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

Federal Ministry of Food and Agriculture

Advisory and Coordinating Committee for Agricultural and Horticultural Plants (BEKO)

National Programme

Federal Office for Agriculture and Food

Secretariat
PGRDEU
Coordination + information
Project funding

Informations- und Koordinationszentrum

Biolocische Vieta!

Projektträger Bundesanstalt für Landwirtschaft und Ernährung

www.natres.de
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

3,600 PGRFA species (CWR & cultivated crops) in total,
thereof: 2,900 CWR (in situ)
thereof: 1,000 CWR without exclusive ornamental and breeding uses

http://pgrdeu.genres.de
National context: Ex situ conservation
Genebanks in Germany

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

National context: ex situ conservation
**Ex situ documentation of PGR in German Genebanks**

**National context: ex situ conservation**

- **Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) – Federal Genebank**
  - 3,000 species
  - 150,000 accessions

- **German Genebank for Grapevine JKI**
  - Grapevine collections in Laender institutes
  - > 4,400 acc.

- **German Genebank for Fruit Crops JKI**
  - Collections of apples, cherries, strawberries…
  - > 1,000 acc.

- **Tobacco Genebank**
  - Agricultural Technology Center
  - ca. 800 acc.

- **German Genebank for Oramentals Federal Plant Variety Office**
  - Roses
  - Rhodo
  - Generativ
  - > 12,000 acc.

- **German Genebank for CWR BG Osnabrück**
  - > 3,000 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

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

http://www.ex-situ-erhaltung.de/
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)

http://www.geodienste.bfn.de/schutzgebiete/#?centerX=3786876.500?centerY=5669060.000?scale=5000000?layers=639

National context: in situ conservation
Endangerment of 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.

Quelle: Eigene Darstellung nach LUDWIG & SCHNITTLER 1996
Crop Wild Relatives and wild food plants in Germany

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

Establishment of CWR network of networks (genetic reserves):

- 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

National context: in situ conservation

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.
    ▪ 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

National context: on farm management

Ex situ

Taxonomic Characteristics

- German variety name: Albana
- Historical conductivity name: ALBANA BIANCA (Goethe 1887)
- Berry colour: weiß
- Variety in ex-situ conservation: Accessions in Institution DEU098 Number: 1

Variety in vineyard(s): Baden: Link 1 to variety Albana in vineyard Baden

Assessment of the virus status - Vineyard Baden

Varieties: Albana

<table>
<thead>
<tr>
<th>Virus infection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Virus infection</td>
<td>40-60 %</td>
</tr>
<tr>
<td>Fanleaf</td>
<td>20-40 %</td>
</tr>
<tr>
<td>Roll virus</td>
<td>20-40 %</td>
</tr>
</tbody>
</table>

Characteristics of Accession: DEU098-1988-001

- 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.jcik.bund.de
- Information on the collection of the accession: Institute, Experimental station, Research organization, Genebank (40)

Information on the donor
- Name: CIRA-Centro di Ricerca per le Vitiulture (ITA555)
- Information about the ancestry and the breeder: GARGANEGA

More information
- Delta 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
National context: sustainable use

Number of companies with breeding programmes

- Cereals: 26
- Maize: 15
- Oil- and Protein Plants: 11
- Ornamental Plants: 7
- Fodder Plants: 6
- Vegetables: 6
- Potatoes: 4
- Sugarbeet: 3

Copyright: BDP
### Situation in Germany

#### Protected varieties

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

Source: Blatt für Sortenwesen 7/2011, Federal Plant Variety Office
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

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

National context: sustainable use
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: 06 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

http://www.ecpgr.cgiar.org/aegis/european-collection/
Upload to EURISCO: Experiences

→ Challenges
  → We are not the data owner
  → Wrong formatting, missing genrea, 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
Convention on Biological Diversity


59 Parties (59 Ratifications), 91 Signatures (May 12th 2015)


In force of the EU-Regulation on 12th Oktober 2014 in the member states of the EU

- Exemptions: Articels 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 oktober 2014.
International context

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

- **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

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**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 notified 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**
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.
Data from PGRDEU in international information systems DivSeek?

International context

ITPGRFA Art 17
Vision paper (GENESYS, WIEWS?)

global

regional

national

CGIAR / IARCs?

Europe / EURISCO

North America / GRIN

NLD DEU CZE RUS ISL NOR DNK SWE FIN USA CAN

CGN BLE CRI VIR NFPs/NIs...

IDN

Nordgen

IPK JKI others

GRIN
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!