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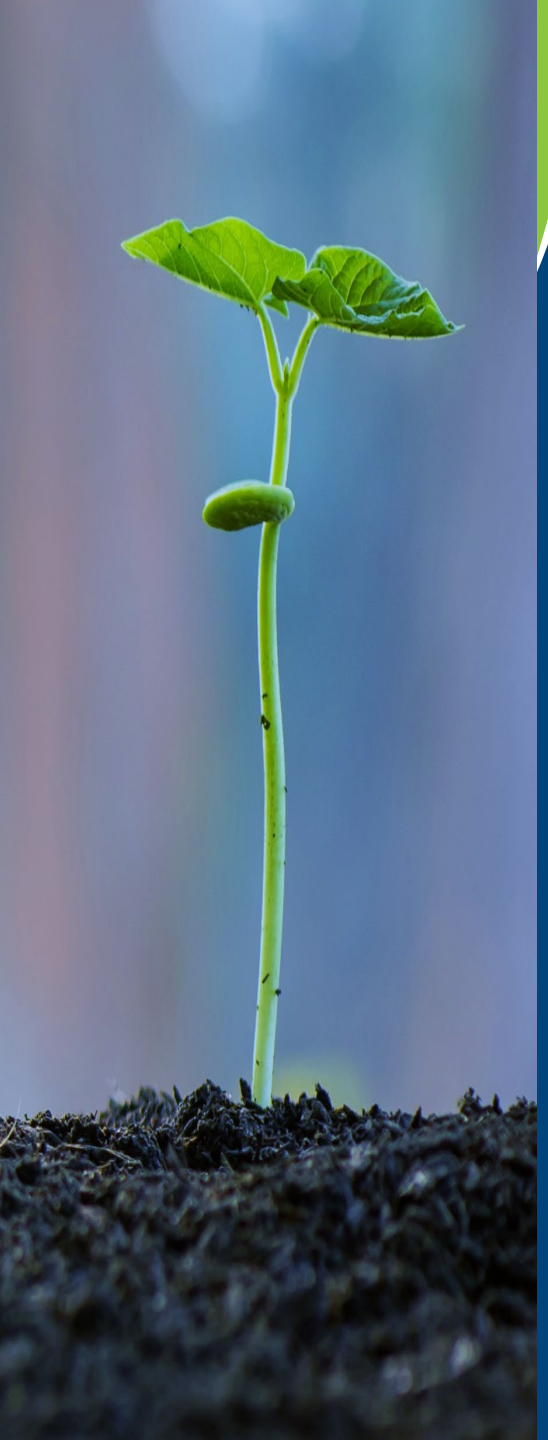
Synergies between plant breeding and conservation of genetic resources

Francesco Mattina – President of the CPVO



Outline

- Plants and technology
- Access to genetic resources and innovation
- The Relevant legal framework
- Link among pieces of legislation
- Conclusions

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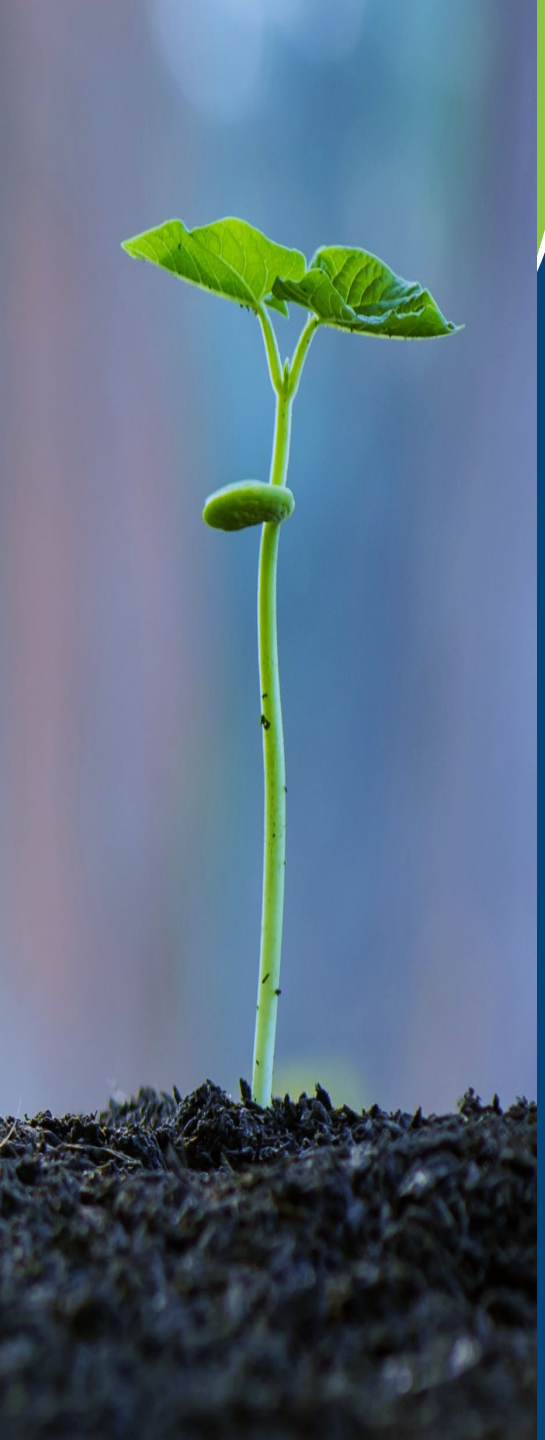
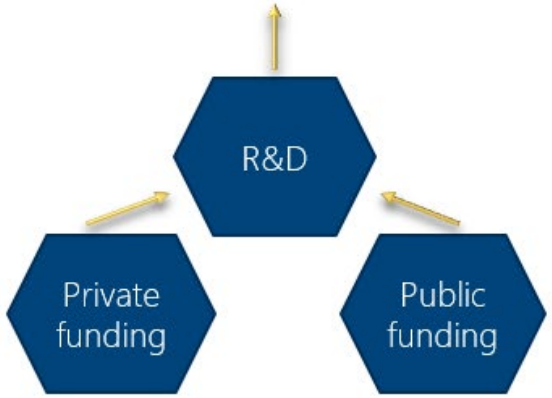
Plants and technology



The importance of innovation

Display: 84x84 pixels
Camera: None
RAM: 1KB
Battery: 900mAh

INNOVATION



Display: 1170x2532 pixels
Camera: 12MP
RAM: 4GB
Battery: 3240mAh

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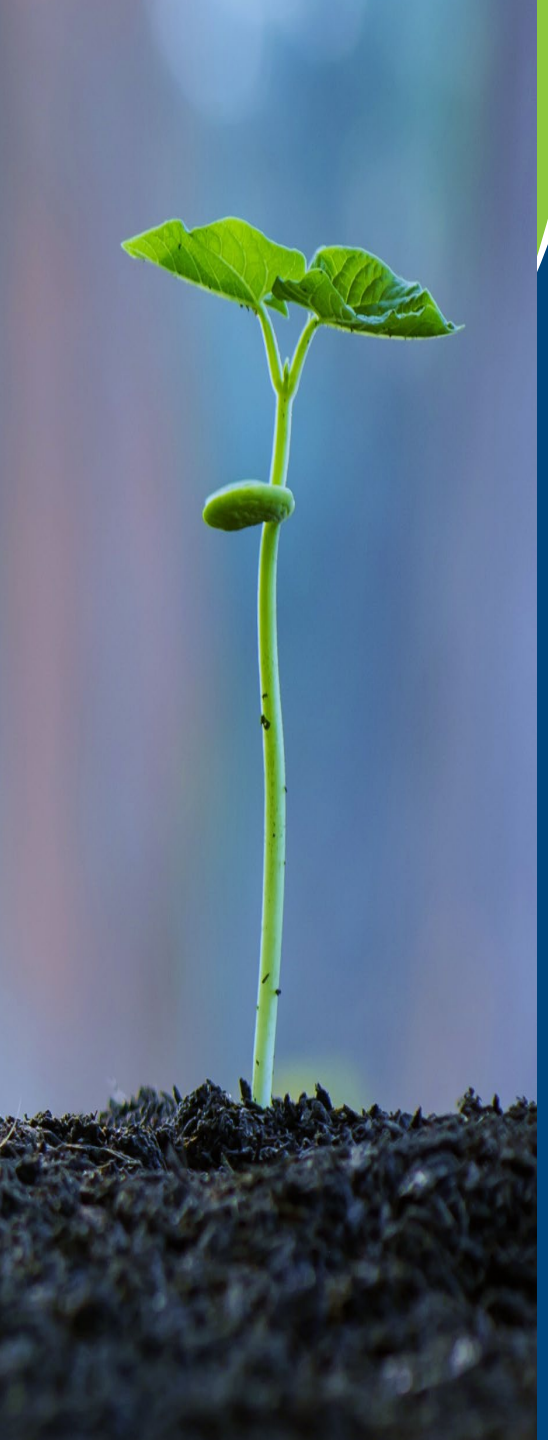
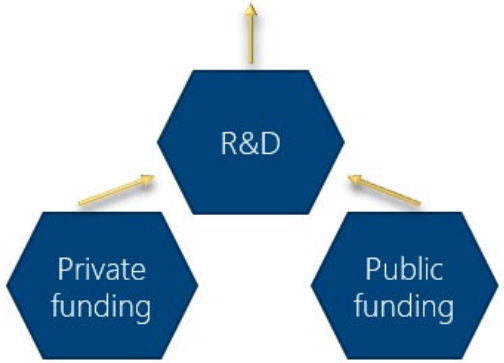


Technology behind New Plant Varieties

- Lower yield
- Lower resistance to pests
- Susceptible to challenging environments (heat, water stress...)

INNOVATION



- Higher and more stable yield
- Adapted to less intrants
- Better resistance to pests (reduction of pesticides)
- More tolerant to climate change
- Better quality, longer shelf life...

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Many techniques can be used

Simple selection and multiplication

Crossing (heterosis)

NGTs

Mutagenesis

Plant tissue cultures

Molecular markers

Embryo rescue

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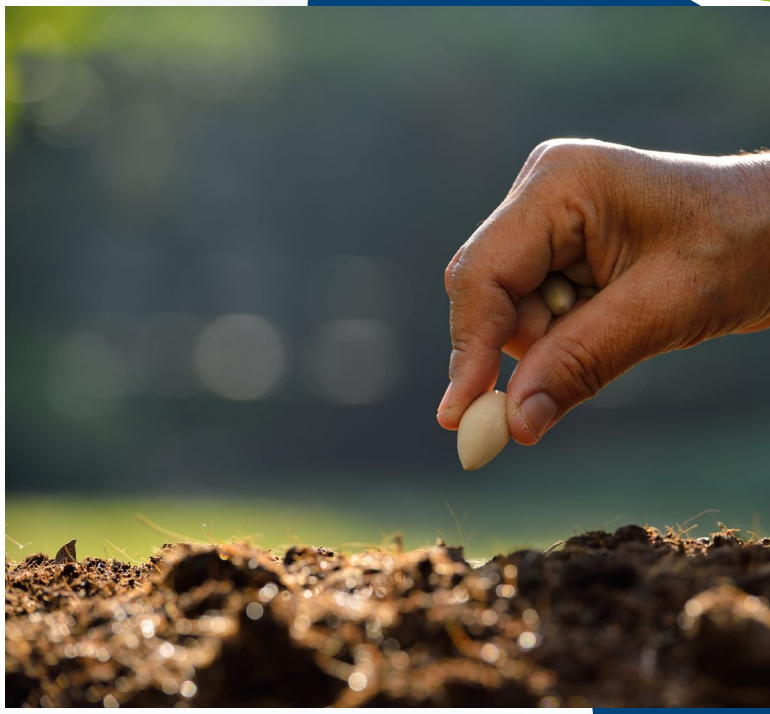
Access to genetic resources and innovation

Why access to genetic resources?

Innovation in the field of plant varieties entails the access to germplasm

A richer germplasm allows innovators to have better choice in initial material

Some traits are found in germplasm → abiotic stress resistance



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Other uses of Genetic resources

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The relevant Legal Framework

Legal Framework at a glance

IP

TRIPS

UPOV

EU – CPVO

EU MS

Access and IP rights on genetic material

BIOLOGICAL DIVERSITY CBD

Nagoya Protocol

AGRICULTURAL BIODIVERSITY-FAO-TIRFFA(ITPGRFA)
DOMESTIC OR CULTIVATED SPECIES

The International Union for the Protection of New Varieties of Plants

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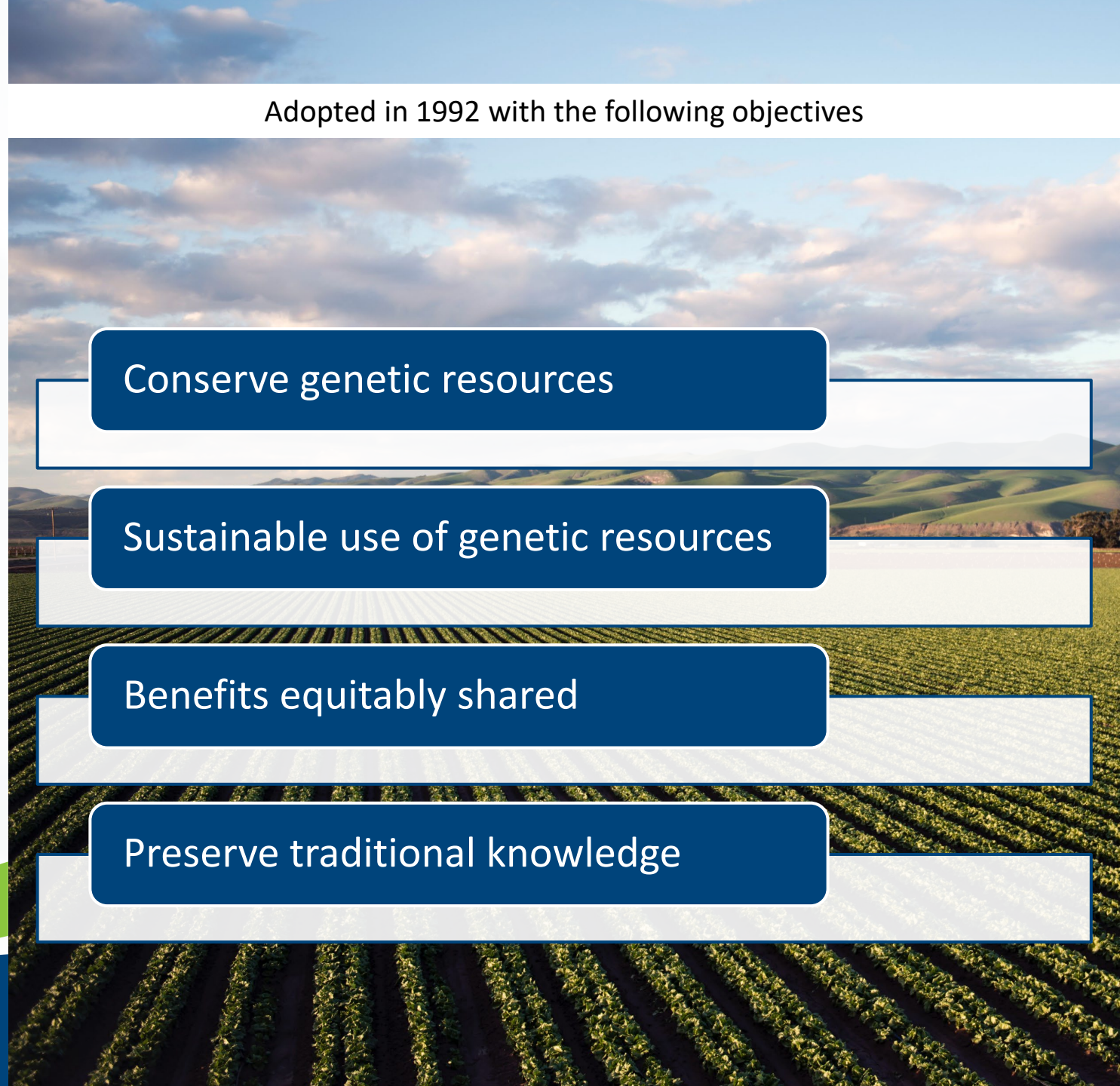
Convention on Biological Diversity



Adopted in 1992 with the following objectives

- Conserve genetic resources
- Sustainable use of genetic resources
- Benefits equitably shared
- Preserve traditional knowledge

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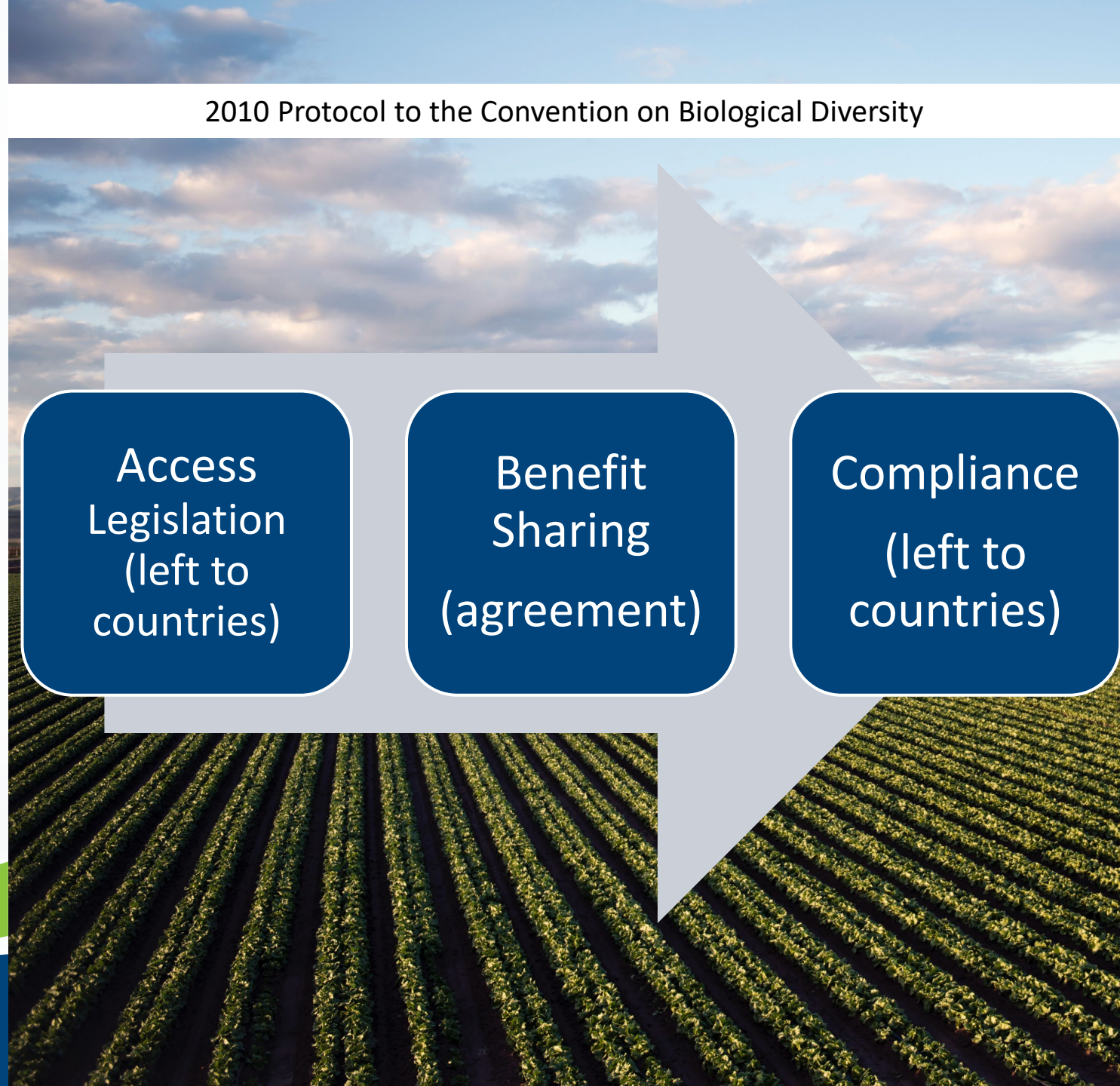
Nagoya Protocol

2010 Protocol to the Convention on Biological Diversity



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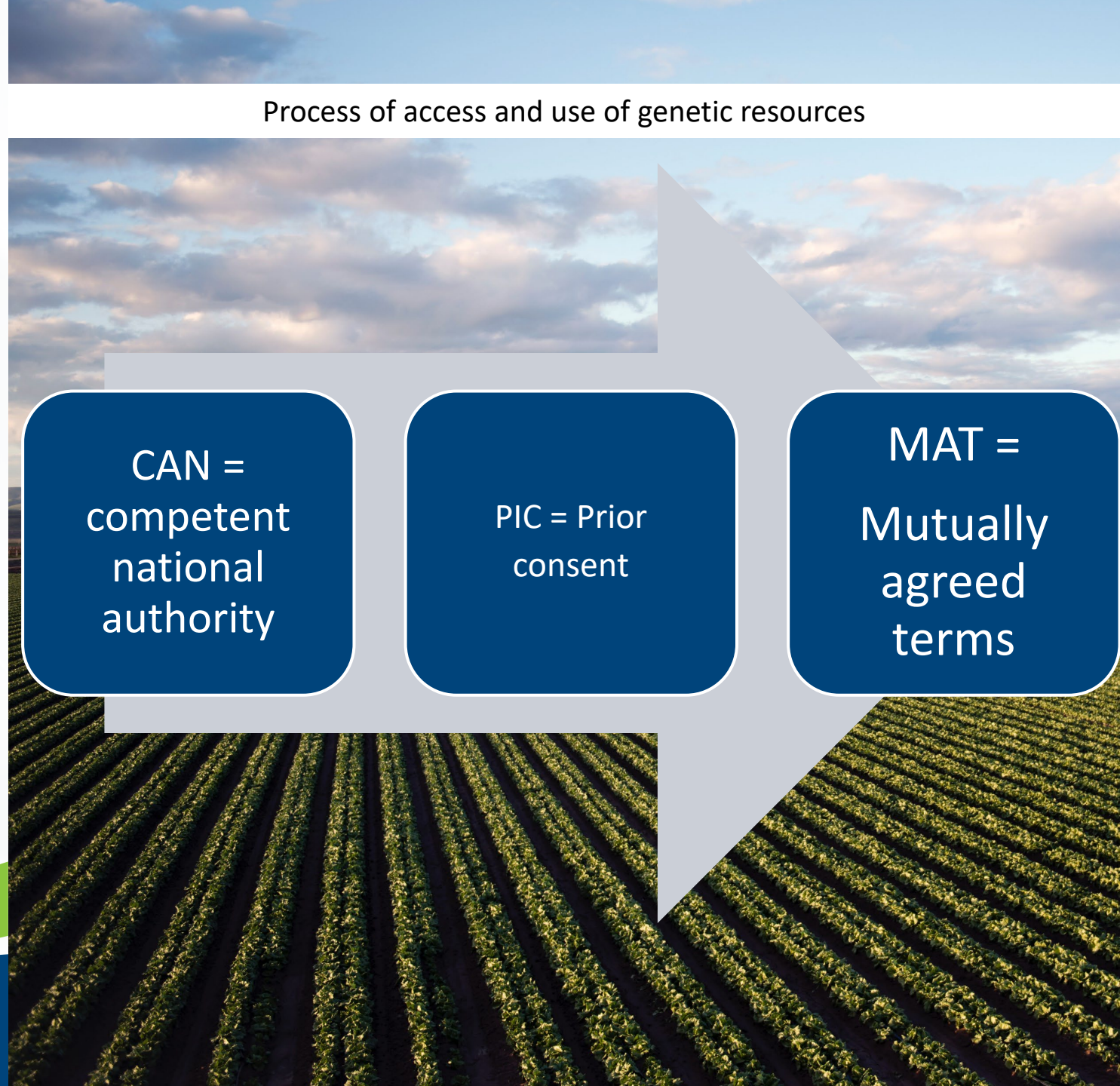
Nagoya Protocol

Process of access and use of genetic resources



CAN = competent national authority

PIC = Prior consent

MAT = Mutually agreed terms

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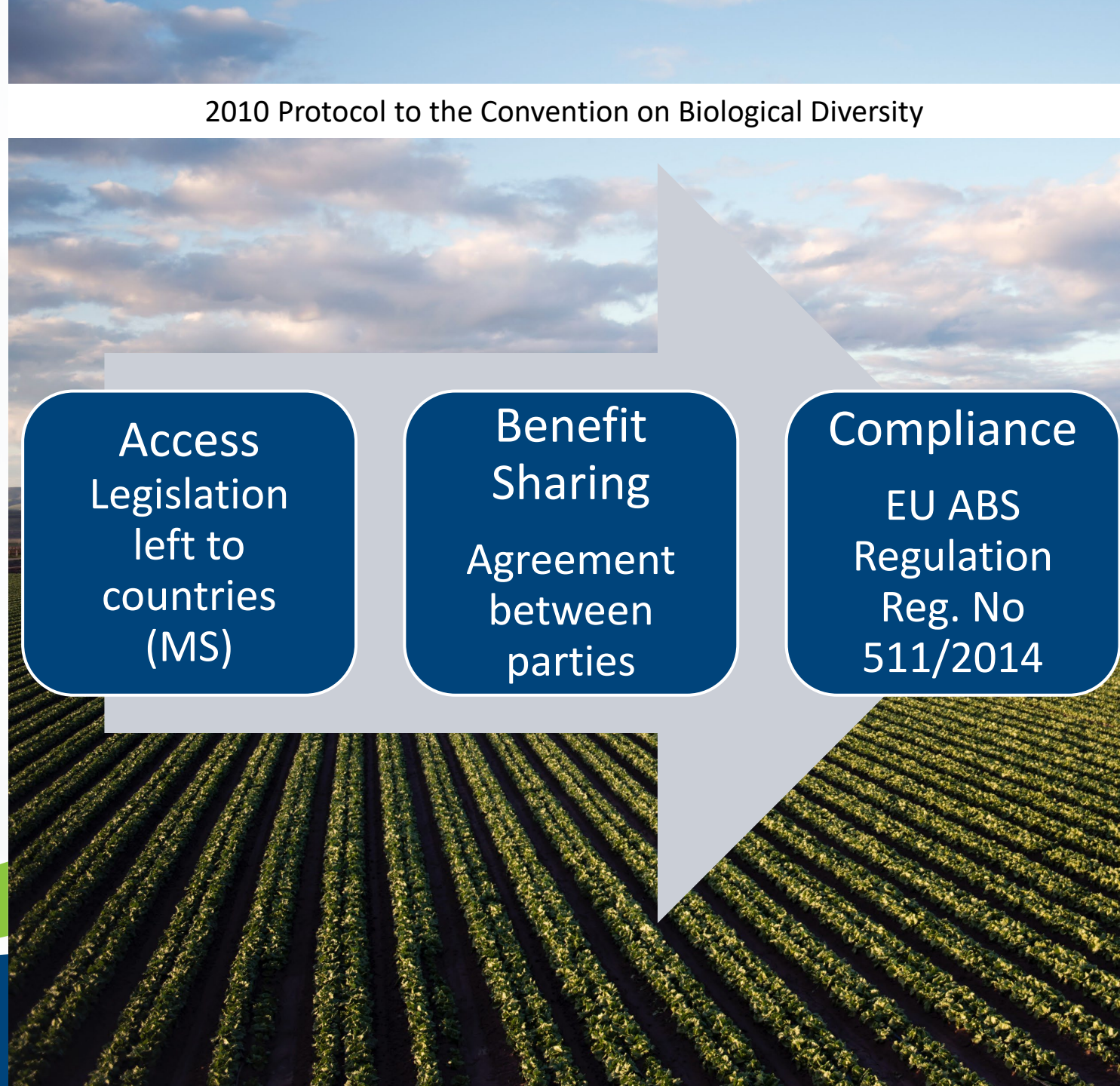
Nagoya Protocol

2010 Protocol to the Convention on Biological Diversity



Access
Legislation left to countries (MS)

Benefit Sharing
Agreement between parties

Compliance
EU ABS Regulation Reg. No 511/2014

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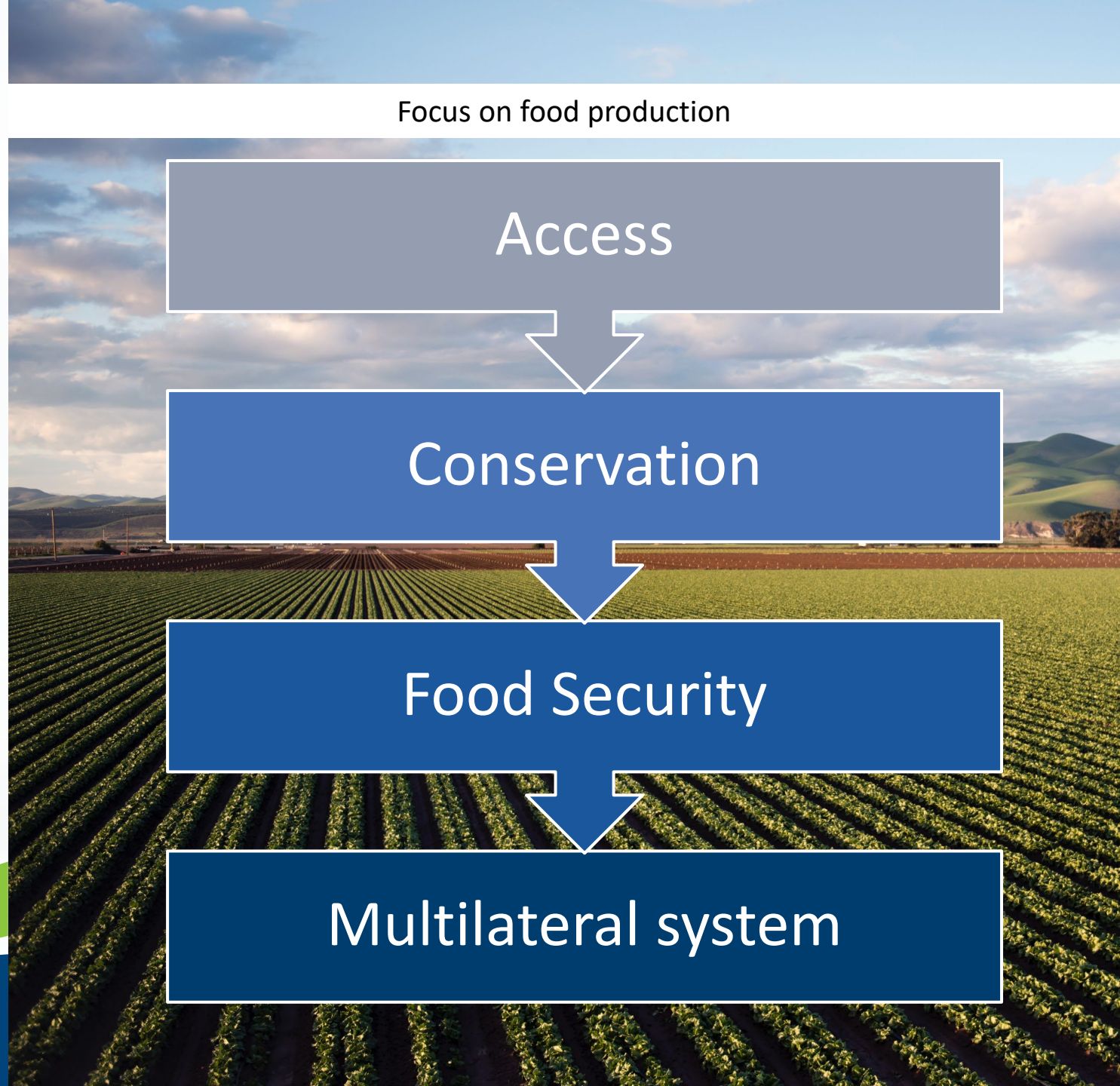
International Treaty on Plant Genetic Resources for Food and Agriculture

Focus on food production



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CBD in the European Union

The EU is member of the CBD

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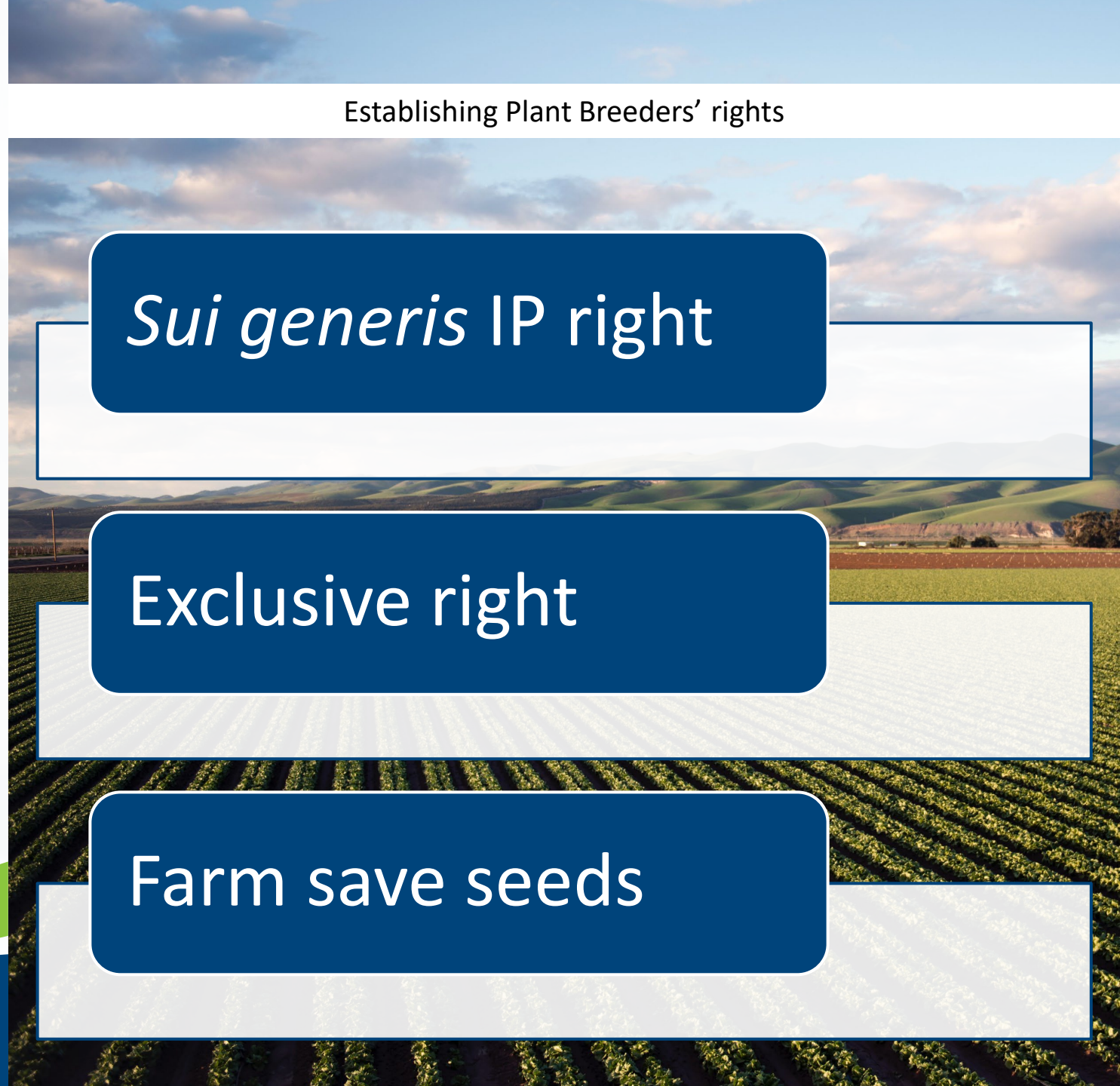
Establishing Plant Breeders' rights

UPOV Convention



Sui generis IP right

Exclusive right

Farm save seeds

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Article 5 UPOV 1991

Conditions of Protection (1) [Criteria to be satisfied] The breeder's right shall be granted where the variety is

(i) new,
(ii) distinct,
(iii) uniform and
(iv) stable. (2)

[Other conditions] The grant of the breeder's right shall not be subject to any further or different conditions, provided that the variety is designated by a denomination in accordance with the provisions of Article 20, that the applicant complies with the formalities provided for by the law of the Contracting Party with whose authority the application has been filed and that he pays the required fees.

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UPOV in the European Union

The EU is member of UPOV

- Run by CPVO
- Pan-European right
- Co-existence with national rights

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Link among pieces of legislation

The systems complement each other

- Access
- Benefit sharing
- Sustainable use
- Innovation

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Compliance check in the EU

IF public funding → Research funding → Due diligence declaration

Pre-commercialisation/final development → Due diligence declaration BEFORE registration common catalogue

Register of collection = compliance presumption

Commercialisation

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To be noted

- The CPVO does not require to show proof of correct access to genetic resources
- Technical information is required → limited to cultivation conditions to conduct technical examination
- Due diligence = obligation of the breeder pursuant to Article 4 reg. No 211/2014

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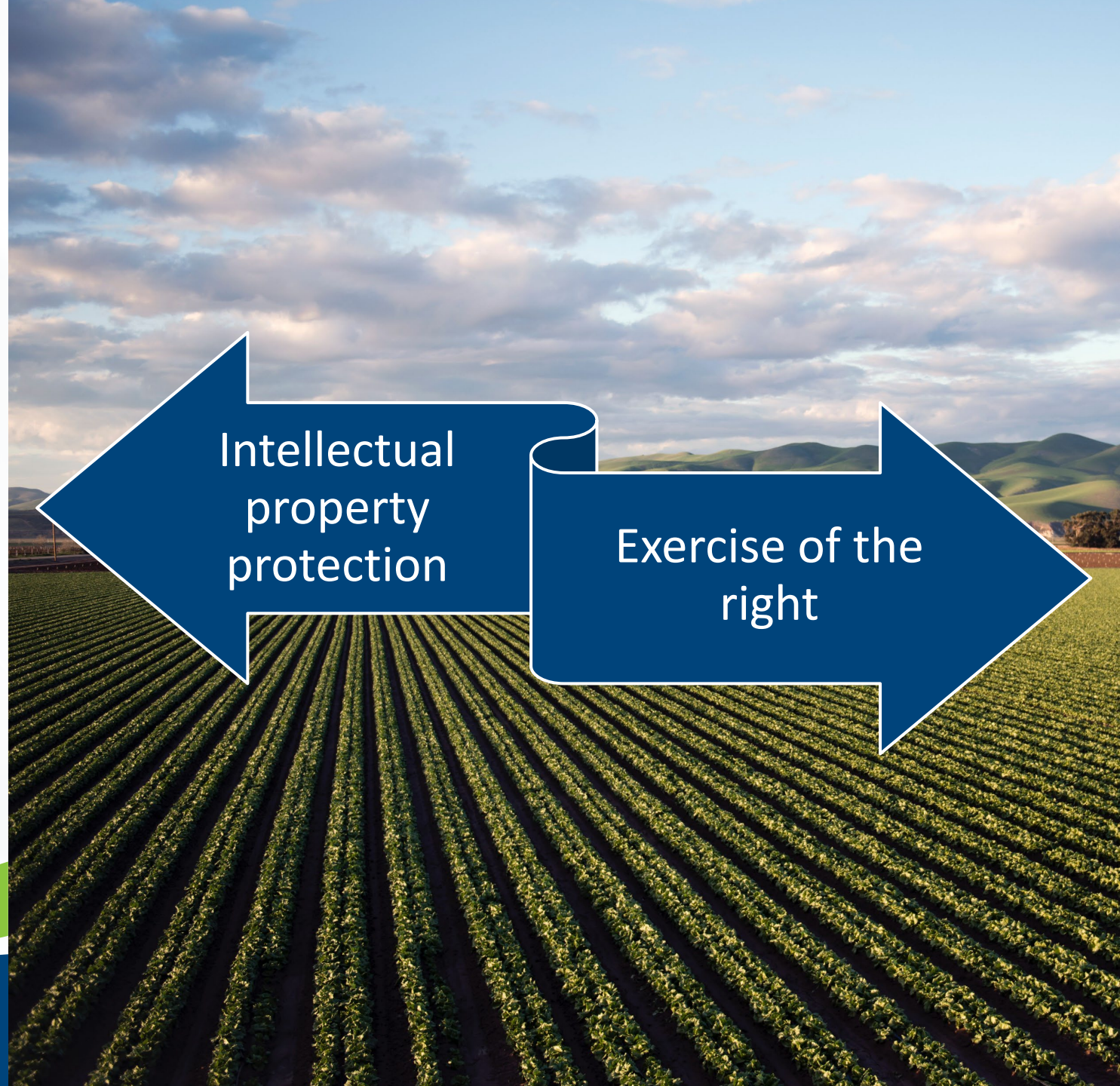
To sum up



Case study: introducing genetic variation in rice crops

Impact of water salinisation due to climate change (abiotic) and apple snail (biotic)

NEURICE: Starting from salt-tolerance from a traditional Indian rice variety named **Pokkali** + backcrossing with different Spanish, French and Italian elite rice + embryo rescue

In 2 years managed to create a resilient to climate change variety that is also naturally resistant to apple snail → no need to use chemicals

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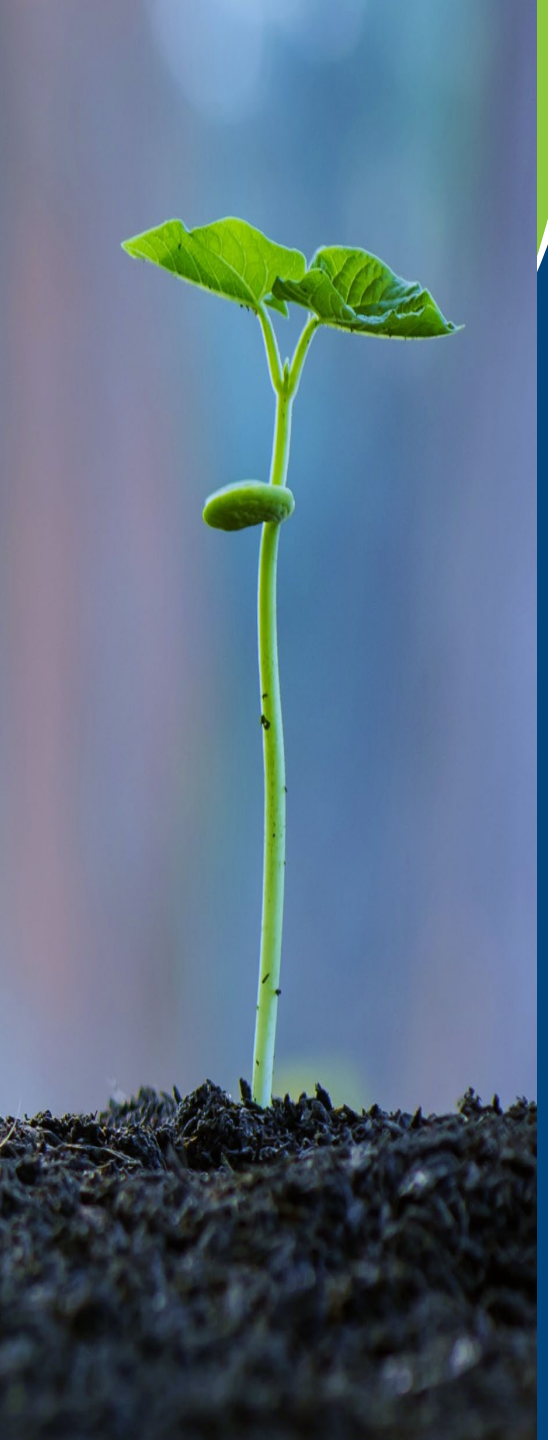
Case Study: conservation of genetic resources in France

- Mapping and management of collection
- Maintenance of conservation collections
- Support in the creation of a common pool for ITPGRFA multilateral system
- Coordination of local structures
- Think-tank for the conservation genetic resources in France

CTPS Section for the Conservation of Plant Genetic Resources (PGR)

The Technical Committee for Plant Breeding (CTPS) plays an advisory role, providing analysis and guidance to the Ministry of Agriculture. It is composed of 14 Sections organised by species and, following the Decree of 24 November 2015, a new cross-sectional committee for the conservation of Plant Genetic Resources of cultivated species and their crop wild relatives.



Still curious? Check the UPOV FAQ

Complementarity between the UPOV Convention, the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

Aims and objectives

Biological diversity or 'biodiversity' is the term used to describe the variety of all living organisms and includes diversity within species, between species and of ecosystems. Biodiversity underpins all human activity, notably including agriculture and, therefore, food security.

The Convention on Biological Diversity (CBD) has three objectives: the conservation of biodiversity, the sustainable use of the components of biodiversity and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. A supplementary agreement to the CBD, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from the Utilization elaborates on the Convention's provisions on access to genetic resources, traditional knowledge and benefit-sharing in order to contribute to the conservation and sustainable use of biodiversity.

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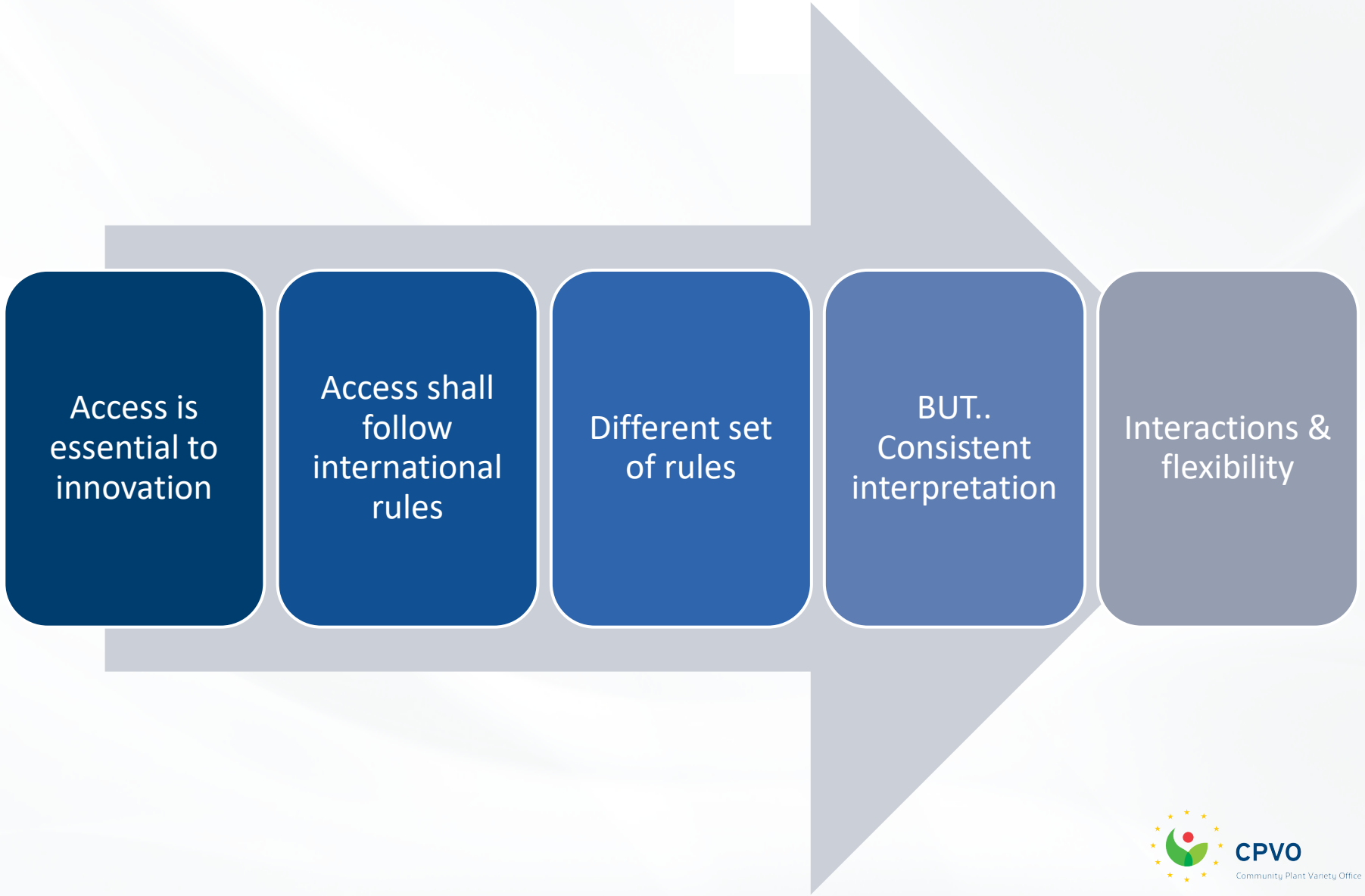
Conclusions

Conclusions



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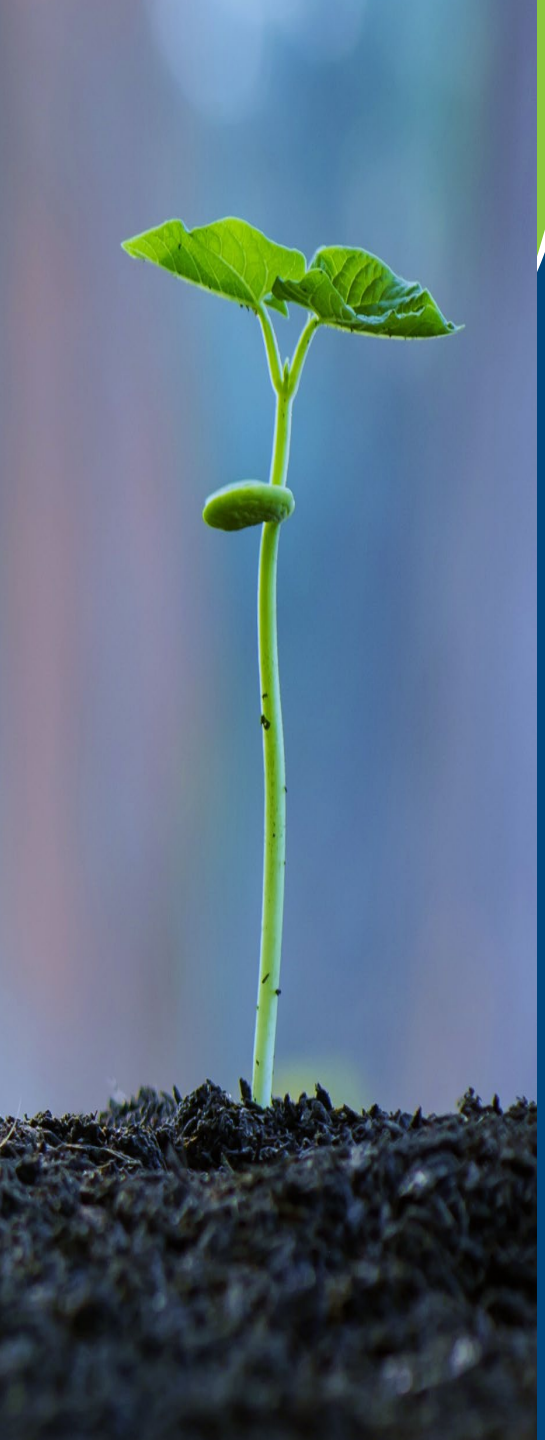

Thank you!

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Community Plant Variety Office

3 Boulevard Maréchal Foch
4900 Angers-FR

Contacts:

Tel: (+33) (0) 2-41.25.64.00

Mail: communication@cpvo.europa.eu

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