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DivSeek International Network (DivSeek) is a global community of practice that brings together leading researchers and practitioners drawn from a broad base of academic and research institutions, government agencies, and inter-governmental organizations around the world.

The Network connects, combines and communicates expertise among stakeholders engaged in the management<sup>1</sup> and characterization<sup>2</sup> of plant genetic resources.

DivSeek comprises over 70 member organizations from more than 30 countries. These contribute to three major Working Groups and a wider network of 11 self-governing Thematic and Regional Hubs on six continents.

### Mission

DivSeek's mission is to enable those who conserve and benefit from the sustainable utilization of plant biodiversity to access and harness expertise, scientific evidence, technologies and global best practices that facilitate the characterization, exchange and traceability of genetic resources.

### Goals

DivSeek has identified three major goals for its new strategy, with more specific objectives for the coming 5 years:

1. Catalyzing the advanced conservation, management and traceability of plant genetic resources
2. Adding value to plant genetic resources, facilitating wider utilization and accelerating crop improvement
3. Increasing awareness, training and education about the biodiversity and relevance of plant genetic resources

Alongside the activities stimulated by its strategic plan, DivSeek is working to extend its network's membership. It has identified a wide range of stakeholders who benefit from continued access to genetic resources and associated information about plants and derived products that affect economic, social, health or environmental outcomes. Stakeholders include farmers, plant breeders, plant conservationists and other researchers, the extensive added-value processing and supply-chain, end-users and consumers of food/feed, fibre, medicines, and other plant-derived products.

This diverse list reflects the increased awareness of the role of plant biodiversity in sustainable agriculture and management of natural resources, food security and in the quality of renewable raw

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<sup>1</sup> Management of plant genetic resources (PGR) includes but is not restricted to the collection and acquisition, storage, distribution, multiplication, documentation and exchange of PGR-related information, and participation in the development and implementation of the legal framework regarding access and benefit sharing.

<sup>2</sup> Characterization of PGR includes documenting provenance, generating data and information about genetic diversity and phenotypic variation, and managing data and information about PGR in an **accessible and interoperable bioinformatic infrastructure** capable of storing, retrieving and sharing information on PGR.

materials and advanced biomaterials. Extensive opportunities also exist for regional market development based on the unique properties of specific plant germplasm.

Plants have migrated within and between continents since antiquity. For domesticated plants and crops, migration has accelerated over the past 5,000 years, underpinning trade and cultural exchange. The exploitation of plants for food, feed, fuel, materials and medicines has driven much of this trade, but in the modern era it is important to protect not only biodiversity but also the knowledge held by indigenous communities.

A recent example of research carried out by DivSeek members was published in *Nature Genetics* last month. This paper describes how large-scale DNA sequencing of a large collection of lettuce genetic resources has enabled the domestication origins and 6,000 year migration history of this salad crop to be unraveled. <https://www.wur.nl/en/newsarticle/The-DNA-of-lettuce-unravelling-in-6000-years-from-weed-to-beloved-vegetable.htm>

The past century has seen rapid and accelerating genetic erosion of plant diversity, both in natural ecosystems and among cultivated plants in farmers' fields.

- For crop plants, this has led to loss of traditional landraces, along with associated traditional knowledge. This is especially acute for minor, locally grown crops that are essential to human nutrition, wellbeing and economic activity.

International conventions and agreements require users of certain plant genetic resources to abide by rules on accessing these resources and sharing defined benefits derived from their use. There is currently intense discussion and debate about the applicability of the agreements to information about PGR, including genetic sequence data, otherwise known as digital sequence information (DSI).

At the same time, technological advances in DNA sequencing, genomics, sensors, imaging, robotics, computation, information science and the management of big data are transforming the way in which plant genetic resources are evaluated, managed and utilized. These advances promise to accelerate the rate of crop improvement for the sustainable production of food, feed, fibre, medicinal, and renewable natural products.

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