CABI's approach to the Nagoya Protocol on ABS
An international perspective

USCCN Workshop, University of California Davis
11th June 2024

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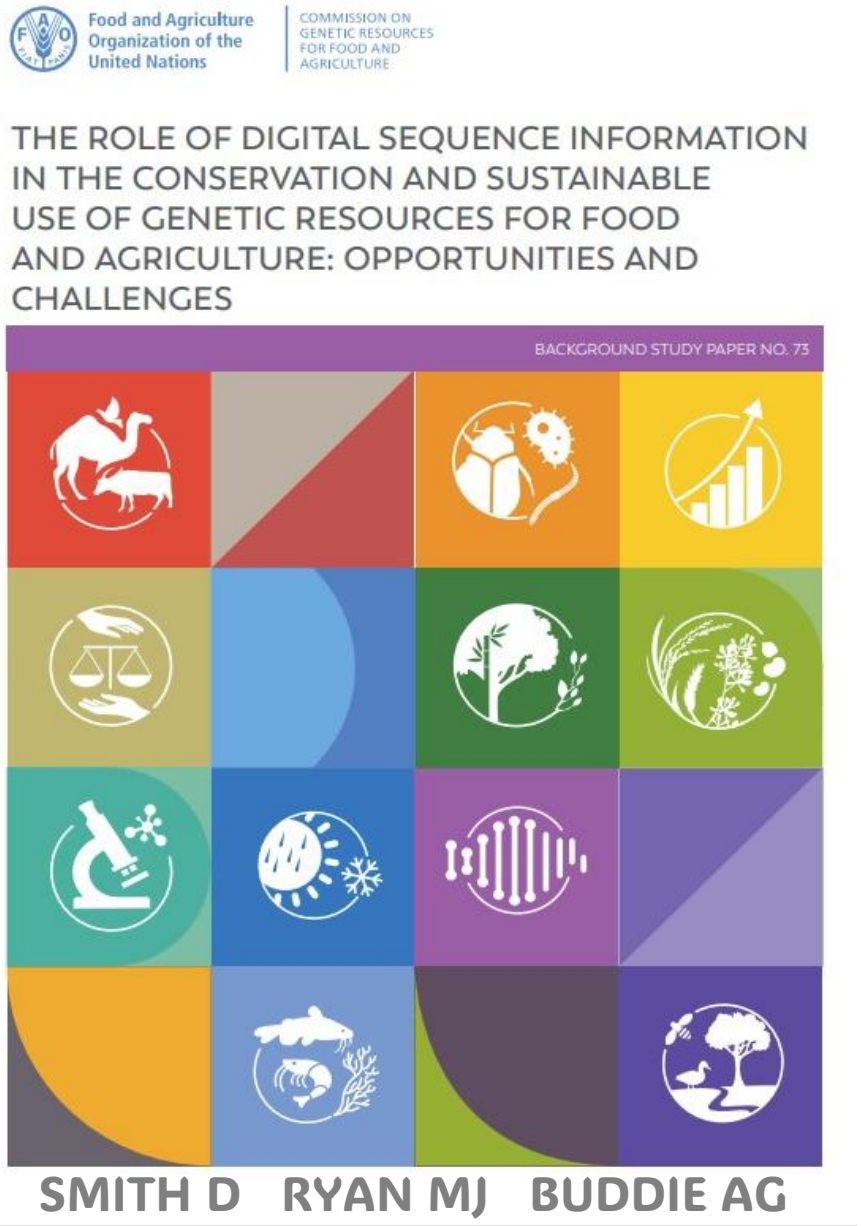
CABI



Key Issues

- DSI (Digital Sequence Information and the proposed multi-lateral benefit sharing mechanism)
- Problems - different countries have bespoke interpretations of Nagoya/ABS which is reflected in their approaches and biodiversity laws. Can make compliance quite a complex process
- Researchers are not (always) aware of their obligations and responsibilities

CABI in brief

Not-for-profit intergovernmental organization**,** established by a United Nations treaty-level agreement

Owned by **48 Member Countries** which have an equal role in the organization's governance, policies and strategic direction

Global reach – 450+ staff across more than 25 locations worldwide

Addresses issues of global concern such as food security and food safety through **research and international development cooperation**

Major publisher of scientific information – books, ebooks, digital learning, compendia and online information resources

Our areas of expertise

Crop health

Development communication and extension

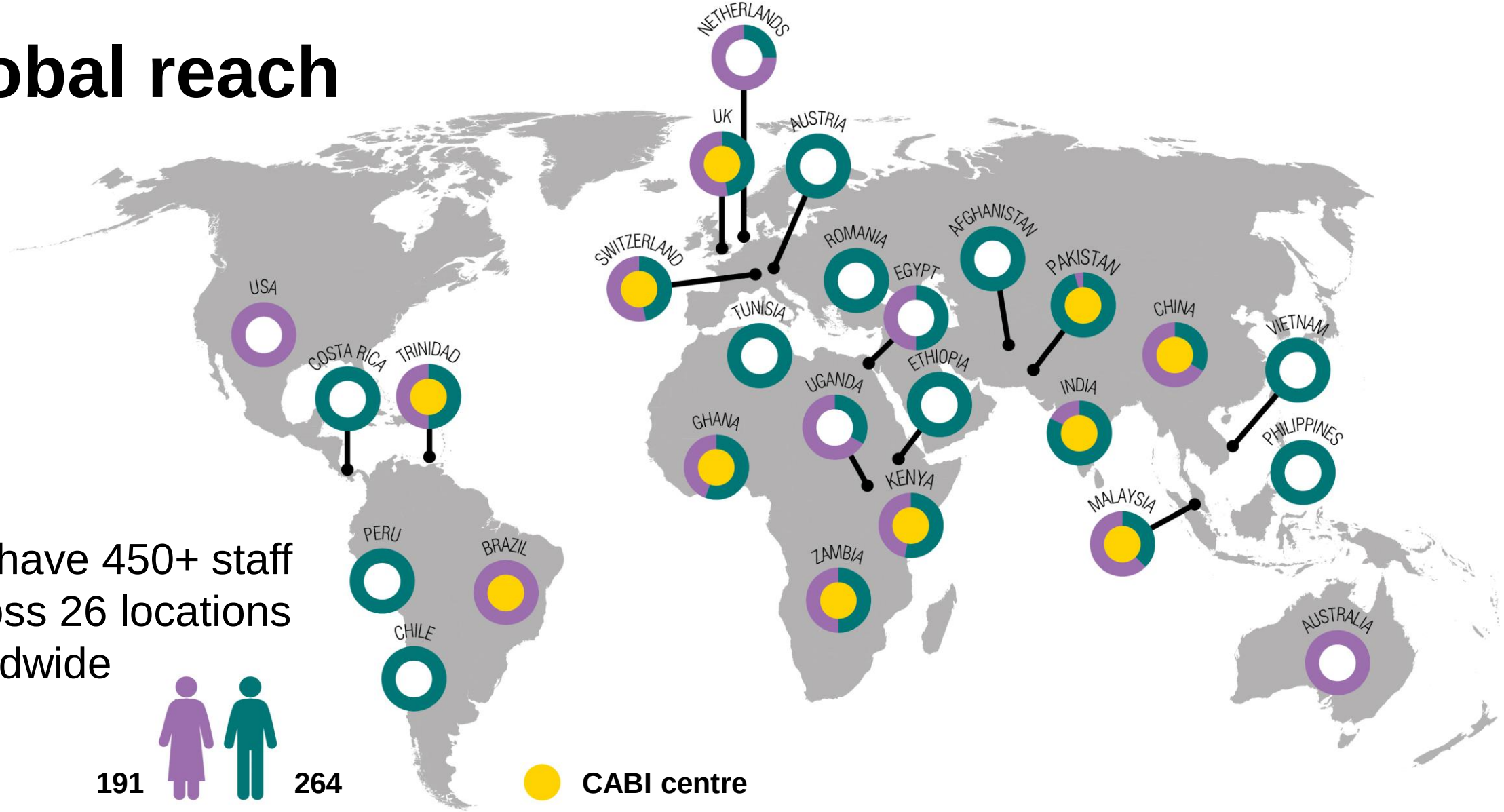
Digital development

Invasive species

Publishing

Value chains and trade

Global reach



We have 450+ staff across 26 locations worldwide

191 264

CABI centre


Afghanistan


Anguilla

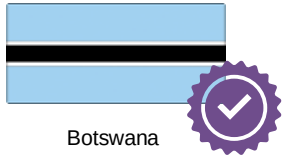

Australia


Bahamas


Bangladesh


Barbados


Bermuda


Botswana


British Virgin Islands


Brunei Darussalam


Burundi


Canada


Chile


China


Colombia


Cote d'Ivoire


DPR Korea


Gambia


Ghana


Grenada


Guyana


India


Jamaica


Kenya

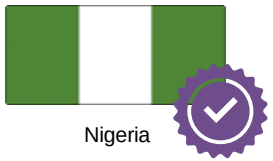

Malawi


Malaysia


Mauritius


Montserrat


Myanmar


Nigeria


Pakistan


Papua New Guinea


Philippines


Rwanda


Sierra Leone


Solomon Islands


South Africa


Sri Lanka


St Helena*


Switzerland


Tanzania


The Netherlands


Trinidad & Tobago


Uganda


United Kingdom


Vietnam


Zambia


Zimbabwe

our member countries

KNOWLEDGE FOR LIFE

18 Party – no law

19 Party with law (37 of 48)

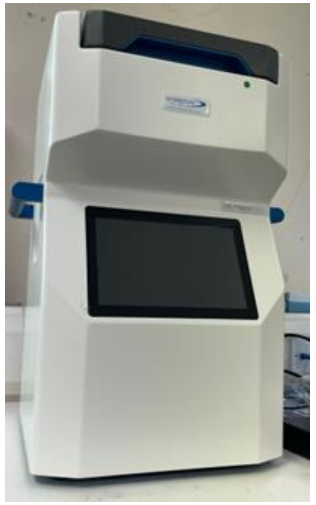
Non-party countries may have national laws

CABI

CABI hosts several key biological collections

The CABI Genetic resources collections of 30,000 living microbes from across the world which also incorporates:

- The UK National Fungus Collection
- The British Antarctic Survey Culture Collection
- The National Collection of Wood Rotting Fungi
- The Aquatic Phycomyces (Michael Dick) collection

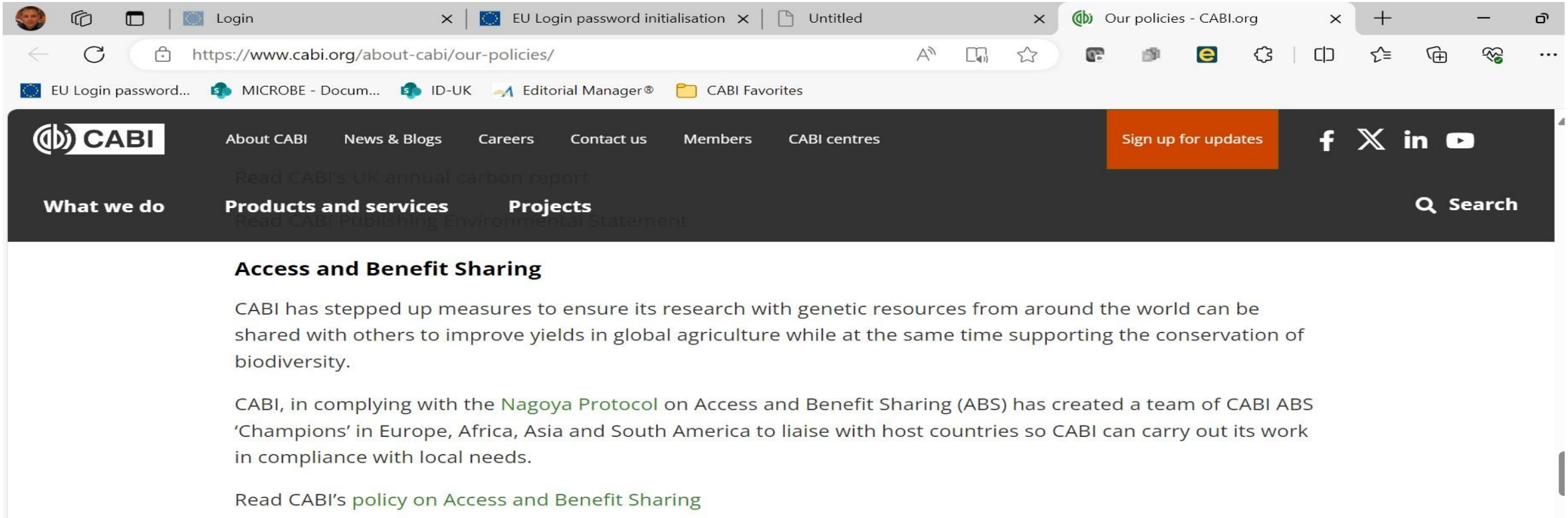


We host the BBSRC funded UK Crop Microbiome Cryobank of 36,000 bacteria and 4,800 environmental soil samples (all cryopreserved)

UK CROP MICROBIOME CRYOBANK

CABI strategy for ABS (1)

- Published ABS policy (under Environmental Policy https://www.cabi.org/about-cabi/business-policies/) and seeking endorsement of best practice



CABI strategy for ABS (2)

- We undertake ABS assessments at project design stage
- CABI has appointed regional ABS Champions to support staff in ensuring compliant access and use (Europe, Africa, Asia and South America)
- Target countries: primarily those we source genetic resources from; e.g. CABI Member and Partner countries

Smith et al. (2018) Biocontrol Science and Technology, https://doi.org/10.1080/09583157.2018.1460317

CABI strategy for ABS (3)

- Support initiatives to reduce administrative burden but that ensure equitable benefit sharing

- Contribute to discussions/solutions to outstanding issues:

  - Digital sequence information
  - Common understanding of what benefits are appropriate for a specific use
  - Facilitated access for uses considered to be for the ”public good”

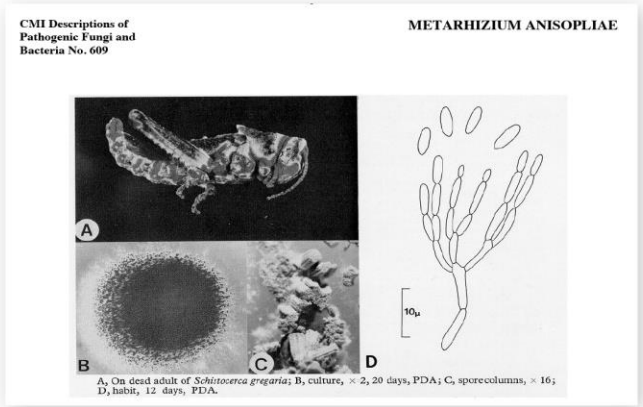
Smith et al. (2018) Biocontrol Science and Technology, https://doi.org/10.1080/09583157.2018.1460317

Examples of CABI's access and use of genetic material (plants, insects, nematodes, microorganisms)

- Diagnosis and identification of pests and diseases
- Rapid ID of alien species to facilitate management
- Studies to assess impact of land-use and climate change
- Long-term conservation of material
- Microbial solutions to improve health and nutrition
- Sustainable management of invasive species through biological control
- Increase and improve scientific knowledge

CABI often acts as an intermediary between providers and users through our biocontrol projects and culture collection

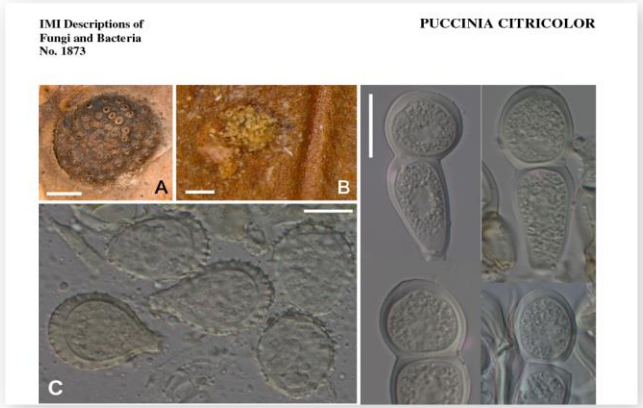
Microorganisms as biocontrol agents


CMI Descriptions of Pathogenic Fungi and Bacteria No. 609

METARHIZIUM ANISOPLIAE

A, On dead adult of *Schistocerca gregaria*; B, culture, × 2, 20 days, PDA; C, sporecolumns, × 16; D, habit, 12 days, PDA.

Description sheets (above *Metarhizium anisopliae*, below *Puccinia citricolor*)


IMI Descriptions of Fungi and Bacteria No. 1873

PUCCINIA CITRICOLOR

34 major invasive plants in UK

Many genera utilised for biocontrol e.g. *Arthrobotrys*, *Beauveria*, *Entomophthora*, *Metarhizium*, *Paecilomyces*, *Puccinia*, *Trichoderma*, *Verticillium* (over 20 genera listed in Dictionary of Fungi)

Over 20 countries of origin

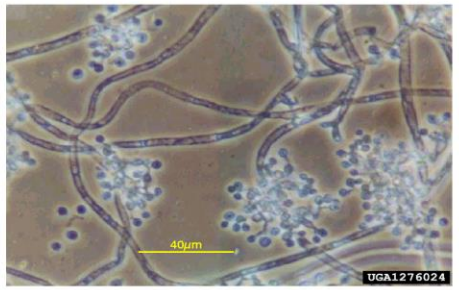
Including Australia, Argentina, Brazil, Canada, Chile, China, India, Iran, Japan, Malaysia, Mexico, New Zealand, Paraguay, Poland, Russia, South Africa, Ukraine, Uruguay, USA

Negotiations / permissions

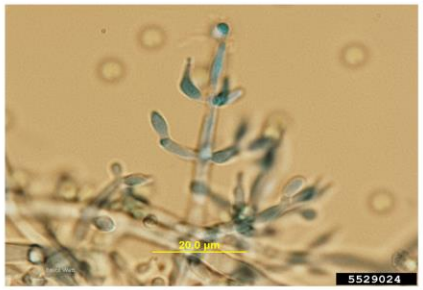
Non-Party to NP	Party	Party with law	Non-Party with law

Colour code for country names showing Nagoya Protocol status and if they have law

Nematode-trapping fungus (*Arthrobotrys* sp.)
©Gerald Holmes, Bugwood.org



White muscadine disease (*Beauveria bassiana*)
©Svetlana Y. Gouli, Bugwood.org



wood rot fungi (*Trichoderma* sp.)
©Bruce Watt, Bugwood.org

Verticillium wilts (*Verticillium* sp.)
©Molly Giesbrecht, Bugwood.org

The benefits CABI shares

<u>Non-monetary benefits</u>:

- sharing of research and development results;
- joint authorship of publications and joint ownership of intellectual property rights;
- exchange of visiting students and scientists;
- joint supervision of graduate students on collaborative research projects;
- institutional capacity-building.

Where CABI develops products for the market benefits are defined at access negotiations

Smith et al. (2021) CABI Working Paper 25
https://dx.doi.org/10.1079/CABICOMM-62-8160

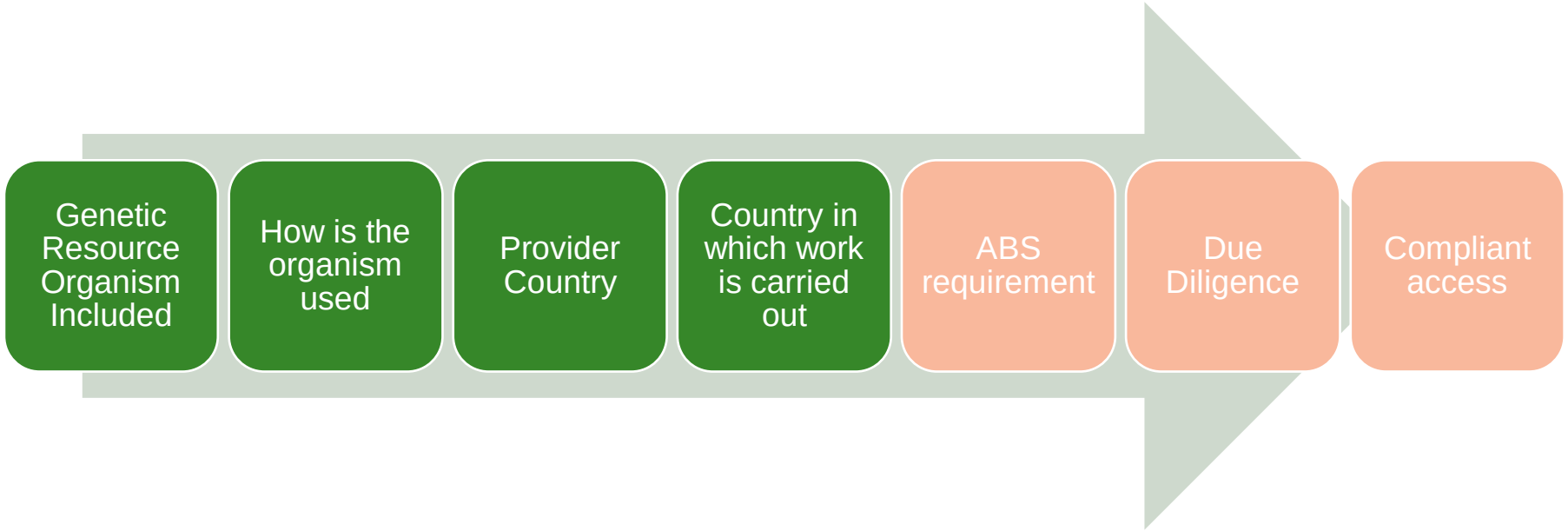
CABI working paper 25: Example benefit sharing from CABI UK projects

Project name	How is the organism used	Provider country(s)	Research Country(s)	ABS requirement	Benefits being shared (monetary and non-monetary)
Enhancing diversity to overcome resistance evolution	Bulk spore production	Brazil USA	UK	The work CABI is doing does not trigger the UK regulation	The biopesticide product will be owned by the Brazilian partners benefiting from CABI's know-how and sharing technology
Coffee berry borer	Biopesticide; strain characterization	Colombia commercial product	Colombia	Joint ownership; if work transfers to the UK a due diligence declaration is required	Colombia: commercial product for ownership and sale in Colombia
Colombian Cocoa Control System (COLCO)	Cocoa plant material to isolate causal disease. Identification at CABI	Colombia	UK	The work CABI is doing does not trigger the UK regulation	Partners benefit from data generated and project outcomes
Improving integrated pest management in strawberry	Field study	Direct from FARGRO	UK	The product sample was provided by FARGRO, the licence holder for the product	FARGRO holds the licence with the provider country with benefit sharing incorporated
Biological control of *Crassula helmsii*	Research for the biocontrol of *C. helmsii*	Australia	UK	Not a party to the Nagoya Protocol	Permit requires publication of outputs in the providing country. Project report publicly available
Biological control of Japanese knotweed using a psyllid	Identification and preliminary testing of many species for biological control of Japanese knotweed	Japan Canada USA Netherlands	UK Canada Netherlands	No access controls	Research outputs published, numerous studentships completed, and project work in Japan funded. Project report publicly available

CABI’s Best Practice Document for ABS Compliance

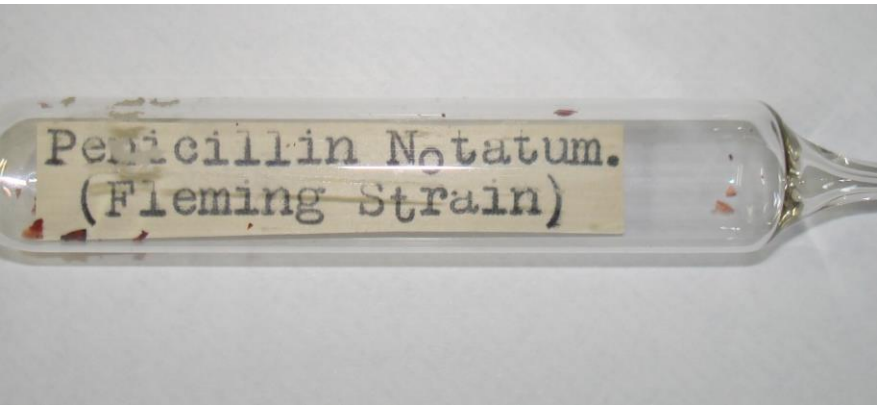
Contents

ABS project assessment at CABI UK



- To date total of 191 projects assessed, 162 involved genetic resources
- Most out of scope because provider country had no regulations or did not control access
- 19 project activities fell in scope of the EU Regulation
- Countries concerned were Brazil, China, India, Madagascar, Pakistan, Paraguay, South Africa

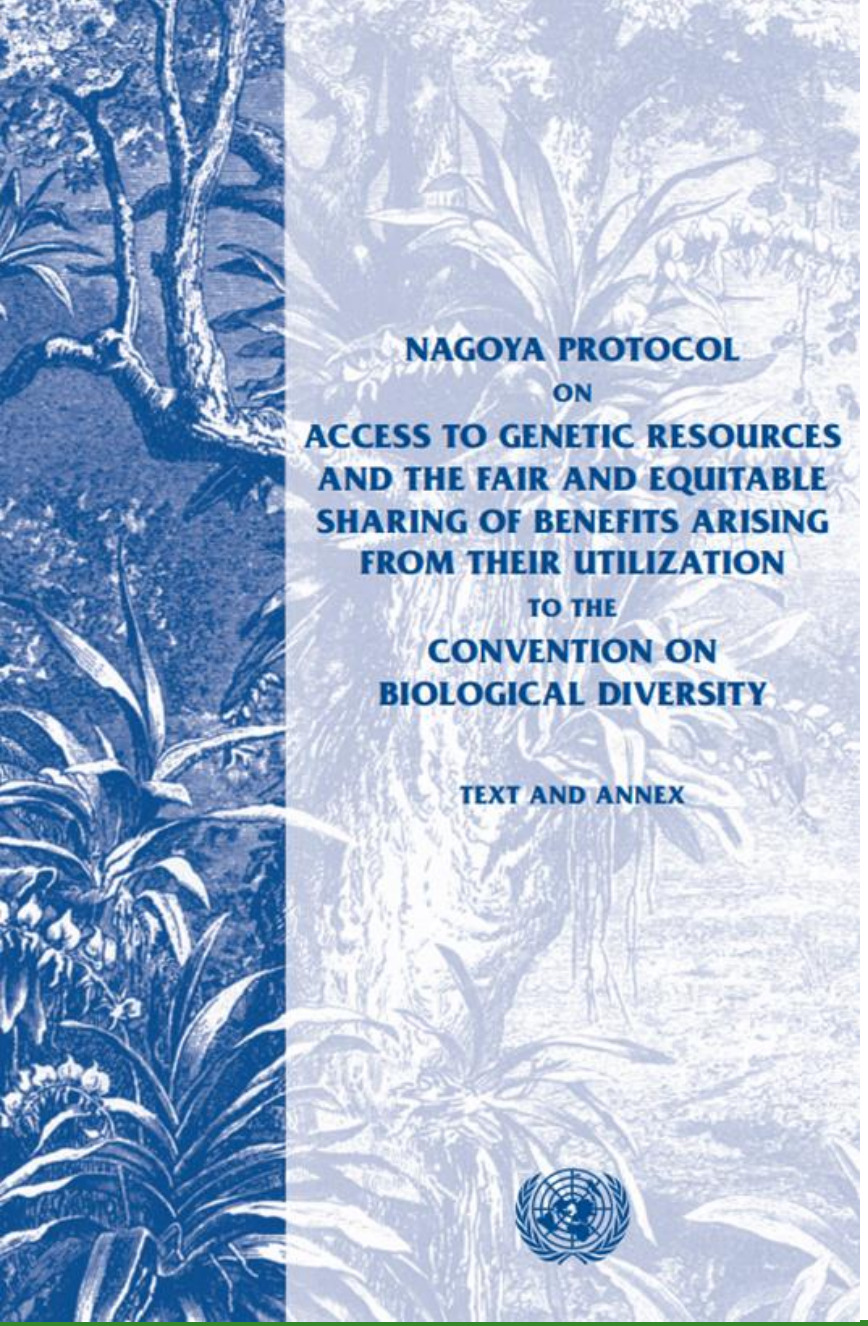
→ Agreements in place where needed or CABI's use is out of scope



CABI activities in ABS compliance

- Early recognition (2010) of impact in biocontrol
- CABI internal support to coordinate compliance
- Established and tested policy[1]
- Centre specific best practices [2] – Swiss Centre version recognised by National Authority
- ABS assessment of CABI projects
- Reported evidence of benefit sharing CABI working paper 25[3]
- CABI ABS champions to support CABI staff
- Regularly publishes on the issue
- Responds to CBD Secretariat requests
- Involved in IOBC Commission on Biological Control and ABS
- Culture collection Terms and Conditions: CABI Material Transfer Agreement[4]
- FAO CGRFA DSI Paper and Informal Advisory Group on Benefit-sharing from the Use of Digital Sequence Information

1. https://site.cabi.org/wp-content/uploads/PDFs/AboutCABI/Cabi-Abs-Policy-Draft-For-Website-May2018.pdf
2. https://www.oecd.org/health/biotech/oecdbestpracticeguidelinesforbiologicalresourcecentres.htm
3. https://www.cabi.org/wp-content/uploads/Working-Paper-25.pdf
4. https://www.cabi.org/Uploads/CABI/bioservices/genetic-resource-cat-condition-of-sale-web-form.pdf



Receiving or collecting genetic resources – CABI process

Receiving materials

- Request a Material Transfer Agreement and/or PIC and MAT
- Compare documentation with country requirements on the ABSCH
- If the information is unavailable or is unclear contact the National Focal Point
- Culture Collections on the registered list of collections will provide legal clarity

Obtain Prior Informed Consent (PIC) before accessing the resources

- Negotiate Mutually Agreed Terms (MAT) the benefits that will be shared and ensure all aspects of use are included
- Follow your national registration and reporting process e.g. due diligence declarations in UK & EU
- Retain information for a 20-year period after the end of the period of use

Our Collection approach – New Accessions

Gather ⬇ Check ⬇ Accept

1. Depositor contacts us requesting submission to the CABI collection

2. Depositor completes online submission form, including all data and accompanying information (location country, GPS and date of access are incredibly important)

3. Collection staff check details, including country of collection and whether acceptance aligns with our accession policy. Data sets must be complete.

4. If country of collection is a Party to the Nagoya Protocol with access controls we ask for ‘hard’ evidence of PIC and MAT. If the country is not party to the NP we check to establish if national biodiversity laws are in place. In all cases we undertake due diligence to ensure that everything is *bona fide* (e.g. researchers' institution is genuine, GPS data checks out etc.)

5. Once checks are complete the depositor may send their culture to us for accession and preservation.

6. Once preserved, the culture is checked, data uploaded and released into our ‘open’ collection

Our Collection approach – Culture Supply

1. User contacts us requesting a culture from the CABI collection
2. Requestor completes online order form

3. Collection staff check that the requestor is *bona fide* as part of due diligence process

4. We review the CABI database to check the 'Nagoya status' of the strain requested and whether there are any restrictions on supply. **For every culture the Nagoya status is (or will be) recorded** - e.g. country of origin, access control, date of collection (not isolation) as these may be different etc. We also check that the request is for research use only. Any commercial request is subject to a much more rigorous process.

5. Once checks are complete CABI staff send the culture with associated Material Transfer Agreement. Commercial requests invoke a more complex review process

Gather ⬇ Process ⬇ Dispatch

Common issues

- Depositors: Permissions to collect may not be in place, may be granted by the ‘wrong’ national department (e.g. not the Competent National Authority) or the depositor might not have authority to deposit.
- Data sets may not be complete – If any information is incomplete cultures will not be accepted!
- Historic collection datasets may not be complete (!!!) – it is difficult to retrospectively find data!! E.g. no GPS records, collection information becomes confused with isolation details
- Scientists may be inclined to avoid ABS processes and not use collections (definitely not recommended)
- Even if you work within jurisdictions not party to Nagoya, your international collaborators / depositors may be and therefore responsible for their actions which may be enforceable if regulations are not followed

Outstanding issue: Digital Sequence Information

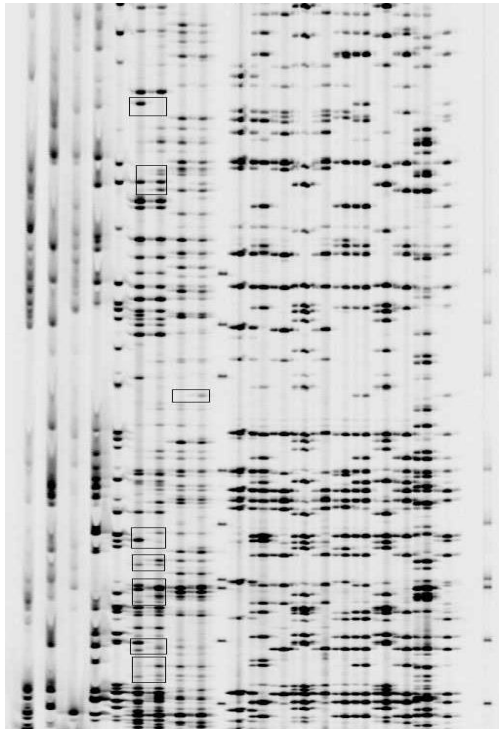
- COP15 Decision 15/9 left several unresolved issues. Discussions on-going

CABI position (will change!!!)

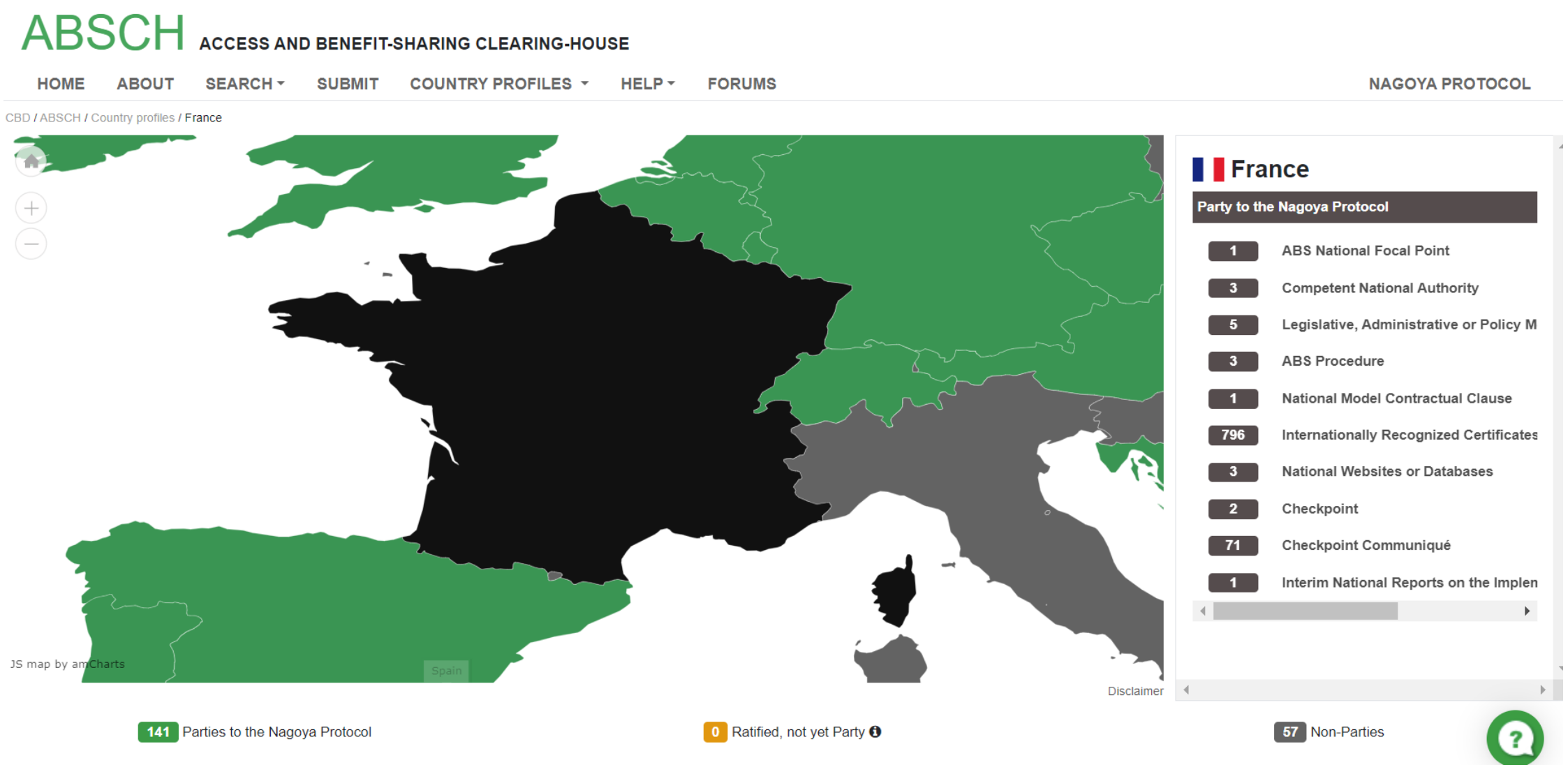
- Generating and publishing sequence data is the production of descriptive information on the organism and therefore not utilisation and out of scope
- Publishing the sequence as electronic data is an act of sharing such descriptive information and thus should meet benefit-sharing commitments
- DSI can be used at many non-exploitative levels: for example, its use to confirm identification, this is an observation, not research; in most cases the resulting sequence data are published i.e. necessary for implementation of the CBD

Sharing benefits

- If DSI is used for financial benefit, then this should be considered utilisation and covered in Mutually Agreed Terms (MAT) on access
- Currently a multilateral means of sharing monetary benefits the generation and use of sequence data is being considered by COP – Will It work?



Where to go for information



Convention on Biological Diversity

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COUNTRY PROFILES

COUNTRY PROFILES

United States of America

United States of America

Convention
Non Party

Cartagena Protocol
Non Party

Nagoya Protocol on Access and Benefit-sharing
Non Party

Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress
Non Party

CBD Information
› Overview
› Main Details
› National Focal Points

Convention on Biological Diversity

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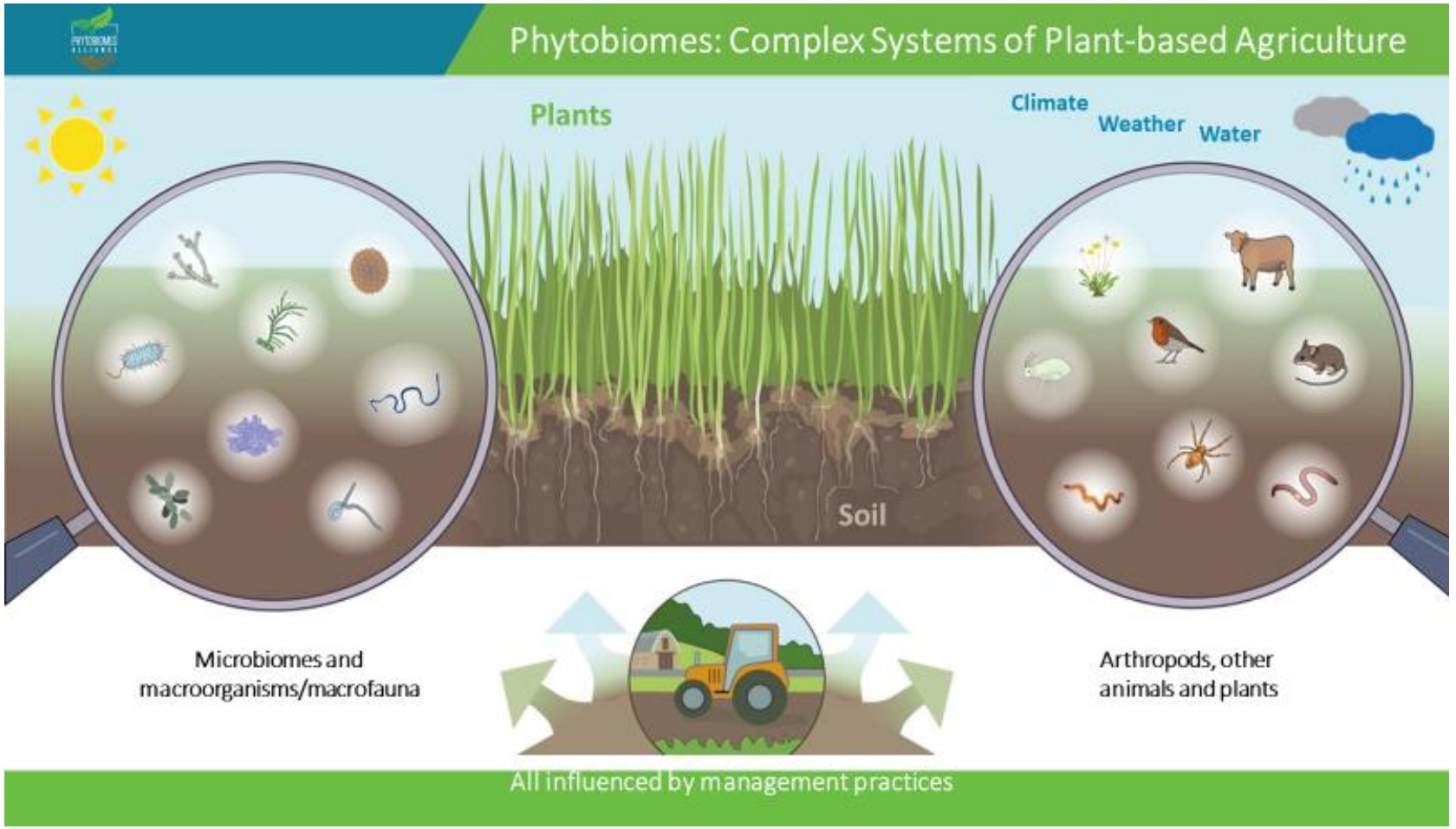
Addressing the future and the changing approach to GRFA



A systems based approach + technology + bioinformatics

Knowledge solutions
Bioinoculants
Biofertilisers
Biopesticides

Challenges in the biobanking of environmental samples and preservation of ‘microbiomes’

Collections have historically only handled ‘axenic’ microorganisms

Regulatory regimes for collections have been focussed on historical approaches (eg., Budapest treaty, Biosecurity etc,) - Note for Nagoya the key thing is the point of ‘initial access’ regardless of where or what is eventually isolated or processes from a sample

Significant gigabytes of data are produced (=DSI) – awareness required!

Two EU projects are looking at these issues –
EU Microbiome Biobanking (RI) Enabler and EU Microbes4Climate

Microbe WP5 –
Legal and ethical framework for microbiome biobanking

DSMZ

MICROBE
the Microbiome Biobanking (RI) Enabler

AIT · CABI · DSMZ · INRAE · Med Uni Graz · EMBL · HELMHOLTZ MUNICH · SORBONNE UNIVERSITÉ · rtd services

Funded by the European Union

EU Microbe (from a biobanking and technical perspective)

MICROBES 4 CLIMATE

Funded by the European Union

Work Package 6

Legal, regulatory, ethical, and intellectual property affairs

20/02/24

MIRRI · ALSIA · AIT · AnaEE ERIC · CABI · Consiglio Nazionale delle Ricerche · crea · LifeWatch ERIC · National and Kapodistrian University of Athens · Fondazione Edmund Mach · HelmholtzZentrum münchen · JÜLICH · INRAE · Phytobiomes Alliance · IPK · spi · The University of Nottingham · Universidade do Minho · Università degli Studi di Torino · Universitat de València · Ghent University · Universiteit Utrecht · Wageningen University & Research

EU Microbes for Climate (for climate change mitigation and intervention)

Summary

- CABI has implemented policy and best practice for compliance with the Nagoya Protocol

  !!!Transparency – all documents publicly available!!!
- CABI's network of collaborators and centres around the world helps facilitate compliant access
- CABI will continue to invest in negotiating access and use of genetic resources
- Much concern over the status and process to access DSI
- Still a long way to go and more challenges anticipated
- We hope to soon join DSMZ as a 'registered collection' (EU 511/24)
- Projects are looking at the complex 'microbiome' issue

Funded by the European Union

CABI is an international intergovernmental organisation, and we gratefully acknowledge the core financial support from our member countries (and lead agencies) including:

UKaid from the British people

Ministry of Agriculture and Rural Affairs, People's Republic of China

Australian Government
Australian Centre for International Agricultural Research

Agriculture and Agri-Food Canada

Ministry of Foreign Affairs of the Netherlands

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC