



**Food and Agriculture
Organization of the
United Nations**



**International Treaty
on Plant Genetic Resources
for Food and Agriculture**

Item 11 of the Provisional Agenda

TENTH SESSION OF THE GOVERNING BODY

Rome, Italy, 20–24 November 2023

Report by the DivSeek International Network

Executive Summary

At its Ninth Session, the Governing Body requested the Secretary to provide a report on joint activities with the DivSeek International Network (Resolution 5/2022, paragraph 8). The Secretary reported on those activities in document, IT/GB-10/23/11, *Report on the Implementation of the Global Information System*. The Secretary also invited the Network to provide a report to the Tenth Session. This information document contains such a report, as received from the Network.

Prepared by Graham King, formerly Executive Director, DivSeek; Nov 2023

Background:

DivSeek provides a forum for discussion about how data, information and technologies can be used to characterize PGR and acts as a “hub” to connect and promote constructive interactions between its partners, other researchers and diverse organizations interested in generating, exchanging and utilizing information about plant genetic variation to accelerate crop improvement, strategic research, and sustainable production of food and agricultural products around the world.

Final stages of Establishment Project

Engagement activities have included webinars, online workshops and discussion meetings, workshops at international conferences. The website has developed authoritative content, with periodic articles supplemented by a distributed e-newsletter. DivSeek has established close working relationship with the FAO International Treaty (ITPGRFA) and signed an MOU with workplan in 2022; and recently with the Global Crop Trust, leading to a co-sponsored workshop and development of a Plant Data Commons White Paper that outlines next steps for the international conservation and bioeconomy end-use communities.

A final invited workshop co-funded with the Global Crop Trust was held in June 2023 to develop a White Paper focused on Plant Digital Commons: Conservation to Consumption. This outlines the value proposition for a community of practice that focuses on the role of data, information and knowledge exchange that adds value to Plant Genetic Resources (PGR) in the context of global challenges and development of the bioeconomy. It thus provides a roadmap for future global development, building on the Genome Prairie investment.

The primary outcomes of the DivSeek establishment project, co-funded by Genome Prairie (Genome Canada) and the Global Institute for Food Security, were the increased engagement of DivSeek global membership and stakeholders, with identification of key technical and some policy issues relating to information exchange that may add value to Plant Genetic Resources. In particular, this was achieved through:

Development of a Strategic Plan and DivSeek Commons

- An ambitious 5 year strategic Plan was published in 2021 (<https://divseekintl.org/strategic-plan>)
- This outlined mission, vision and workplans with tangible outcomes that require considerable funding to achieve.
- As follow-up a tactical White Paper was initiated in 2023 to provide stepwise roadmap of fundable activities.
- *Divseek Commons* was established as an ‘Ecosystem of Standards, Open Data Resources, Analysis Tools and Best Practices’ for Plant Genetic Resources.

Coordination of Webinars and convening specialists to tackle specific issues:

- Current poor traceability and interoperability between FAO-assigned DOIs used for PGR accessions and BioSampleIDs used genomic repositories such by NCBI/EMBL (the genebank to GenBank problem). Solutions proposed, including Digital Genetic Objects.
- Highlighting the scope for development of more generic crop genetic resource phenotypic descriptor standards; examples in relation to nutritional components and underutilised crops.

- Engagement with TK/BC (traditional knowledge, biocultural) label system and raising awareness amongst the PGR community.

Community building:

- a more cohesive and communicative community encompassing PGR collection curators, academic R&D, pre-breeding and breeding communities,
- the value of Working Groups focused on genomics, phenomics and policy to identify and prioritise generic challenges, good practice options, along with ongoing gaps and unresolved challenges
- establishment of regionally global Hubs and thematic hubs
 - extended community and stakeholders beyond core members
 - reach into developing economies in Africa, S. America and Pacific
 - encouragement of autonomous interactions between hubs
- refinement and prioritisation of gaps where. esp. in relation to digital sequence information (DSI) and requirement for data descriptive standards contributing to FAIR (Findable, Accessible, Interoperable, Reusable) data.

Outreach and sharing vision:

- Organising and sponsoring workshops at international conferences, including PAG, PAG Asia, PAG Australia, TropAg/HarlanIV.
- Interaction with regional communities, via formal regional and thematic Hubs as well as ad hoc involvement.
- Initiating a White Paper on "Plant Digital Commons - conservation to consumption" to identify gaps and challenges and road map for future investment.
- Active website (divseekintl.org); additional dissemination of articles and issues of 'DivSeek Connect' e-newsletter.

Online Resources:

- Resources developed are primarily available via the <https://divseekintl.org> website.
- In addition, the DivSeek Commons initiative was established with an associated framework GitHub repository (https://github.com/DivSeek/DivSeek_International_Commons).

Reflection

DivSeek International Network has proven successful in providing a global platform to share experiences and best-practices relating to data exchange and downstream information that describes Plant Genetic Resources held in genebanks. The project from the outset had an international leadership/cohesive remit and focus. DivSeek has interacted with leading groups from its membership and extended to external international communities and groupings.

DivSeek has actively engaged and brought together leaders in the areas of: downstream genomic characterisation of PGR; FAIR data exchange and those involved in development of standards/ontologies; DivSeek complements other international and networks focused on management of plant germplasm (eg Global Crop Trust; ITPGRFA) and downstream genomics. It fills a niche by bridging the gap between genebanks and bioeconomy end-use.

The recruitment and involvement of DivSeek members, observers and partnership categories has been a central aspect of this project. The engagement and exchange of ideas with a wide range of expertise in different sector and regions of the world has helped develop a more cohesive view of gaps in capacity and capability relating to information flow around Plant Genetic Resources.

Mechanisms such as AGM, webinars, workshops, and newsletter have been participatory and enabled a wide range of users to interact and share knowledge.

Future directions

1. Community engagement in development and dissemination of White Paper on "Plant Data Commons: conservation to consumption", with identified targets for small, medium, large-scale funding.
2. Greater interaction with the Global Crop Trust focusing on complementary activities and adding value to Plant Genetic Resources.
3. Development of a globally federated model for DivSeek International, building on the success of DivSeek regional Hubs and to assist in attracting regional funding. Anticipate bases at least in N. America, Latin America, Oceania and Africa, with scope to develop additional Hub covering S and SE Asia.
4. Further development of DivSeek Commons as a focus for identifying and establishing data standards, increasing interoperability, ease of access and visibility of information platforms that connect Plant Genetic Resources with genomics, R&D, breeding, Ag and wider economy.
5. Ongoing additions to DivSeek website as a focus for the relevant communities and stakeholders.