

A young girl with long brown hair, wearing a white dress with green polka dots, is smiling and holding a yellow corn cob. She is standing in a lush green cornfield. The background is slightly blurred, showing more corn plants and a bright, sunny sky.

New possibilities with old natural enemies

Tom Groot, Manager R&D Entomology

NEED FOR MORE BIOLOGICAL CONTROL

- To ensure the availability of enough and healthy food in the future, the use of biological control will have to increase
- Many species still need to be tested as potential useful natural enemy

We should go and search for new natural enemies!

Biological control and sustainable food production

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BioControl

DOI 10.1007/s10526-011-9395-1

FORUM PAPER

**The state of commercial augmentative biological control:
plenty of natural enemies, but a frustrating lack of uptake**

Joop C. van Lenteren

CHALLENGES TO DEVELOP NEW NATURAL ENEMIES

The Nagoya Protocol on Access and Benefit-sharing

- Acknowledges the need to share the benefits of genetic resources
- requires agreement on how to share before organism is collected
- Will provide clarity on fair procedures and sharing

Increasing awareness of potential risks of introducing exotic natural enemies

- Stricter demands in risk analysis
- More complex registration procedures

<https://www.cbd.int/abs/>



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Nagoya Protocol

About the Nagoya Protocol

Nagoya Protocol Text

History

Key Protocol issues

ABS Clearing-House

Awareness-raising

Capacity-building and development

Compliance with the Protocol

Financial mechanism

Global multilateral benefit-sharing mechanism

Model contractual clauses, codes of conduct, guidelines and best practices and/or standards

Monitoring and reporting

Resource mobilization

Parties

Becoming a Party

List of Parties

National information - country profiles

> Access and Benefit-sharing

The Nagoya Protocol on Access and Benefit-sharing

The *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* is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way. It entered into force on 12 October 2014, 90 days after the date of deposit of the fiftieth instrument of ratification. [Learn more about the Nagoya Protocol.](#)

The *Access and Benefit-sharing Clearing-House* (ABS Clearing-House) is a platform for exchanging information on access and benefit-sharing established by Article 14 of the Protocol, as part of the Clearing-House of the Convention established under Article 18, paragraph 3 of the Convention. The ABS Clearing-House is a key tool for facilitating the implementation of the Nagoya Protocol, by enhancing legal certainty and transparency on procedures for access and benefit-sharing, and for monitoring the utilization of genetic resources along the value chain, including through the internationally recognized certificate of compliance. By hosting relevant information regarding ABS, the ABS Clearing-House will offer opportunities for connecting users and providers of genetic resources and associated traditional knowledge. [Learn more about the ABS Clearing-House.](#) [Visit the ABS Clearing-House.](#)

The ABS Clearing-House

ABSCH

COP-MOP 1



Ratifications



With the accession of Cuba, the Nagoya

What's New

Notifications

Upcoming Meetings

News Headlines

28 January 2015

Statement of Mr. Braulio F. de Souza Dias, CBD Executive Secretary, On the occasion of the Fourth Access and Benefit Sharing Business Dialogue, 28 January 2015, Copenhagen, Denmark

19 January 2015

Statement by the CBD Executive Secretary, Mr. Braulio F. de Souza Dias, at the Fifteenth Session of the Commission on Genetic Resources for Food and Agriculture, Rome, Italy, 19 – 23 January 2015

The conflict

- Need more natural enemies
- It's harder to develop new species

Solutions

- Search for native natural enemies
 - Need local research
 - Need local production
- Improve the current (old) natural enemies



EXAMPLE FROM THE PAST: INTRODUCTION SYSTEM

Neoseiulus cucumeris

introduction: 1985

improvement: 1991

Benefits of the sachets

- cheaper
- easier to distribute
- no spilling
- extended period
- no carrier material on the crop



EXAMPLE FROM THE PAST: INTRODUCTION SYSTEM



Other improved introduction systems



RECENT EXAMPLE: NEW REARING TECHNIQUES

Cryptolaemus montrouzieri

Mass reared since early 20th century

Fisher 1963: mealybugs on potato sprouts

Expensive

Excellent fliers

Phototaxis



RECENT EXAMPLE: NEW REARING TECHNIQUES

Cryptolaemus montrouzieri

New rearing method using alternative
an food source

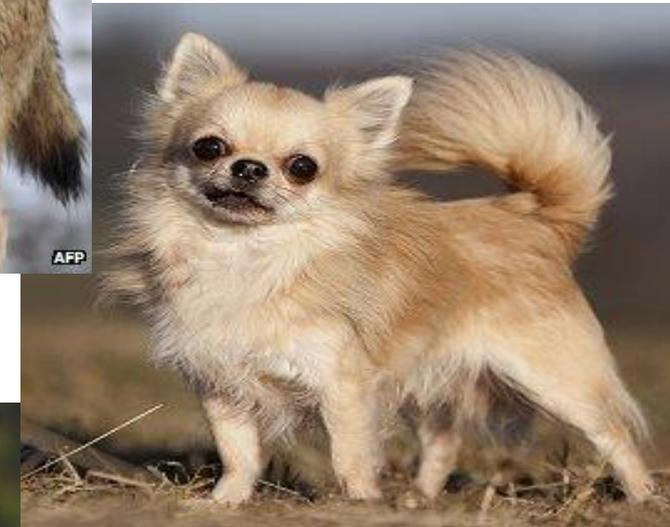
Large scale availability of larvae

At a competitive price



FUTURE EXAMPLE: SELECTIVE BREEDING

Selective breeding



insects

- Silk worms
- Honey bees
- Medfly



FUTURE EXAMPLE: SELECTIVE BREEDING

Started jan 2015

13 projects

<http://www.bingo-itn.eu/>

Permission settings



Breeding Invertebrates
for Next Generation
BioControl Training
Network

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BINGO-ITN kicks off in Wageningen

On January 22 2015, an international research network has had its kick-off for their exploration of natural genetic variation of native natural...

> Read more

BINGO - Breeding Invertebrates for Next Generation BioControl, is a Marie Skłodowska-Curie Innovative Training Network that develops innovative research training to improve the production and performance of natural enemies in biological control by the use of genetic variation for rearing, monitoring and performance.

BINGO's approach is multidisciplinary, encompassing a broad range of scientific disciplines, including the application of state-of-the-art genomic techniques in the field of biological control. The programme combines integrated training workshops and internship opportunities across the network, with career opportunities in academia, public or the private sectors.

BINGO is funded by the EU Horizon 2020 programme and involves 12 partners from academia, non-profit organizations and industry located in the Netherlands, Germany, France, Spain, Czech Republic, Austria, Switzerland, Greece and Portugal.

**RP3 Promoting adaptability of
Amblyseius swirskii predatory
mites to tomato crop**

**Instituto Valenciano de Investigaciones
Agrarias**



FUTURE EXAMPLE: SELECTIVE BREEDING

RP10 Minimizing plant damage
through selected *Nesidiocoris*
tenuis

Instituto Valenciano de Investigaciones
Agrarias



**RP11 Expanding the range of uses
of *Phytoseiulus persimilis***

Koppert Biological Systems



TAKE HOME MESSAGE

**We do need more species of
natural enemies!**

**But we should not forget the “old”
natural enemies**

