



Il Protocollo di Nagoya
e le risorse genetiche:
accesso, utilizzo e ripartizione dei benefici

PADOVA 30 - 31 marzo 2016
Orto Botanico

Biodiversity Conservation and economic value of the natural capital

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Convention on Biological Diversity – 1992

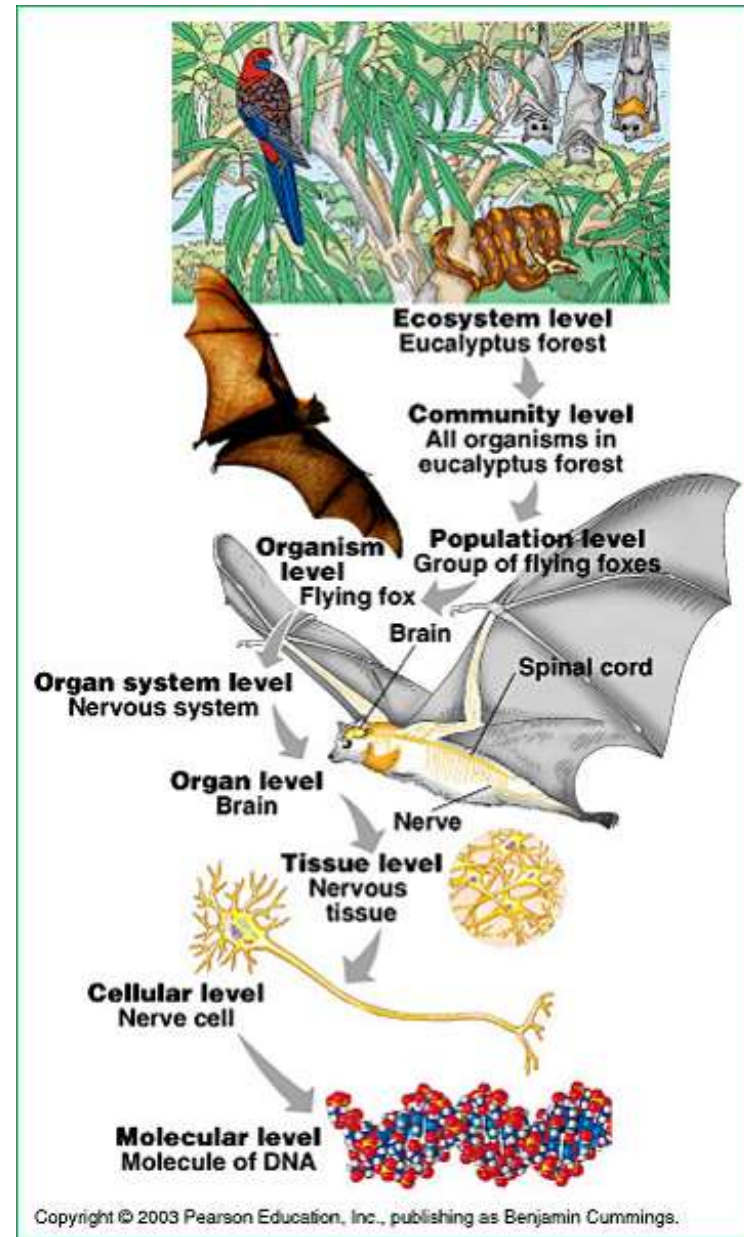
"Biological diversity" means the variability among living organisms . **This includes diversity within species, between species and of ecosystems.**

What are genetic resources?

- All living organisms (plants, animals and microbes) carry **genetic material potentially useful to humans**
- These resources can be taken **from the wild, domesticated or cultivated**
- They are sourced from:
 - Natural environments (*in situ*)
 - Human-made collections (*ex situ*) (e.g. botanical gardens, genebanks, seed banks and microbial culture collections)

Why are genetic resources useful?

- They can lead to the development of new products **for human well-being (e.g. pharmaceuticals, cosmetics)**
- They allow for a better understanding of the natural world
- **They can lead to improvements in biodiversity conservation**



Nagoya Protocol

Article 1 **OBJECTIVE**

The objective of this Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources.

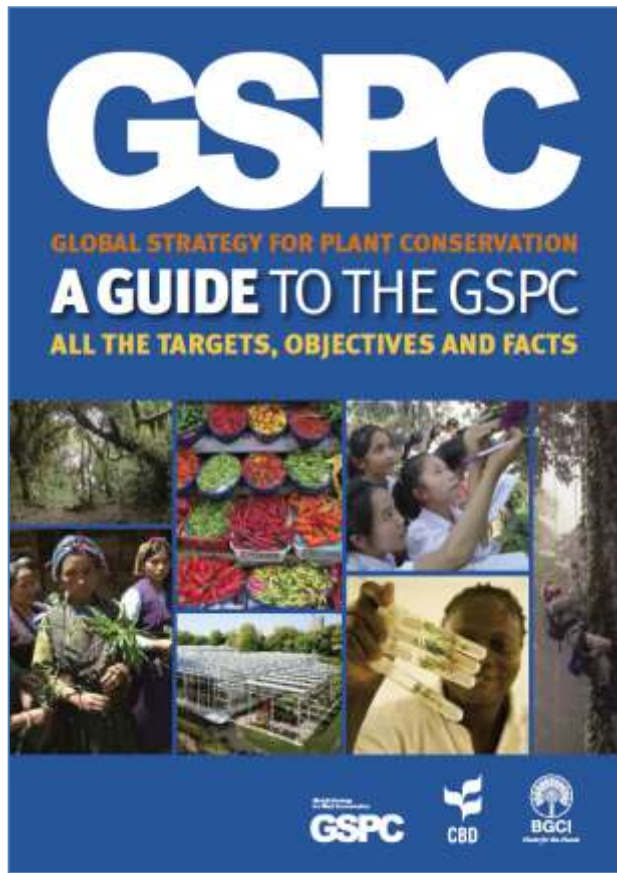
Article 3 **SCOPE**

This Protocol shall also apply to traditional knowledge associated with genetic resources within the scope of the Convention and to the benefits arising from the utilization of such knowledge.

**NAGOYA PROTOCOL
ON
ACCESS TO GENETIC RESOURCES
AND THE FAIR AND EQUITABLE
SHARING OF BENEFITS ARISING
FROM THEIR UTILIZATION
TO THE
CONVENTION ON
BIOLOGICAL DIVERSITY**

TEXT AND ANNEX





The **GSPC** has **5 main objectives**:

- I. Plant diversity is well understood, documented and recognized
- II. Plant diversity is urgently and effectively conserved
- III. **Plant diversity is used in a sustainable and equitable manner**
- IV. Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted
- V. The capacities and public engagement necessary to implement the strategy have been developed.

On a total of **14 targets** for conservation to be achieved by 2020, the **Objective III** includes **3 targets**:

- **Target 11**: No species of wild flora endangered by international trade.
- **Target 12**: All wild harvested plant-based products sourced sustainably.
- **Target 13**: Indigenous and local knowledge innovations and practices associated with plant resources, maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.

The EU Biodiversity Strategy to 2020



TARGET	TARGET	TARGET	TARGET	TARGET	TARGET
1	2	3	4	5	6
Fully implement the Birds and Habitats Directives	Maintain and restore ecosystems and their services	Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity	Ensure sustainable use of fisheries resources	Combat invasive alien species	Help avert global biodiversity loss

Target 3 Increase the contribution of agriculture and forestry

to maintaining and enhancing biodiversity

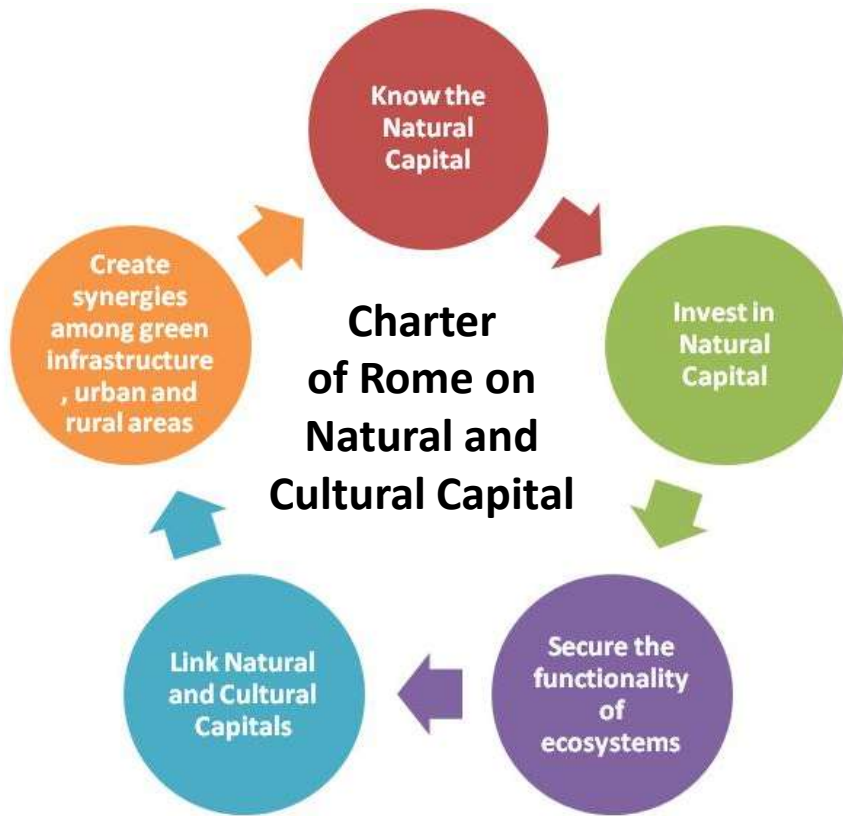
Action 10 Conserve Europe's agricultural genetic diversity

10) The Commission and Member States will encourage the uptake of agri-environmental measures to support genetic diversity in agriculture and **explore the scope for developing a strategy for the conservation of genetic diversity.**

Target 6 Help avert global biodiversity loss

Action 20 Regulate access to genetic resources and the fair and equitable sharing of benefits arising from their use

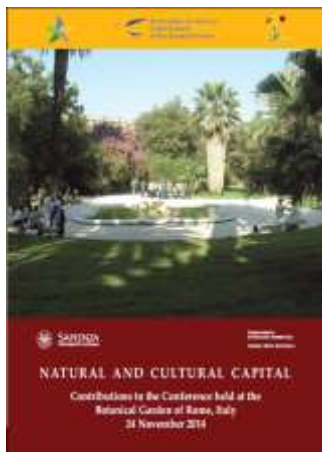
20) The Commission will propose legislation to implement the **Nagoya Protocol** on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their utilization in the European Union so that the EU can ratify the Protocol as soon as possible and by 2015 at the latest, as required by the global target.



theMilan Charter

*“To safeguard the future of the planet and the right of future generations everywhere to live healthy and fulfilling lives. This is the great development challenge of the 21st century. **Understanding the links between environmental sustainability and equity is critical if we are to expand human freedoms for current and future generations.**”*

Human Development Report 2011



Botanical Garden of Rome, Italy
24 Novembre 2014



MILANO 2015
NUTRIRE IL PIANETA
ENERGIA PER LA VITA



Biodiversity Hotspots



Myers et al. 2000 Nature, 403
25 hotspots



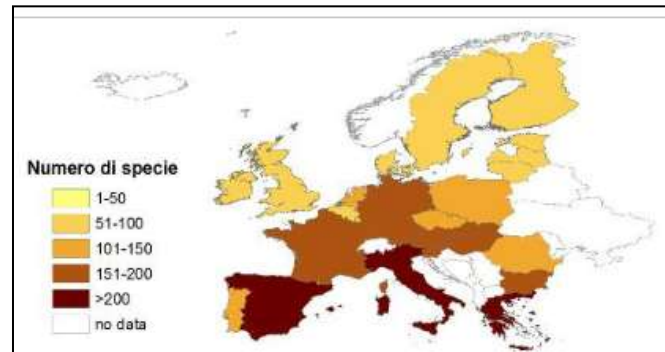
Conservation International (<http://www.conservation.org>)
from 25 to 34 hotspots

Mediterranean Basin Hotspot

More than **22,500 species** of vascular plants, of which 13,000 are endemic (over 50%),
More than **200 species of mammals** (over 11% are endemic)

Italy

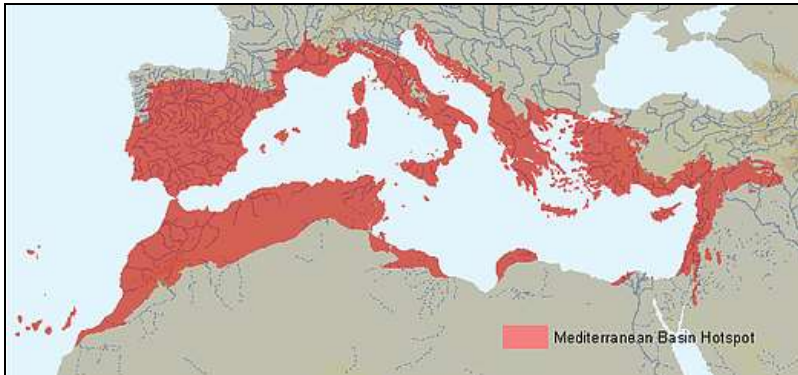
Animals: **58 000** species (30% endemics)
Vascular plants: **6700** species (15% endemics)
279 Potential Natural Vegetation types



ISPRA, Serie Rapporti, 194, 2014



312 IPAs + 8 sites for freshwater algae
Total cover: about 15% of the country



Biodiversity in Italy



Land units

SMIRAGLIA D., et al 2013.
JOURNAL OF MAPS



Phytoclimate

Blasi and Michetti 2007
Biodiversity in Italy



Potential Natural Vegetation

BLASI C. Ed. (2010).
Blasi et al. 2004, **FITOSOCIOLOGIA** 41 (1), suppl. 1: 21-25



Ecoregions

Blasi et al., 2014 **PLANT BIOSYSTEMS**, 148



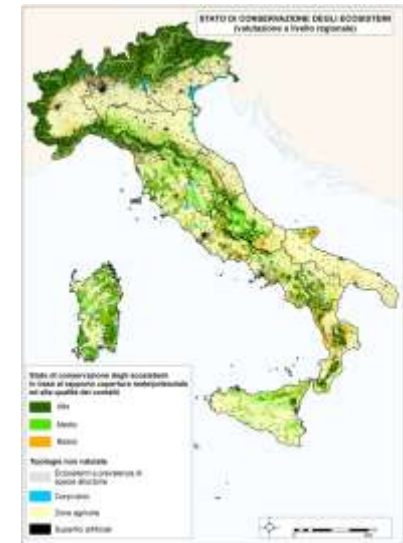
Important Plant Areas

BLASI C. et al (2011). **BIOLOGICAL CONSERVATION**, vol. 144, p. 220-226



Ecosystem Map of Italy

(1:100,000), MAES, 2014



Conservation status of ecosystems (MAES project)

Italian National Biodiversity Strategy



Strategic Objective 1

By 2020, ensure the conservation of biodiversity, or the variety of living organisms, their genetic diversity and the ecological complexes of which they are part, and ensure the protection and restoration of ecosystem services in order to guarantee their key role for life on Earth and human well-being.

Strategic Objective 2

By 2020, substantially reduce the nationwide impact of climate change on biodiversity, by defining the appropriate measures to adapt to climate changes and mitigate their effects and increasing the resilience of natural and semi-natural ecosystems and habitats.

Strategic Objective 3

By 2020, integrate biodiversity conservation into economic and sectoral policies, also as potential for new employment opportunities and social development, while improving the understanding of the benefits from ecosystem services derived from biodiversity and the awareness of the costs of losing them.

Nature as a source of wellbeing

The **90%** of the health products is based on **plants**.

The **50%** of the clinical use of drugs is made from products of **plant origin**.

25% of these drugs is based on molecules derived from **vascular plants**.

70% of the world population uses traditional medicine to meet the primary health needs.

Phytochemicals are non-nutritive plant chemicals that have protective or disease preventive properties. They are non-essential nutrients, meaning that they are not required by the human body for sustaining life. It is well-known that **plant produce these chemicals to protect themselves** but recent research demonstrate that **they can also protect humans against diseases**. There are more than thousand known phytochemicals.



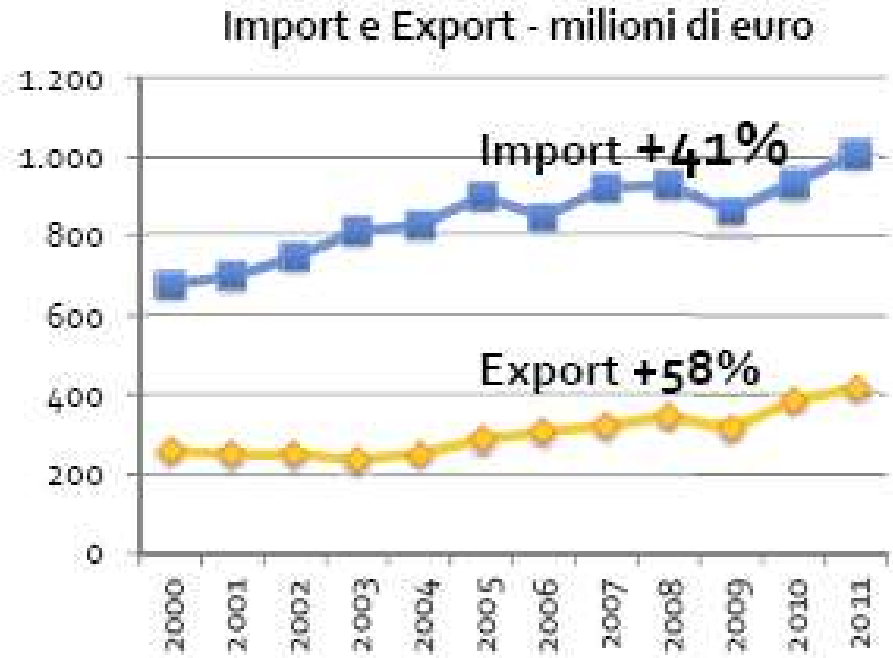
In Italy there are about
5,000 “Erboristerie”

Medicinal and aromatic plants in Italy



Medicinal and aromatic plants in Italy

- 3,300 hectares cultivated;
- 3,600 tonn. of production;
- 9 million Euro the value of the production;
- 500-1,000 sectoral operators;
- 2,000 and more trademarks.



Alps

Alchemilla vulgaris L.

Artemisia genipi Weber ex Stechm

Artemisia glacialis L.

Artemisia vallesiaca All.

Rhodiola rosea L.

Alps and Appenine

Gentiana lutea L.

Helichrysum italicum (Roth) G. Don

Hyssopus officinalis L.

Achillea millefolium L.

Allium ursinum L.

Salvia officinalis L.

Satureja montana L.

Juniperus communis L.

Coastal area

Ceratonia siliqua L.

Foeniculum vulgare Mill

Lavandula vera DC.

Rosmarinus officinalis L.

Myrtus communis L.



Blasi et al., 2014 - Plant biosystems



Wetland

Althaea officinalis L.

Filipendula ulmaria (L.) Maxim

Humulus lupulus L.

Nasturtium officinale R. Br.

Valeriana officinalis L.



Ruderal

Arctium lappa L.

Borago officinalis L.

Marrubium vulgare L.

Isatis tinctoria L.

Urtica dioica L.

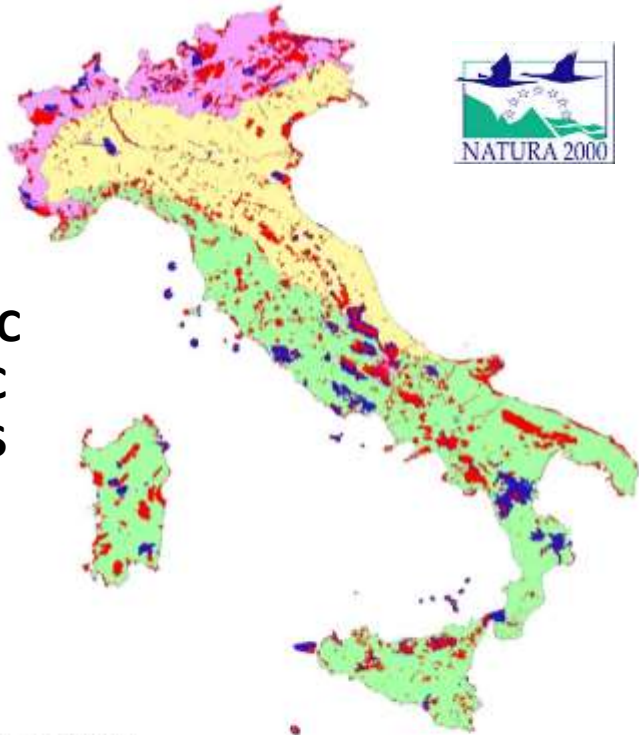


The most used plants in Italy

Specie botanica	superficie	Utilizzo prevalente
menta piperita e dolce	253,54	olio essenziale
lavanda vera ed ibrida	178,77	olio essenziale
camomilla comune	123,1	prodotto secco
finocchio aromatico	78,21	prodotto secco
salvia officinale	68,45	prodotto secco
melissa	47,69	prodotto secco
camomilla romana	45,05	olio essenziale
passiflora incarnata	39,21	prodotto secco
coriandolo	37	prodotto secco
origano bianco	24,25	prodotto secco
psillio	23	prodotto secco
elicriso	22,44	olio essenziale
rosmarino	20,97	prodotto secco
assenzio romano pontico e gentile	18,62	prodotto secco
santoreggia	17,3	prodotto secco
ortica	15,1	prodotto secco

PROTECTED AREAS IN ITALY

21,2 % of the National territory



- 1792 SIC
- 522 ZSC
- 609 ZPS

Rete Natura 2000
■ Siti di Importanza Comunitaria
■ Zone di Protezione Speciale

Regioni Biogeografiche
■ Alpina
■ Continentale
■ Mediterranea



871 Protected Natural Areas

Botanic Garden in Italy

107 Botanic Gardens recorded in Italy

Approx. no. of living plant accessions recorded in these botanic gardens: 400,000 to 500,000

Approx. no. of taxa in these collections: c.15,000 (c.12,000).





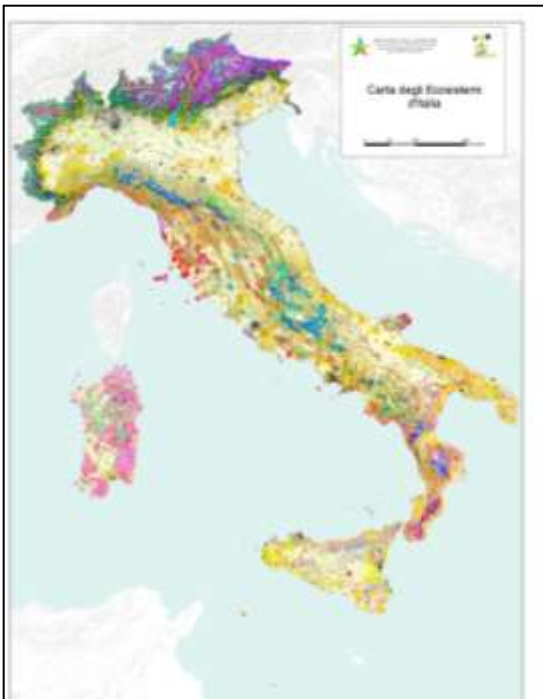
TARGET 2: Maintain and restore ecosystems and their services: By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems.

Action 5: Improve knowledge of ecosystems and their services in the EU

Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory by 2014, **assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020**



Natural Capital



CAPO XI
DISPOSIZIONI VARIE IN MATERIA AMBIENTALE
ART. 67.
(Comitato per il capitale naturale).

ART. 53.
(Delega al Governo per l'introduzione di sistemi di remunerazione dei servizi ecosistemici e ambientali).

Payments for Ecosystem Services (PES)

Conclusion

Nagoya Protocol is positive for **biodiversity conservation**

Given the high number of ecoregions, **we could know and use a large number of plants in their characteristic habitat.**

The network of botanical gardens, universities and research institutes ensures the scientific support to gather the best opportunities offered by Nagoya Protocol.

As well as the CAP supports the quality agriculture, in Italy the Nagoya Protocol could promote the use of genetic heritage **only in ecosystems with high conservation status.**

The network of national parks may take on a decisive role **for the certification and *in situ* conservation of genetic resources**

The Nagoya Protocol supports **the ESP and the Natural Capital accounting.**





Thanks to my research group

Thanks for the attention