
Let's Fly High

the Perfect Genebank Community in Europe

(and Improving the Current by Collaborating More Effectively)

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ECPGR Genebank Managers Network Meeting

Braga, May 14th, 2024



The Perfect Genebank Community

Let's Fly High

- let's dream about the way things should be
 - learning from the past
 - based on the current reality
 - realistic steps forward
 - ending with the dream-come-true (or as close as possible)

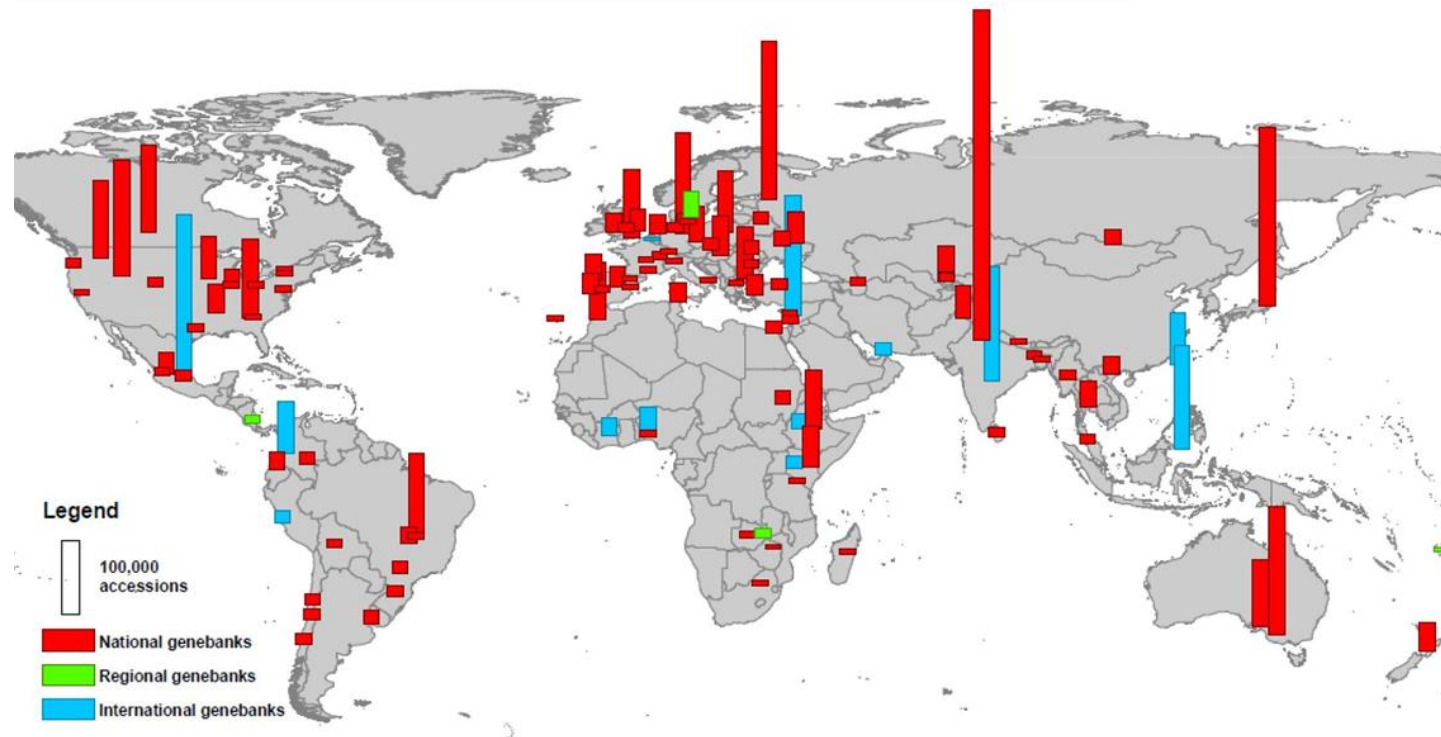
please listen critically since we need to know if you support the ideas and if they are feasible

The Perfect Genebank Community

- premises
 - there is an awful lot of work on PGR going on
 - 425 genebanks in Europe with 2 063 707 accessions
 - very many people, €€€ and PGR material
 - genebank objectives are very similar
 - conserve PGR for future generations
 - support use of PGR for current users
 - redundancy and missed opportunities
 - duplicated material
 - ineffectively used resources

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- FAO 3rd State of the World PGR (2023):



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- where do we come from?
 - various ideas about how a genebank-system should look like
 - regional genebanks (regional mandates)
 - countries in a region collaborating
 - conserving locally adapted material in the perfect habitat
 - crop specific genebanks (crop mandates)
 - a genebank specialises on one group(group)
 - others can rely on that genebank taking responsibility

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- what happened in the real world
 - in politics
 - each country (or region) wants its own genebank
 - many small genebanks possibly under the critical mass
 - ABS rules hinder collaboration
 - from 'heritage of mankind' to 'national sovereignty'
 - IT-PGRFA trying to repair the damage to PGR access
 - in genebanks
 - uncritical acquisition resulted in too large collections
 - most genebanks have back-logs
 - genebank procedures are often below standard

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- current situation
 - unclear how well PGR are conserved
 - accessions in EURISCO or GeneSys do not always exist/live
 - creating an overview (and planning) is difficult
 - **massive collecting is necessary to prevent genetic erosion due to the climate crisis**
 - access to PGR for user is generally poor
 - only few genebanks provide (good) access
 - some important genebanks are well organised
 - e.g. CGIAR

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- current situation
 - genebank methodology exists
 - we know how to do it
 - FAO Genebank Standards
 - knowledge and experience in the ECPGR network
 - on some levels improvements can be made
 - research is lagging behind

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Let's Fly High



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**Genebanks of various sizes,
with various expertises,
in various environments
collaborate and together
conserve PGR for the future
and make it available for current
users**

FEASIBLE AND SIMPLE

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- objective
 - PGR is conserved for future generations and available for current users
 - since no genebank can do it alone (the job is too big) genebanks need to collaborate

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- collaboration
 - to collaborate effectively genebanks need to be able to rely on each other
 - appropriate quality of operations should be assured
 - continuity should be guaranteed
 - 'if I cannot do it anymore someone else should be able to take over'

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- quality of operations
 - genebanks could be certified for (some of) their activities and become part of the genebank network
 - they can rely on each other and thus avoid redundancy
 - 'if you do it, I do not have to (since I know you do it well)'
 - they can use each other's facilities
 - 'if you do the distribution, I'll do the web-site'
 - 'if you do the regeneration, I'll cover the costs'

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- continuity of availability
 - all material in certified genebanks is duplicated and triplicated
 - basic genebank standard
 - safety duplicates become available for activation by other certified genebanks when the managing genebank loses its certification
 - this is NOT the current situation using 'black boxes'

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What is needed ?



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Willingness to get there!

**the rest is details and sweat:
most elements already exist,
we know how to create the rest**

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- what we already have in Europe
 - very many people working on, and with expertise about, PGR conservation
 - all aspects of collection management and genebank services
 - genebank quality management
 - many genebanks with very many accessions
 - varying quality of operations
 - in all eco-geographic regions of Europe
 - a collaboration platform: ECPGR

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- what we need to build
 - stronger coordination and political lobby
 - to assure political support
 - possibly the PGR Research Infrastructure (created in ProGrace)
 - a genebank certification system
 - blueprint is being created (in ProGrace) ready to be implemented
 - capacity building to help genebanks in
 - creating a quality management system
 - reaching the required operational standards

- required elements of a certification system
 - genebank needs quality management system
 - standard operating procedures (SOPs)
 - reporting/monitoring system
 - SOP's need to meet standards
 - agreed standards (FAO genebank standards, crop-specific specifications)
 - an authority needs to check and approve the SOPs
 - compliance needs to be confirmed independently
 - monitoring/certifying authority
 - costs (for individual genebanks) need to be kept low

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We've already started





- AEGIS: a European Genebank Integrated System
 - based on ECPGR network
 - inclusive (starting point: all genebanks)
 - contains elements for
 - quality management (AQUAS)
 - identification of relevant genebanks (based on MoU's)
 - problem: it's not working
 - has to become more reliable to allow rationalisation

■ AEGIS: a European Genebank Integrated System



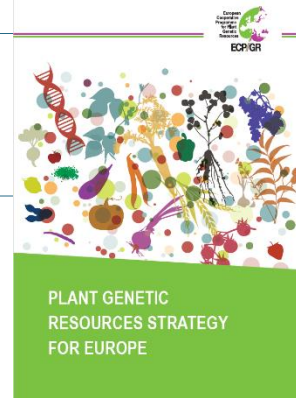
Opinion

AEGIS, the Virtual European Genebank: Why It Is Such a Good Idea, Why It Is Not Working and How It Could Be Improved

Theo van Hintum ^{1,*}, Johannes M. M. Engels ² and Lorenzo Maggioni ^{2,3}

Abstract: Europe is very active in terms of conserving plant genetic resources, with hundreds of genebanks and thousands of dedicated people involved. However, the resulting infrastructure is, along with being very expensive, far from efficient and not very reliable. In this opinion paper, the authors describe how this situation arose, and why the European Cooperative Programme for Plant Genetic Resources (ECPGR), the collaborative umbrella organization of the European countries involved, has not been able to improve this situation so far significantly. The principles of the decentralized virtual genebank (AEGIS) are described, and an analysis is made of the reasons for its lack of success. Possible changes for making AEGIS a success, or at least steps in the right direction, are proposed. These changes center around the creation of a system of certified genebanks with proper quality management, guaranteeing the long-term conservation of, and immediate access to the plant genetic resources conserved in it.

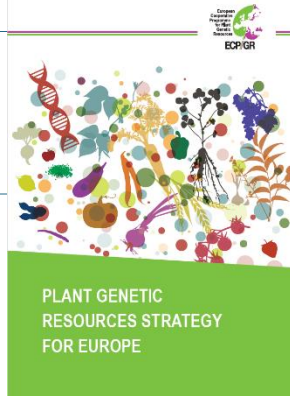
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■ PGR Strategy for Europe (2021)

- *by 2030, the PGR diversity in European genebanks is conserved reliably and made accessible for sustainable use, by improving the efficiency and efficacy of the European genebank infrastructure*
- the European *ex situ* conservation system will be raised to a level of excellence in terms
 - long-term quality
 - conservation management
 - viability
 - genetic integrity
 - phytosanitary protection
 - accessibility of conserved material to users

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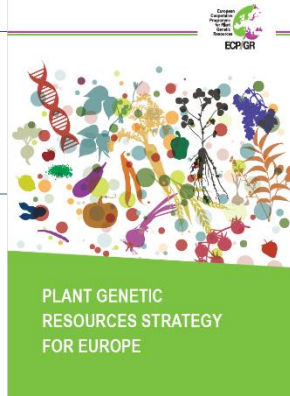


■ PGR Strategy for Europe

- establish a certification system, that is economically sustainable and accessible to genebanks and collection holders, based on a quality management system (AQUAS) with standards and a (external) monitoring system
 - consolidating AQUAS ... along with simple and inexpensive performance indicators and a reporting system
 - establish and run a monitoring system ... and a certification mechanism

- establish a genebank certification system
 - EU project Pro-GRACE: work-package on setting up a 'blueprint for a genebank certification system'
 - collaboration with Crop Trust and CGIAR Genebank Initiative
 - assure political support via Inter-governamental Technical Working Group on PGR of the CGRFA
 - "The Working Group also recommended that FAO look into options on how and which capacity-building and evaluation mechanisms could be created to support genebanks in reaching the Genebank Standards and explore the possibility for creating an acknowledgement system."

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■ PGR Strategy for Europe

- create capacity building and facility improvement mechanisms that support genebank managers to achieve the standards needed for certification
 - monitoring system for identifying needs for capacity and facility improvement
 - create capacity building activities
 - websites, publications and social media
 - staff exchanges
 - conferences
 - training material at all levels
 - support facility improvement

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- who should do what?
 - in ProGrace the certification system and capacity building programme is being designed
 - if the 'research infrastructure' is funded this can make a flying start
 - if not, we should do it anyway
 - ECPGR will strengthen AEGIS
 - identify genebanks
 - inventory operating procedures

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- who should do what?
 - genebanks need to make steps toward quality management
 - responsibility of the genebanks !
 - supported by targeted capacity building

to all genebanks:

**start discussing and
documenting your procedures
and improve them if necessary**

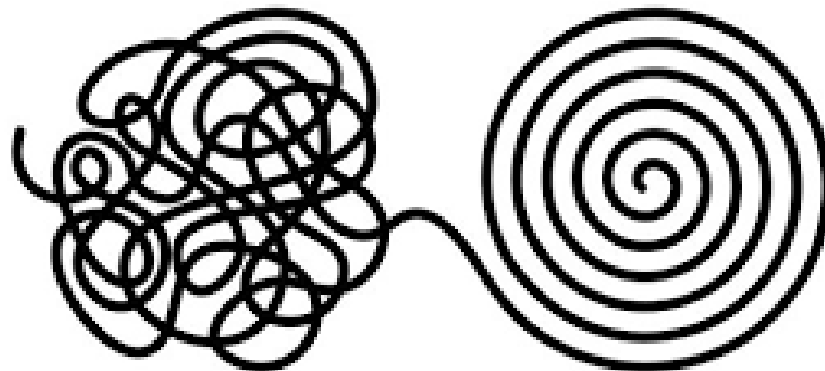
Conclusions



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- conclusions
 - the Perfect Genebank Community will consist of a network of Certified Genebanks
 - everything we need is (nearly) already there to create this Perfect Genebank Community in Europe
 - some tools still need to be created
 - possibly the political support is not complete yet
 - genebanks that want to join should have their operations comply to the standards and create a quality management system to assure this

Remaining issues



Thank you for your attention !

