GER to DEU
- Mistakes
 - Old (invalidated) WIEWS Codes
 - Codes from other international databases are using similar but different codes, e.g. VIVC (for SAMPSTAT, INSTCODE)
- Advantages
 - Upload of single data sets
 - Export opportunities in Excel
 - All mistakes are understandable
 - Technical support is quick and good

International context



<http://www.google.de/url?source=imglanding&ct=img&q=http://p5.focus.de/img/fotos/crop609364/4082715217-w1200-h627-o-q75-p5/wissen-samenbunker-eingang.jpg&sa=X&ei=B95QVcD6LMnVywOqnlDIDg&ved=0CAkQ8wc42wI&usg=AFQjCNEHTwCayTmbeGkpRmdTA9ki6ZRPYw>

Convention on Biological Diversity

Germany ▾



Germany

Convention

Party since: 1994-03-21
By: Ratification

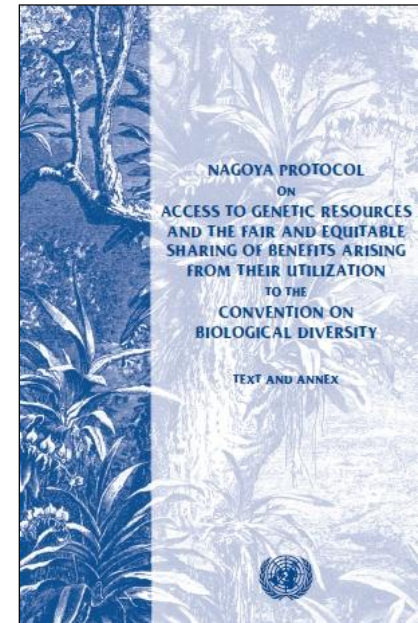
Cartagena Protocol

Party since: 2004-02-18
By: Ratification

Nagoya Protocol on Access and
Benefit-sharing

Non Party

- The Nagoya Protocol entered into force on 12 October 2014.
- 59 Parties (59 Ratifications), 91 Signatures (May 12th 2015)
- Regulation (*EU*) No 511/2014 of the *European* Parliament and of the Council of 16 April 2014
- In force of the EU-Regulation on 12th Oktober 2014 in the member states of the EU
 - Exemptions: Articals 4, 7 and 9 in force on 12th Oktober 2015
- German law for the implementation and ratification of the EU-regulation in force since 29th April 2015
- Germany made a frozen snapshot of the national inventory to document the genetic resources in public genebanks before 12th october 2014.



International Treaty on Plant Genetic Resources for Food and Agriculture

Germany

>>Federal Ministry of Food, Agriculture and Consumer Protection

The Federal Ministry of Food, Agriculture and Consumer Protection of Germany has notified the Secretary of the Treaty that more than 100,000 accessions that are held in the collections of the Genebank of the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK), and the Fragaria and Malus collections held by the Federal Research Centre for Cultivated Plants have been included in the Multilateral System. The German material is fully described by the German National Inventory for Plant Genetic Resources for Food and Agriculture (PGRDEU). website: pgrdeu.genres.de/?lang=en

Date of the notification: 25/07/2008

Updated number of accessions: 108,675

[Read the notification](#)

Website: [National Inventory for Plant Genetic Resources for Food and Agriculture in Germany \(PGRDEU\)](#)



Reporting function of the National Inventory PGRDEU



International Treaty: Multilateral System



PGRDEU
Plant Genetic Resources in Germany

START | IMPRINT | CONTACT | DATA PRIVACY | DEUTSCH



Introduction

Search all Areas

Suche

Ex situ Collections

In situ Occurrences

On-farm-Management

Thematic Lists

Varieties for Diversity

Start ▶ Search all Areas

Search all Areas

Search this area for an overview on species and related PGRDEU information

- in the ex situ collections,
- in the in situ and on-farm occurrences,
- on the Red List of Endangered Native Crops,
- on cultivation and seed propagating areas of agricultural and horticultural species and varieties in use.

By means of a link you can refine your search in the chosen area.

▶ Go to search

Contribution of Germany to the Multilateral System of the International Treaty on Plant Genetic Resources

Germany has ratified the International Treaty on Plant Genetic Resources for Food and Agriculture on 31 March 2004 and is fully supportive of its objectives, which are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising from their use, in harmony with the convention on Biological Diversity.

A core element of the Treaty is the Multilateral System of Access and Benefit-sharing. The Multilateral System shall include all plant genetic resources for food and agriculture listed in *Annex I* of the Treaty that are under the management and control of the Contracting Parties and in the public domain. Furthermore Contracting Parties shall invite other holders of the plant genetic resources for food and agriculture listed in *Annex I* to include these in the Multilateral System.

Germany notifies the following plant genetic resources for food and agriculture listed in *Annex I* and maintained in Germany that have been included in the Multilateral System:

113,349 Accessions

Through the website of the National Inventory for Plant Genetic Resources (PGRDEU) in Germany detailed data on the composition of the collections and user procedures to order samples are readily available.

- **National contributions to the MLS**
 - The integration of the German PGRFA in the **public domain** in the MLS is very well established.
 - German stakeholders provided from July 2011 – June 2012 >35.000 accessions with 1.894 SMTA's
 - 7.569 accessions were sent to countries outside ERG



Initiative „Variety for Diversity“

- 17 breeding companies committed to participate
- Portfolio with 218 varieties in 15 crop species

- German plant breeders include protected premium plant varieties in the Multilateral System
- The material from „Varieties for Diversity“ is accessible via the same internet platform as the accessions in the public domain (PGRDEU)
- Starting from now users all over the world can obtain information and ask for seed samples of these protected varieties from the private sector
- The varieties are well described, including the climatic adaptation potential

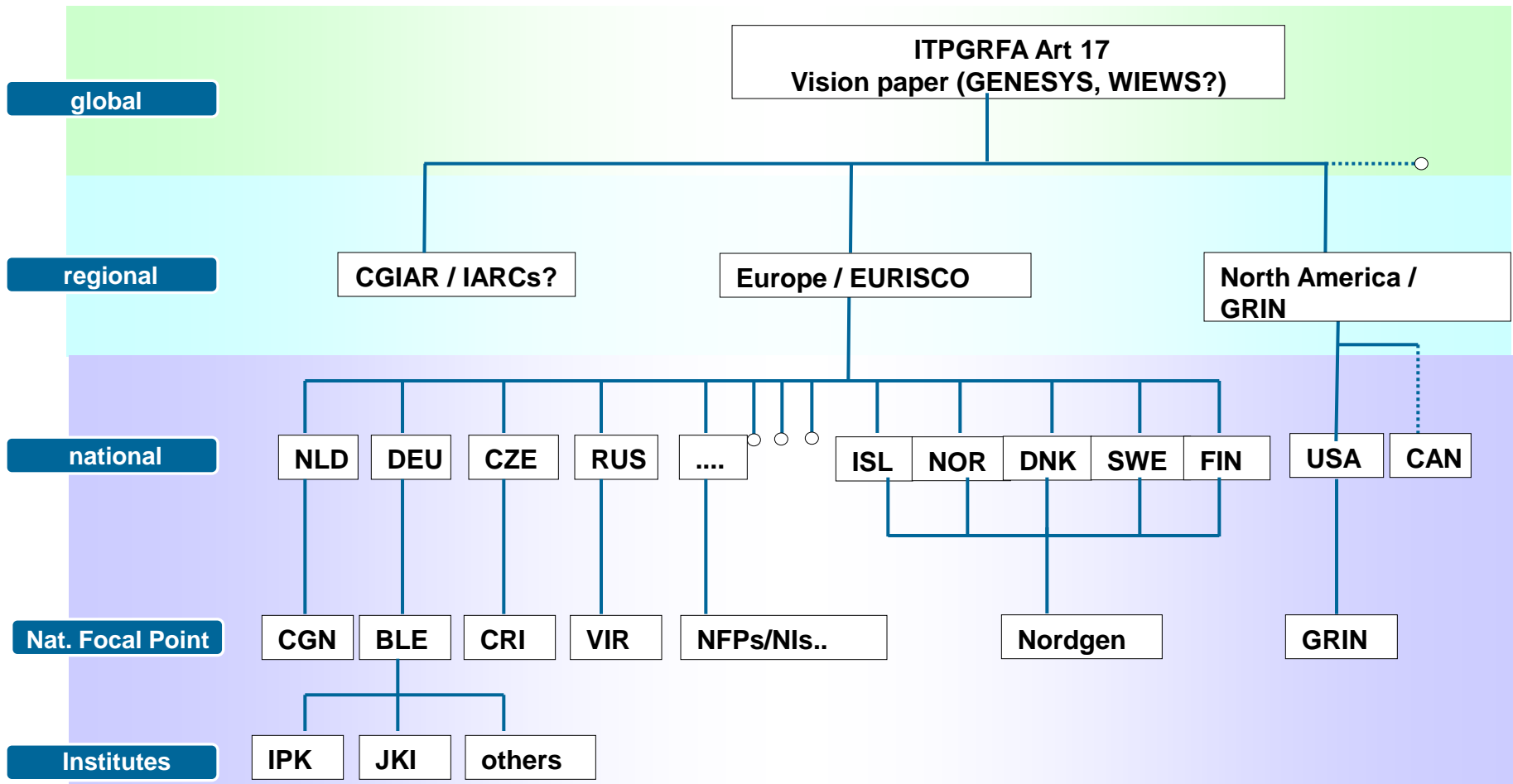


- 69 Wheat
- 34 Barley
- 25 Rapeseed
- 21 Potatoe
- 12 Oat
- 11 Sugarbeet
- 10 Triticale
- 9 Pea
- 8 Ryegrass
- 6 Maize
- 5 Rye
- 3 Acker bean
- 2 Mustard
- 2 Clover
- 1 Phacelia

Copyright: BDP

Data from PGRDEU in international information systems

DivSeek?



End note

→ Interested in further information? Questions?

- Please do not hesitate to ask us!
 - Information and Coordination Centre for Biological Diversity
 - Information system for genetic resources: <http://www.genres.de/?L=3>
 - National Inventory for Plant Genetic Resources: <http://pgrdeu.genres.de/index>

Thank you for your attention!

