CROP DIVERSIFICATION IN A CHANGING WORLD
Mobilizing the green gold of plant genetic resources
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Workshop 4: Accessing plant genetic diversity – what are the obstacles and how can they be overcome?
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Problem statement
Plant breeders are in need of a continuous supply of diverse and novel genetic diversity to produce new crop varieties able to cope with the impacts of changing cultivation conditions and to respond to consumer demand. A vast pool of this diversity exists in nature, in production systems and in genebanks, and the PGRFA community has the knowledge, tools, techniques and rapidly evolving technology to conserve and use these genetic resources wisely to sustain crop production. However, there is a range of complex issues causing significant limitations to the effective management and availability of PGRFA which is resulting in loss and inefficient utilization of diversity.

The evidence base

ITPGRFA study – global focus1–2
To understand the constraints affecting the capacity of national programmes in implementing Article 6 of the International Treaty on PGRFA, ‘Sustainable Use of Plant Genetic Resources’, in 2015 the Treaty Secretariat conducted a global survey using an online questionnaire to gather the views of stakeholders (n=289) in the PGRFA use system. In this survey, access to plant genetic diversity for use in public research and commercial crop improvement programmes was highlighted as a critical bottleneck in the system due to issues which can be broadly characterized as follows:

1. Problems of accessing material held in national genebanks
   - Many accessions may be unviable due to prevailing poor funding and weak infrastructure;
   - Material requests are sometimes not honoured;
   - There is confusion regarding the operation of the Multilateral System – MLS
   - For material that has been characterized and/or evaluated, access to the resulting data is problematic due to inadequate data management;
   - Germplasm collections are not established on the basis of targeted genetic diversity;
   - Genebank curators and plant breeders seldom collaborate in base broadening or population development.

2. **Policy related issues hampering access**
   - Determining and following the legal steps required to obtain germplasm is complex and time-consuming;
   - Conflicts between national and international policies (e.g., material transfer agreements – MTAs, intellectual property rights – IPRs, and Farmers’ Rights);
   - Compliance with national access and benefit-sharing (ABS) regulations;
   - Some commercial companies are cautious of potential future claims on royalties due to IPRs and ABS regulations;
   - Insufficient policies and guidelines;
   - Fragmentation of policies and conservation facilities.

3. **Information availability hampering access**
   - Inadequate access to passport, characterization and evaluation data on the plant material available;
   - Much information on PGRFA material is not available in the public domain;
   - Information on material containing specific traits is difficult to obtain;
   - Insufficient characterization and evaluation is undertaken across a broad spectrum of crop gene pools;
   - Access to information is hampered by poor communication technology, lack of human resources, language barriers and restricted access to scientific literature;
   - Obtaining information on potential collaborators is difficult.

4. **There are restrictions on accessing material conserved in situ.**

   **PGR Secure study – European focus**

   An analysis of the constraints of PGR exchange in Europe took place in the PGR Secure project (2011–2014; [www.pgrsecure.org](http://www.pgrsecure.org)). In this project, 133 semi-structured interviews were carried out in 21 countries and an online questionnaire was completed by 226 respondents. Using these data, a SWOT (strengths, weaknesses, opportunities and threats) analysis was made per stakeholder group and a vision for a future European PGR exchange system was proposed. Access to plant genetic diversity for use in a public as well as in a private context was in this project also identified as a critical bottleneck due to amongst others:

   a) Limited budgets of genebanks, public research organizations and agro-NGOs for maintenance and storage of PGR;
   b) Insufficient visibility of collections on the web and inadequate data management;
   c) Lack of characterization and evaluation data;

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d) Administrative barriers hindering PGR exchange due to the implementation of the CBD and ITPGRFA;
e) The tendency at public research organizations to operate their own collections, often underestimating the proper management of collections;
f) Lack of the implementation and coordination of PGR conservation and use policies by (inter)national authorities.

Workshop objectives
1. Agree on the main factors limiting access to plant genetic material for research and crop improvement.
2. For each factor, identify what critical changes need to be made to increase the availability, accessibility and use of plant genetic material.
3. Make recommendations for steps that need to be taken to put the required measures into place.