



DivSeek Connect

Official Newsletter of DivSeek International Network

Issue #3 | October 2022

Dear Reader,

As most of us return to a covid cohabitation world, many opportunities for in-person meetings and conferences have opened up.

The past few months have seen some key gatherings, including the recent Ninth Session of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) Governing Body (GB9) in New Delhi.

Some immediate summary is available via the [IISD Earth Negotiations Bulletin](#). We hope to bring some additional perspectives in the next issue of DivSeek Connect.

Congratulations to DivSeek Board member Yasmina El Bahloul (Morocco), who was highly effective in her role as Chair for the GB9 session, and was re-elected as Chair for the GB10 session that will take place in 2023.

Unfortunately, for logistics reasons the planned 'Barcodes to Bushels' workshop was postponed from its planned October slot. The meeting and focus is being rebooted as 'Barcodes to BioEconomy' for Q2 2023, focused on managing distributed workflows from Plant Genetic Resources. We shall update with new-items in the near future.

We are pleased to announce that DivSeek will hold its in-person AGM in San Diego, prior to Plant Animal Genome (PAG) from lunchtime Jan 12 (Thu) 2023. This will include community 'flash-talks'. At 4pm on Jan 13 (Fri) we have secured a DivSeek workshop within the PAG program, and

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Announcements:

- Final days to share your feedback on DivSeek's performance and capacity.
- DivSeek AGM to be held in-person in San Diego, January 12 2023.
- Upcoming DivSeek workshop at PAG 30 conference in San Diego, January 13 2023.
- DivSeek 'Barcodes to BioEconomy' workshop is in the works.

we plan to follow this with a community discussion session and refreshments at 6pm. This will also provide the opportunity to fine-tune the rebooted Q2 workshop.

Finally, please do not forget to help us by taking time to complete and return the survey circulated by colleagues at the University of Saskatchewan – there is still time to get this completed.

Complete the survey [here](#).

Graham King, Executive Director

Timely Topics

Stephen Kresovich elected to Chair of DivSeek Board

Plant breeding expert professor Stephen Kresovich has been elected Chair of our Board of Directors.

Kresovich brings a lifetime of experience in conservation genetics and research supporting crop genetic improvement. This includes directing major U.S. plant genebank programs and serving as a member of the U.S. National Genetic Resources Advisory Council.

He currently serves as director of the Cornell University [Feed the Future Innovation Lab for Crop Improvement](#) and the Clemson University [Advanced Plant Technology Program](#). These programs aim to advance plant breeding tools, technologies, and methods to deliver staple crop varieties that can increase yield and stability, enhance nutrition, and show greater resistance to pests and diseases.

As DivSeek Chair he succeeds Steve Visscher, formerly of the Global Institute for Food Security in Saskatoon, Canada. As a director since 2019, Visscher made major contributions to our recent developments, including the Strategic Plan 2021-26.

"I'm excited to lead the DivSeek effort and support the global networks responsible for effective conservation and use of crop genetic resources," said Kresovich, professor

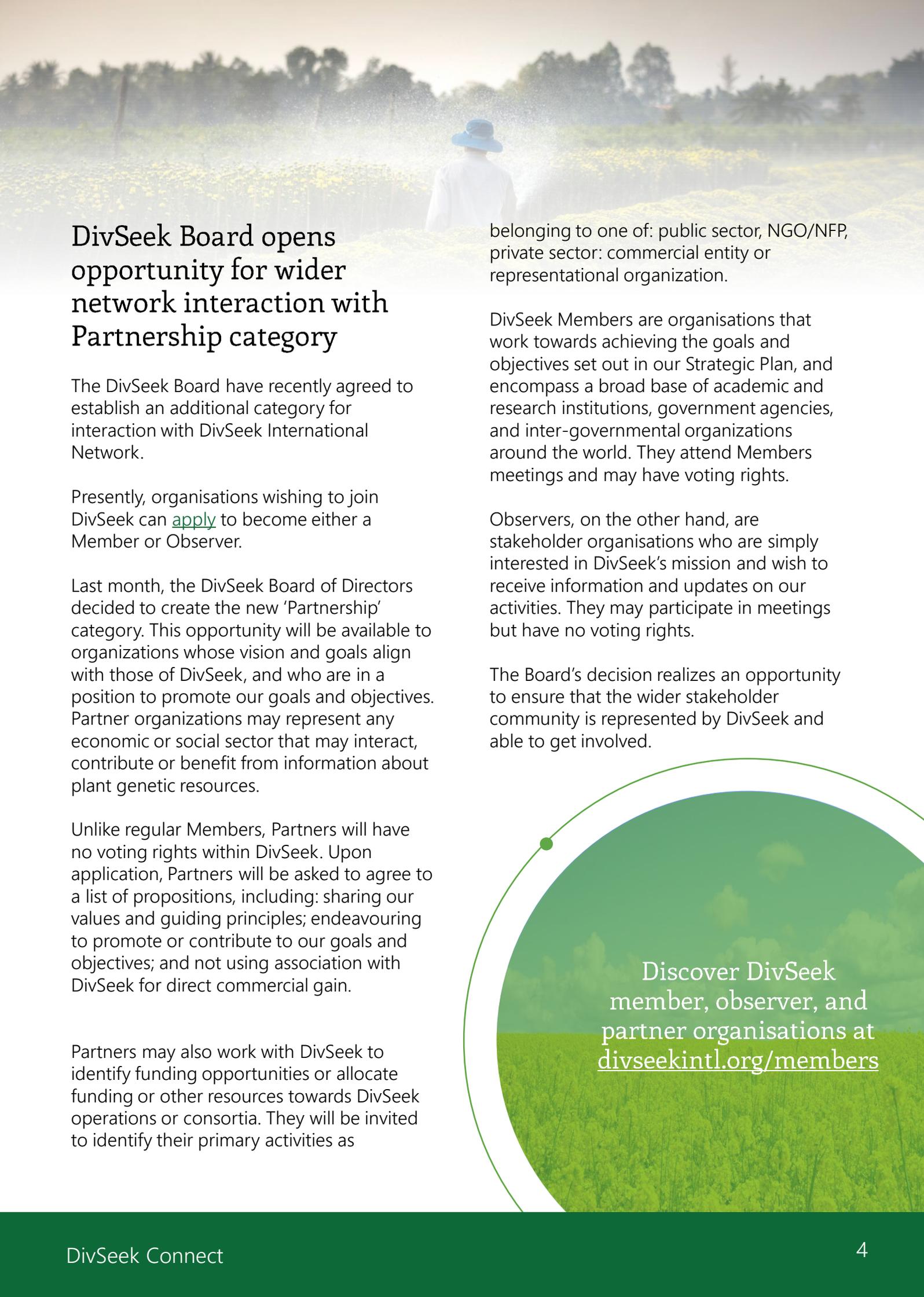
in Cornell University's School of Integrative Plant Science and Robert and Lois Coker Trustees Chair of Genetics in the Department of Plant and Environmental Sciences at Clemson University.

"We're at a critical juncture of time when climate change and genetic erosion of plant diversity challenge our society's resilience.

With other key global partners, DivSeek can play a valuable role addressing these growing pressures".



Figure 1: Stephen Kresovich, new Chair of DivSeek Board of Directors. (Source: Clemson University News)



DivSeek Board opens opportunity for wider network interaction with Partnership category

The DivSeek Board have recently agreed to establish an additional category for interaction with DivSeek International Network.

Presently, organisations wishing to join DivSeek can [apply](#) to become either a Member or Observer.

Last month, the DivSeek Board of Directors decided to create the new 'Partnership' category. This opportunity will be available to organizations whose vision and goals align with those of DivSeek, and who are in a position to promote our goals and objectives. Partner organizations may represent any economic or social sector that may interact, contribute or benefit from information about plant genetic resources.

Unlike regular Members, Partners will have no voting rights within DivSeek. Upon application, Partners will be asked to agree to a list of propositions, including: sharing our values and guiding principles; endeavouring to promote or contribute to our goals and objectives; and not using association with DivSeek for direct commercial gain.

Partners may also work with DivSeek to identify funding opportunities or allocate funding or other resources towards DivSeek operations or consortia. They will be invited to identify their primary activities as

belonging to one of: public sector, NGO/NFP, private sector: commercial entity or representational organization.

DivSeek Members are organisations that work towards achieving the goals and objectives set out in our Strategic Plan, and encompass a broad base of academic and research institutions, government agencies, and inter-governmental organizations around the world. They attend Members meetings and may have voting rights.

Observers, on the other hand, are stakeholder organisations who are simply interested in DivSeek's mission and wish to receive information and updates on our activities. They may participate in meetings but have no voting rights.

The Board's decision realizes an opportunity to ensure that the wider stakeholder community is represented by DivSeek and able to get involved.



Discover DivSeek
member, observer, and
partner organisations at
divseekintl.org/members

DivSeek welcomes Vietnam's Plant Resources Centre

Written in correspondence with Nguyen Van Kien of the National Plant Genebank, Vietnam.

The Vietnamese Plant Resources Centre in Hanoi has become the newest member organization of DivSeek International Network.

Positioned in the heart of Southeast Asia, Vietnam is a country with a broad range of climates and habitats – from tropical, to subtropical, to temperate, and alpine. This diversity is mirrored in its floristic composition. The country is considered a global biodiversity hotspot^[1], and has been recognized as a center of angiosperm radiation and crop biodiversity^[2].

The [Plant Resources Centre](#) (PRC) was founded in 1986 to preserve around 1,000 accessions collected across the Red River Delta (*Châu thổ sông Hồng*) – the expansive, low-lying plain surrounding Hanoi.

Now, more than thirty years later, the PRC has become the headquarters for Vietnam's National Plant Genebank. The genebank now conserves 45,000 accessions of over 450 crop species and their wild relatives, from across all eight of the country's agroecological regions.

The genebank conserves genetic resources at both ex-situ and in-situ sites – located throughout 23 agricultural R&D institutions, and in associated protected areas and national parks.

Beyond conservation, the PRC also conducts genomic research on important crop species, characterises and evaluates germplasm for [valuable traits](#), manages and develops their own [information systems](#), and distributes between 500 and 1,000 accessions to domestic scientists and farmers, annually.

"We are so happy to be joining DivSeek International Network," says Nguyen Van Kien, principle researcher at the National Plant Genebank. "Our collection of 45,000 accessions comprises useful material to carry out research, and we expect it will be of interest to many of DivSeek's members."

Kien says that he and his colleagues are looking forward to supporting and joining existing by other DivSeek member organizations, or to collaborate on developing proposals for new projects.



Figure 2: Seed collections housed within the National Plant Genebank in Vietnam. (Source: CIAT / [Georgina Smith](#)).



Figure 3: Nyugen Van Kien, principle researcher at the National Plant Genebank in Vietnam, in a cassava in-situ genebank. (Source: CIAT / [Georgina Smith](#))

“Our collection of 45,000 accessions comprises useful material to carry out research, and we expect it will be of interest to many of DivSeek’s members.”

“It’s so important that we cooperate with other organizations to collect, assess, store, utilize and raise awareness for plant resources,” he says. “This is the only way we will develop our capacity to face future challenges.”

DivSeek’s executive director, Graham King, says the PRC are a welcome addition to DivSeek’s growing membership base. “We are actively looking to expand our network to include more member organizations in Southeast Asia,” he says.

To the broader DivSeek network, Kien extends a warm invitation. “All of you are welcome at PRC”.

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1. Andrew W. Tordoff, J. W. Duckworth, Christopher Macfarlane, Marguerite Ravn, James Tallant. Critical . Ecosystem Profile: Indo-Burma Biodiversity Hotspot. Update 2020. Ecosystem Partnership Fund. https://www.cepf.net/sites/default/files/e_p_indoburma_2020_update_final-sm_0.pdf
2. Hoai, Tran Thi Thu, Hummer, K.E. and Nghia, La Tuan (2018). Plant Resources Center and the Vietnamese Genebank System. Acta Hort. 1205, 425-430
DOI: 10.17660/ActaHortic.2018.1205.50
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Perspectives

ABS and Biodiversity Conservation: Does the Design of the ABS system allow for the realization of the Post-2020 Framework?

Written by Dr. Aysegül Sirakaya, Lund University, Department of Law, Sweden (aysegul.sirakaya@jur.lu.se)

International law provides for mechanisms for coupling the use of biodiversity and its conservation. One of these mechanisms is fair and equitable sharing of benefits arising from genetic resources. The system of access and benefit-sharing (ABS) aims to fairly distribute benefits deriving from utilising nature between the providers of genetic resources (such as biodiversity-rich countries) and users of genetic resources (such as universities, biotechnology or pharmaceutical companies, natural history museums and botanical gardens). The international access and benefit-sharing (ABS) system was put in place with the hope that it would aid the international community in conserving biodiversity and thereby attaining its international conservation targets. Nevertheless, the inability to achieve our global conservation targets were documented by the Secretariat to the Convention on Biological Diversity in its 5th Global Biodiversity Outlook, in which we had to face the grim reality that we have failed every single one of our goals and subsequent targets (Secretariat of the Convention on

Biological Diversity (2020) Global Biodiversity Outlook 5. Montreal).

We have been long witnessing the inability of the Nagoya Protocol as well as the ABS Framework as a whole to result in a significant amount of benefits. We do not base this argument solely on the 5th Global Biodiversity Outlook, but also on the academic literature which has been criticising the ineffectiveness of the ABS framework in achieving its goals (Scholz et al, 2022; Heinrich et al, 2020; Laird et al, 2020; Sirakaya 2020; Sirakaya 2019; Smith et al, 2017; Morgera et al, 2015; De Jonge 2010). We witness the academic literature debating whether ABS, an international legal framework aiming at building trust-based relationships under the principles of fairness and equity between the Global North and the Global South, is currently achieving more than the bureaucratisation of obtaining the prior informed consent of the holders of sovereign rights over genetic resources.

The international community is currently negotiating its next set of conservation targets and indicators under the auspices of the Convention on Biological Diversity. The first draft of the Post-2020 Global Biodiversity Framework bases its methodology around the theory of change. The theory of change is expressed as the need to strive for a holistic paradigm shift in global policy action as well as the economic, social and financial models related to the conservation of biological diversity. This approach is considerably welcome, as this is the first time

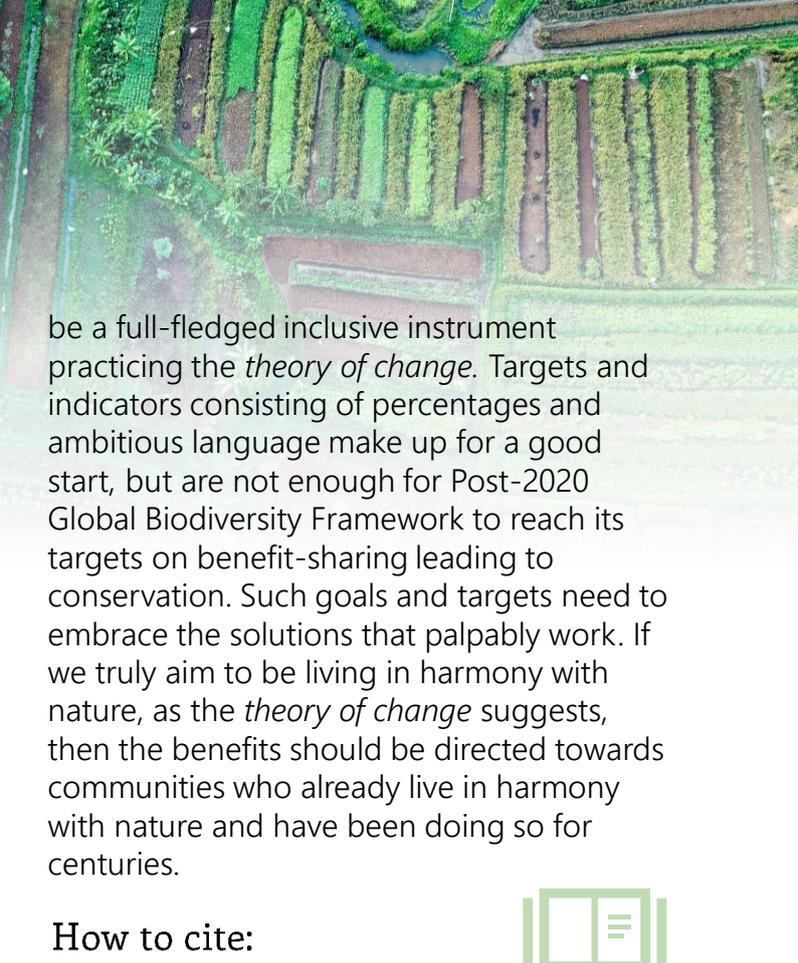
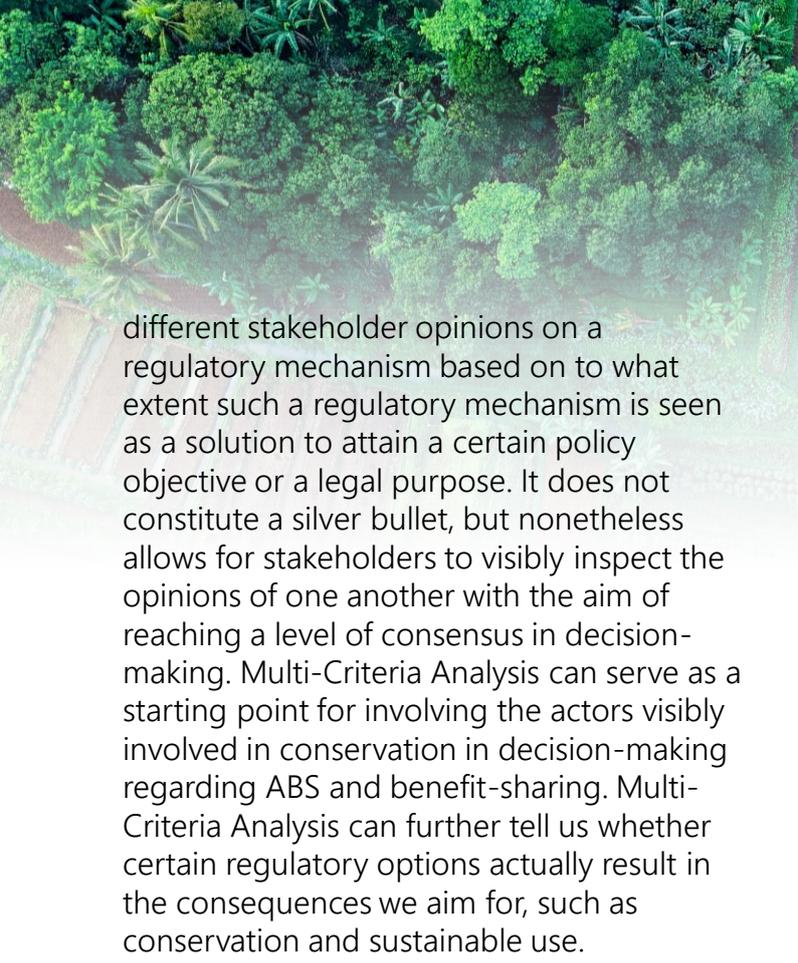


we recognise that our current system based around the use and conservation of biological diversity is not suitable to achieve our conservation goals. The implementation of the Global Biodiversity Framework is the ultimate space to discuss the ability of the Nagoya Protocol as well as the ABS Framework as a whole in achieving its objectives. This is because we currently assume that ABS and the Nagoya Protocol contribute to biodiversity conservation, yet, is the Nagoya Protocol actually designed to conserve biodiversity? In a recent study (Sirakaya, 2022) which subjects the text of the Protocol to a legal review and analyses all of the negotiations that led to the adoption of the Nagoya Protocol, we came to the conclusion that there are no legally binding obligations under the Nagoya Protocol that obliges Parties to channel benefits into biodiversity conservation, except for Article 10 on Global Multilateral Benefit-sharing Mechanism. The modalities of Global Multilateral Benefit-sharing Mechanism are still under the consideration of the Parties, and it is thus yet to be activated. Thereby the benefit-sharing as such we foresee under the Global Biodiversity Framework is that of bilateral benefit-sharing. Consequently, there exists no direct mechanism in a bilateral ABS relationship that obliges parties to channel benefits into conservation. The ABS system as it is currently designed, merely refers to biodiversity conservation and sustainable use in its bilateral form. However, the design of the bilateral ABS system does not inherently lead to biodiversity conservation.

Nevertheless, not all hope is lost for ABS. The paper addresses the statements made during the negotiations of the Nagoya Protocol, with

regard to the actors who are inherently involved in conservation of biodiversity such as the Indigenous People and Local Communities as well as scientific research directed towards the conservation and restoration of biodiversity. If the Nagoya Protocol is to remain our available solace for fair and equitable sharing of benefits, then enabling the language of the Post-2020 Global Biodiversity Framework to reflect the need to distribute the benefits to those who are evidently involved in conservation is of crucial importance.

A Post-2020 Framework on biodiversity conservation must take into account the disconnect between benefits and conservation which relates to the inherent design of the Nagoya Protocol and the ABS system as a whole. Consequently, the Global Biodiversity Framework needs to take into account the interconnectedness of Indigenous People and Local Communities with conservation as well as research directed towards conservation. There already exist a plethora of methods to address the concerns of a multitude of stakeholders. In the field of ABS, Multi-Criteria Analysis from a multi-stakeholder perspective has been suggested in order to enable solutions related to ABS would result in informed and mutually-supportive regulatory and policy options that have the highest chances to attain international ABS goals, which includes the Post-2020 Framework (Sirakaya and De Brucker 2020). Multi-Criteria Analysis has also been referred to as a viable solution for digital sequence information, during the ongoing negotiations of the 15th Conference of the Parties to the Convention on Biological Diversity (CBD/WG2020/3/L.3). Multi-Criteria Analysis is a method which aims to visualise



different stakeholder opinions on a regulatory mechanism based on to what extent such a regulatory mechanism is seen as a solution to attain a certain policy objective or a legal purpose. It does not constitute a silver bullet, but nonetheless allows for stakeholders to visibly inspect the opinions of one another with the aim of reaching a level of consensus in decision-making. Multi-Criteria Analysis can serve as a starting point for involving the actors visibly involved in conservation in decision-making regarding ABS and benefit-sharing. Multi-Criteria Analysis can further tell us whether certain regulatory options actually result in the consequences we aim for, such as conservation and sustainable use.

The international community further possesses inclusive and distributive methods of enabling the actors inherently involved in biodiversity conservation (i.e., Indigenous People and Local Communities) in providing their own aspirations and modalities related to benefit-sharing (Liggins et al, 2021; Hudson et al 2020). These examples and many more need to be integrated into the Global Biodiversity Framework, if it aims to

be a full-fledged inclusive instrument practicing the *theory of change*. Targets and indicators consisting of percentages and ambitious language make up for a good start, but are not enough for Post-2020 Global Biodiversity Framework to reach its targets on benefit-sharing leading to conservation. Such goals and targets need to embrace the solutions that palpably work. If we truly aim to be living in harmony with nature, as the *theory of change* suggests, then the benefits should be directed towards communities who already live in harmony with nature and have been doing so for centuries.

How to cite:



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We welcome anyone with a stake in plant genetic resources to submit their opinion articles to info@divseekintl.org

Figure 4: Farmer at work in casava plantation, Sierra Leone. (Source: [Annie Spratt on Unsplash](#)).

Meet Tripal, an open toolkit for building biological databases

Written by Lacey Sanderson, University of Saskatchewan

[Tripal](#) is a toolkit for developing web data portals focused on supporting open-science by helping researchers build sites for community engagement, distributing scientific data and providing domain-specific tools for analysis.

Tripal serves the needs of a diverse community with one core developer focused on primary genomic research and the other focused on breeding and applied agriculture research.

This has resulted in a very generic core with (1) an ontology-focused approach to data storage, (2) a unified interface for data curation, analysis and exploration focused on data attribution and (3) a built-in system for providing layers of access for data security while facilitating collaboration.

Underlying all core functionality is an extensive and robust set of APIs allowing site developers to customize and extend every aspect of their data portal.

An example of this is [KnowPulse](#), which is a Tripal data portal focused on germplasm diversity data in support of the Pulse Crop Breeding program at the University of Saskatchewan.

Through open-source modules available to all Tripal sites, KnowPulse provides

Pedigree

X

Germplasm

Shown Hidden

is a MATERNAL PARENT OF is a PATERNAL PARENT OF is a REGISTERED CULTIVAR OF is a SELECTION OF

Note: Only the first 3 levels of this pedigree diagram are expanded, please double click on hidden germplasm to expand tree.

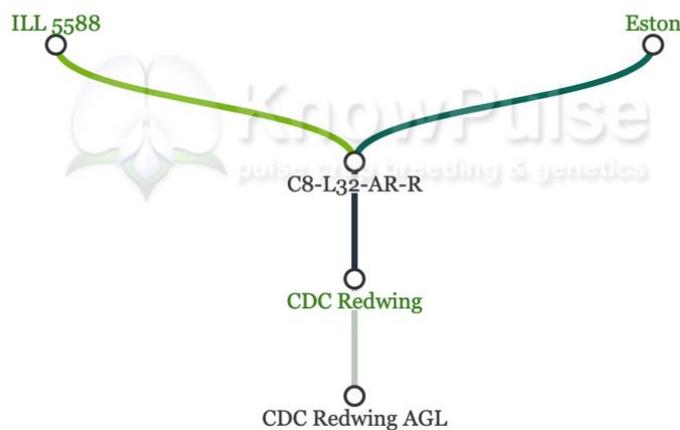


Figure 5: Screenshot from the Tripal data portal KnowPulse, showing pedigree overview for an accession of lentil (*Lens culinaris*). (Source: Lacey Anderson, University of Saskatchewan).



germplasm-focused tools for exploring large-scale phenotypic and genotypic data in multiple ways. Wherever possible, tools are embedded directly in the site to reduce activation energy for breeders looking into new technologies and highly couple the data and tools for a seamless, interconnected experience.

For example, on a germplasm accession page, there is important metadata and attribution right at the top, followed by a graphical pedigree to provide context and fully describe the germplasm concisely (Figure 5).

All data available for that germplasm is summarized and tools linked or embedded directly. For example, an embedded violin plot highlights the phenotype of the current accession within the greater context of various experiments (Figure 6). This allows breeders to answer important questions at a glance (e.g. is this accession early flowering in our diversity panel for adaptation in our growing zone?).

The open-source nature of Tripal supports every community to focus on their individual needs while making it easy for them to produce extensions for others at the same time.

This approach has helped Tripal thrive for [10 years](#) with over 125 current sites world-wide and an active community including advisory and project management committees open to all members.

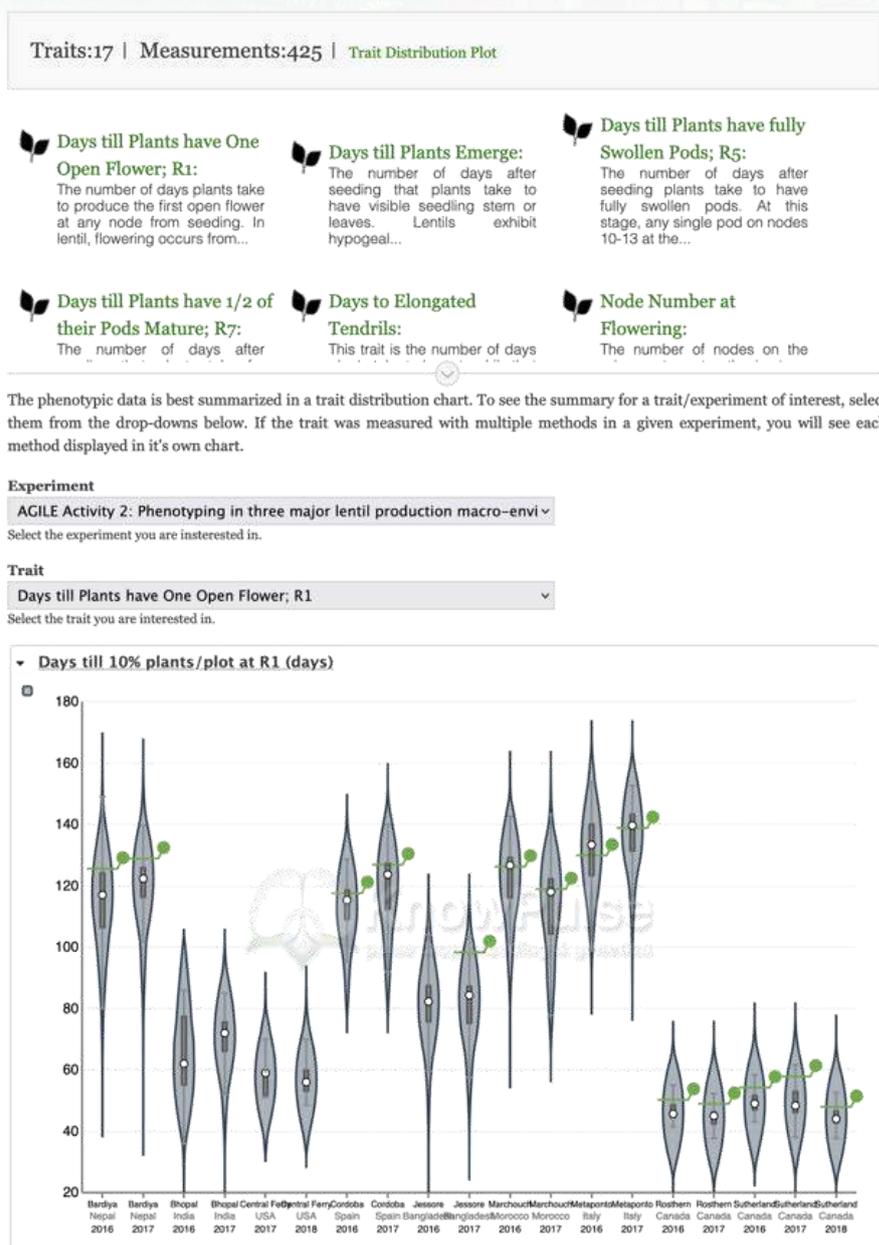


Figure 6: Screenshot from the Tripal data portal KnowPulse, showing phenotype overview for an accession of lentil (*Lens culinaris*). (Source: Lacey Anderson, University of Saskatchewan).

Upcoming Events



DivSeek AGM

12 January, 2023
San Diego (and virtual)

We are pleased to announce that we will be holding an in-person AGM in Jan 2023 in San Diego. The AGM will be followed by community “flash talks”.



‘Barcodes to BioEconomy’ workshop

‘Barcodes to Bushels’ is being rescheduled from its original October slot. The rebooted workshop will focus on distributed workflows. More details to follow.



DivSeek PAG 30 Workshop

13 January, 2023
San Diego

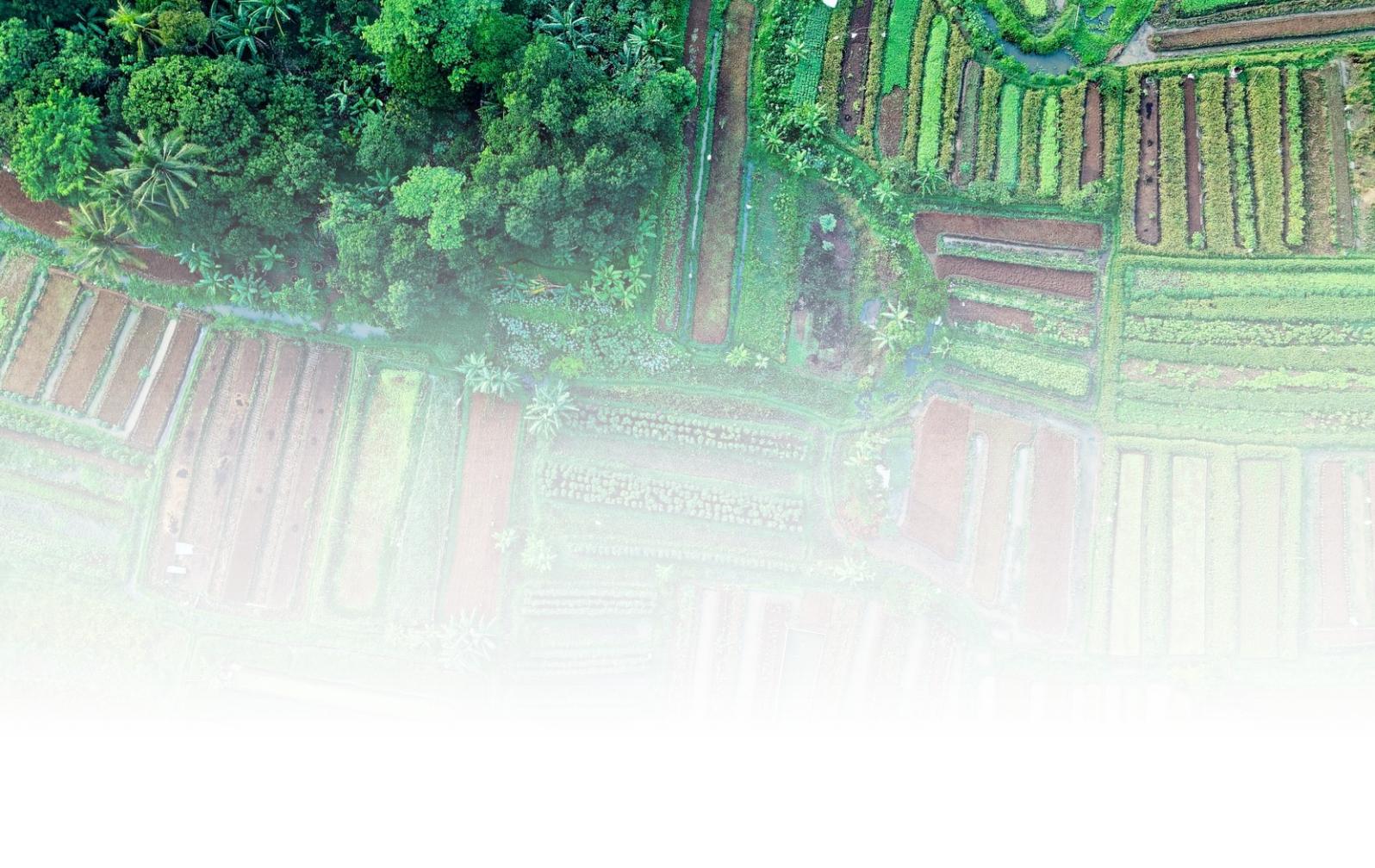
We will run a workshop Session at the upcoming [Plant and Animal Genome Conference](#) about information flows to harness plant genetic diversity. The workshop will be followed by community discussion and drinks. Here there will be opportunity to fine-tune the agenda for our upcoming Barcodes to BioEconomy workshop.



Priority area online workshops

Late January / early February
Virtual

More details to follow.



**DIVSEEK
INTERNATIONAL
NETWORK INC.**

Call out for Newsletter Contributions

We are keen to receive any content, short or long, from Members and Observers, organisations and individuals. We welcome your news updates, opinion pieces, research abstracts and upcoming conferences.

Contact info@divseekintl.org with 'Connect' in the email subject.

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