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Access & Benefit Sharing for Beneficial Insects and Mites

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International Biological Manufacturers Association

- 4 Professional Groups
  - Invertebrate Biological Control Agents (IBCA's)
  - Microbials
  - Semiochemicals
  - Natural Products

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  - **Invertebrate Biological Control Agents (IBCA's)**
  - Microbials
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  - Natural & Biochemical Products

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Integrated Pest Management

"A system that keeps harmfull organisms below the economic damage level based on ecologically, economically and toxicologically acceptable methods, taking into account the specific ecology of crops as well as harmfull organisms." (IOBC, 1973)

- strategy
- uses combination of different tactics to :
  - prevent (hygiene, exclusion, ...) and
  - manage (mechanical, biological, chemical, cultural, ...) pest populations.
- biological control = cornerstone !!!
- chemical control = last resort

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Biological Control

"The action of parasites and predators in maintaining another organism's acitivity at a lower average than would occur in their absence" (Debach, 1964)

- uses biological agents (a.k.a. natural enemies, beneficials, IBCA's)
  - parasites
  - predators
- to manage pest populations
- below an acceptable level (economic damage threshold)

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Types of Biological Control

1. Classical Biological Control

2. Augmentative Biological Control
   a) Preventive Releases
   b) Seasonal Inoculative Biocontrol
   c) Inundative Biocontrol
   d) Pest-in-first
   e) Predator-in-first
   f) Bankerplants

3. Conservation Biological Control

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History of Augmentative Biological Control

- 1920's: California, citrus
- 1967: Europe, greenhouse crops

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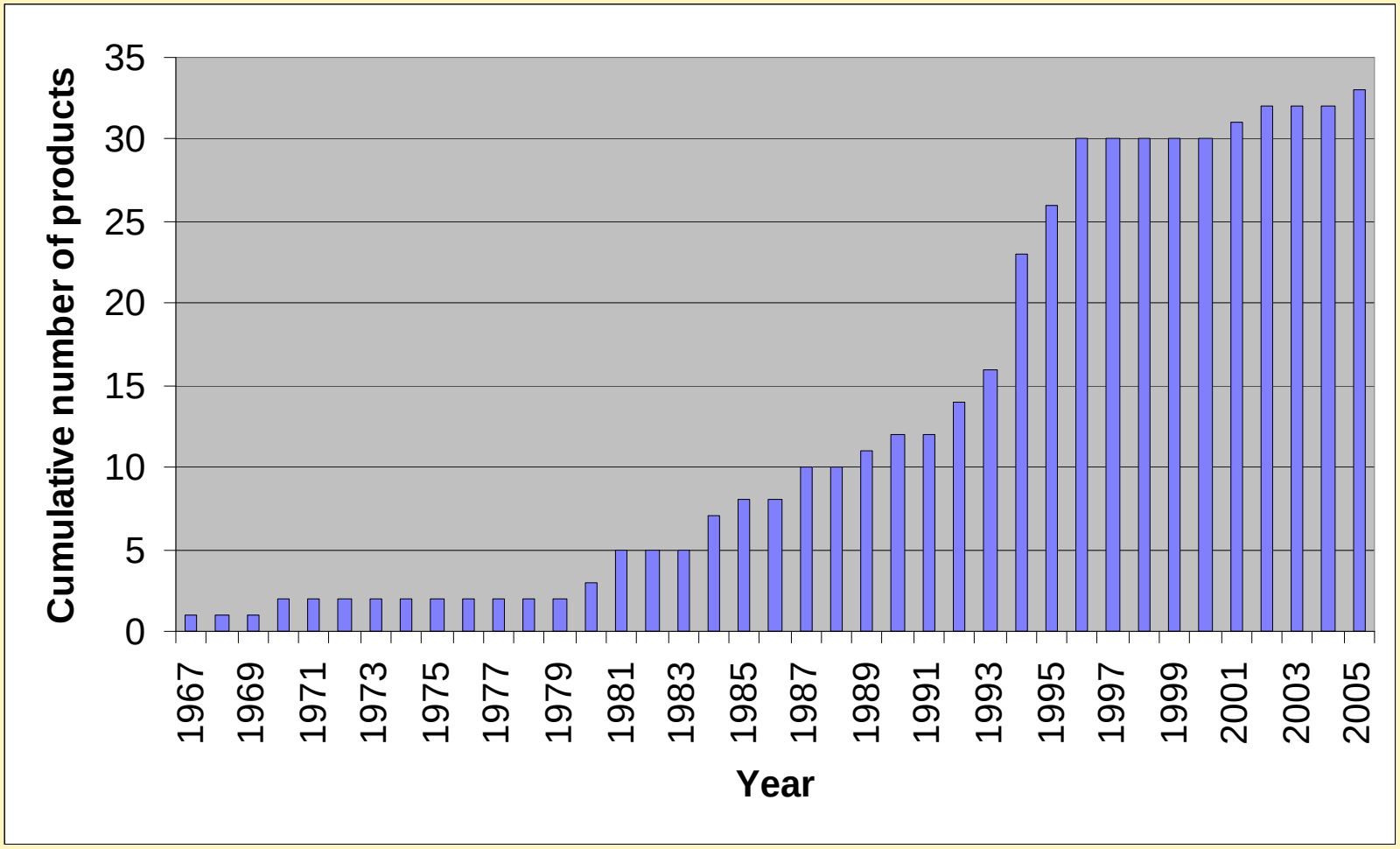
Importance of Augmentative Biocontrol

- Alternative for chemical pesticides
- Greenhouses in North Europe and North America; citrus in USA, Australia, South Africa, ...; (straw)berries; etc.
- Market drivers: food safety, pesticide resistance, yield and quality increase, reduction of available pesticides, ...
- Developing markets: Latin America, Asia, Middle East, Africa
- Total of >100 beneficials for augmentative biological control (35 for greenhouse biocontrol)

IBCA's for Greenhouse Crops



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Biocontrol Industry

- Biocontrol Industry
  - ±150 million € (225 million $) (excl. bumblebees)
  - 50 producers, 90% less than 20 employees
  - 1000 'direct' employees, total >3000 employees
  - Low profitability

- Pesticide Industry
  - 25 billion € (insecticides: 6,25 billion €)
  - Extremely high profitability

- Benefit sharing ? Which benefit ?
  - $$$???
  - Assuring production of safe and healthy food
  - Minimizing pesticide impact on the environment
  - and on people ...

- The Almeria Case

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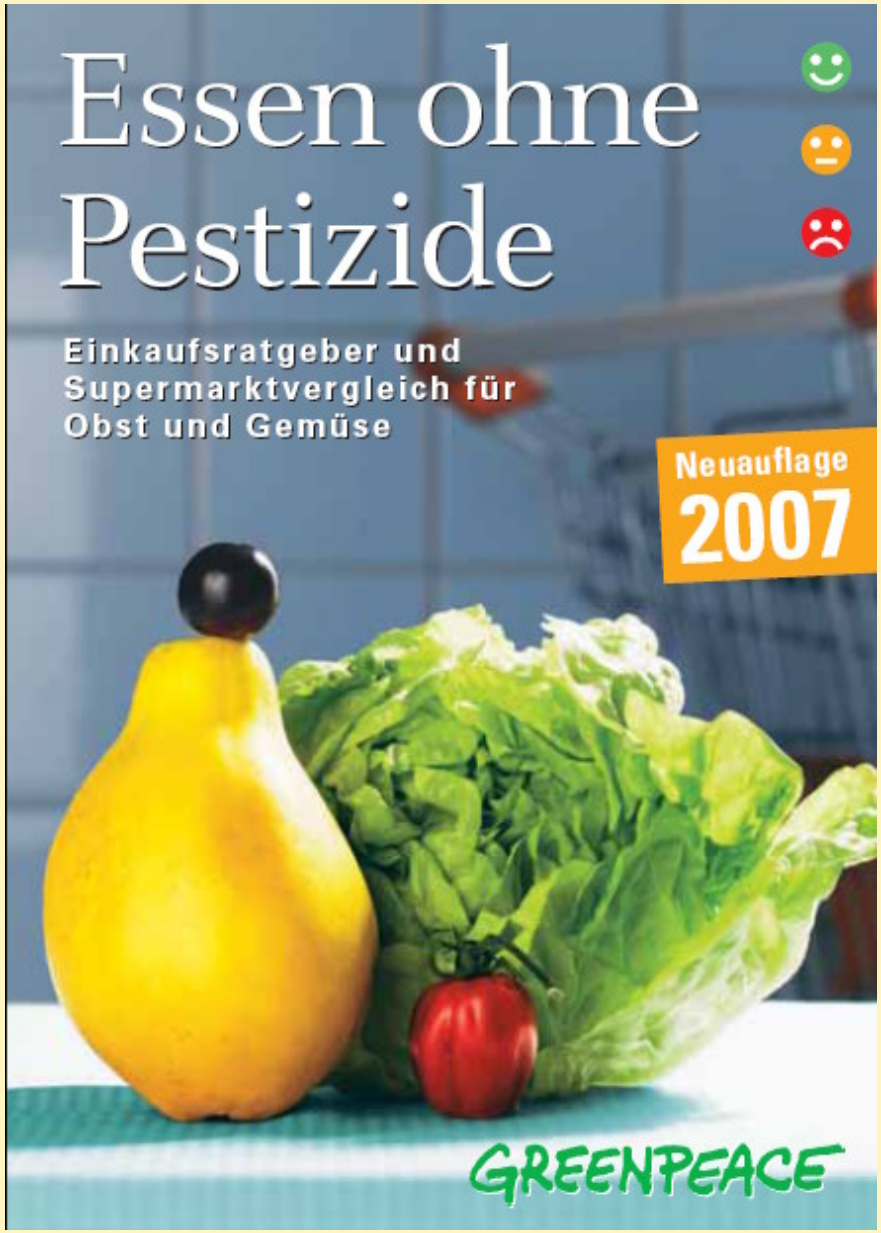
Essen ohne Pestizide
Einkaufsratgeber und Supermarktvergleich für Obst und Gemüse
Neuauflage 2007
GREENPEACE

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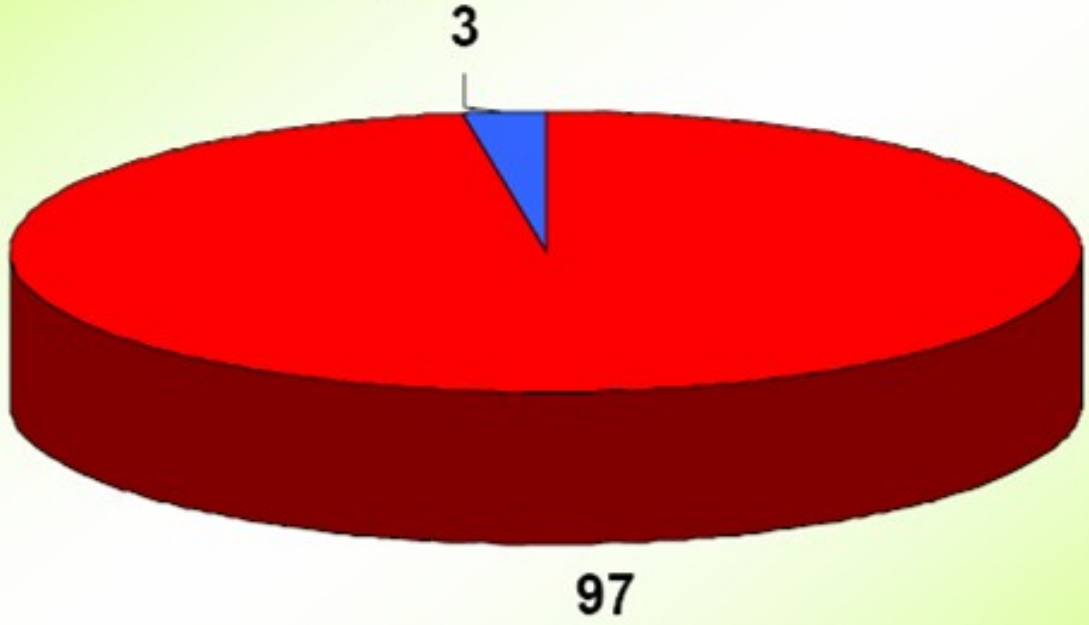
¿El control de trips ha sido peor o mejor que en Control Químico?



COEXPHAL

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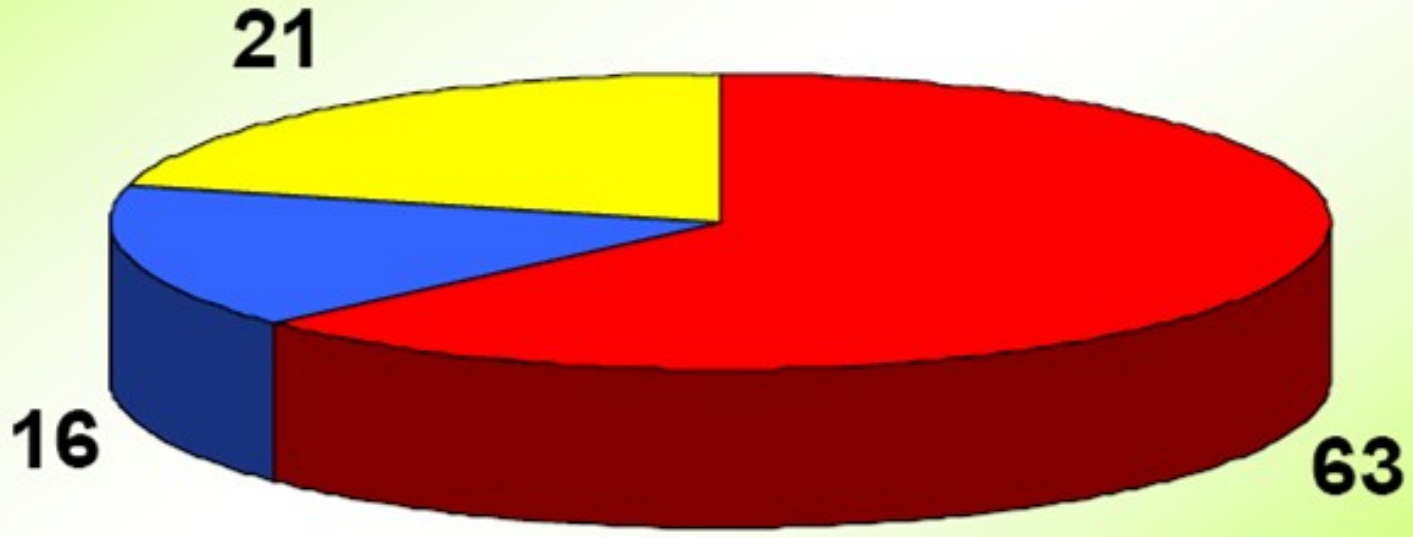
¿El control de Mosca Blanca ha sido peor o mejor que en Control Químico?



COEXPHAL

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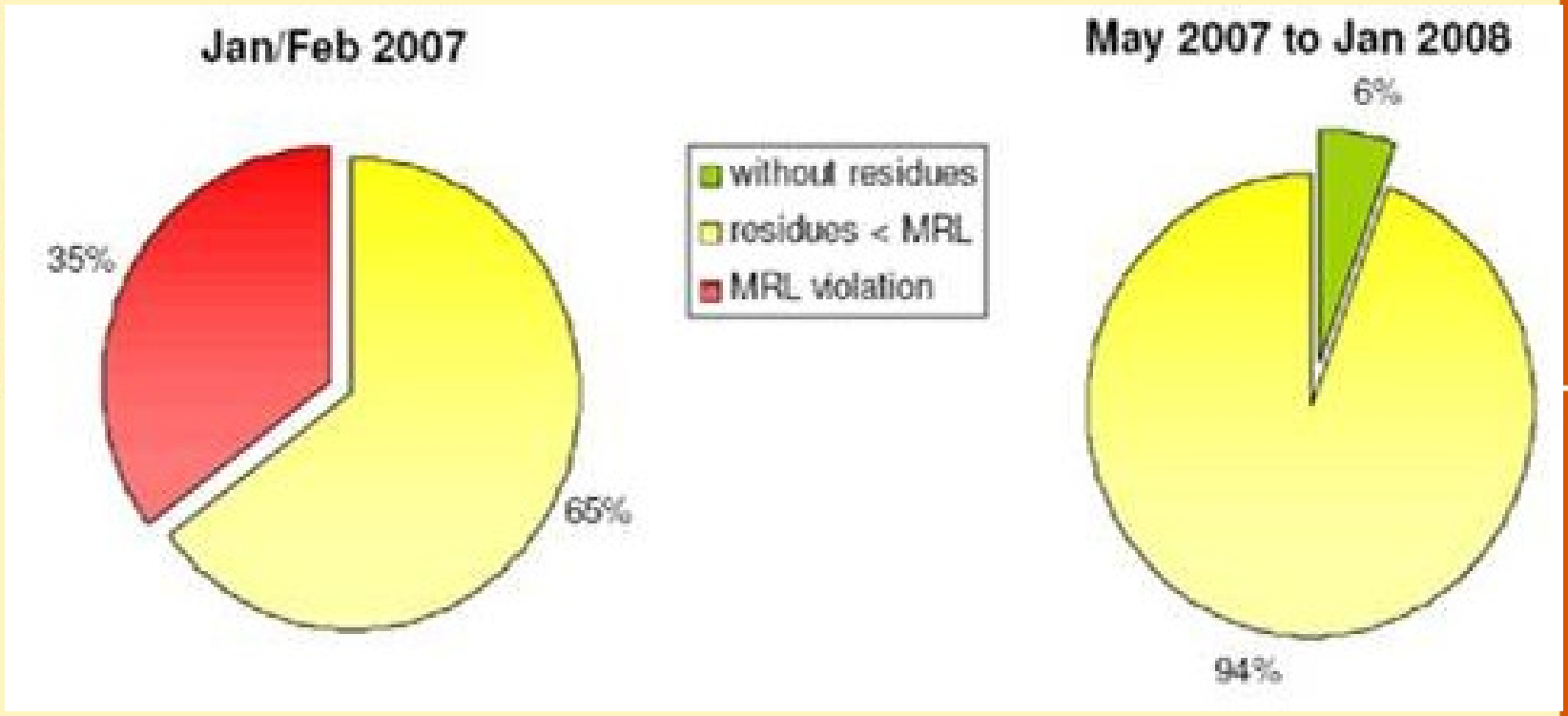

Percentage of tested, conventionally-grown Spanish sweet peppers with pesticide residues from different production seasons: January / February 2007 in comparison with May 2007 to Jan 2008

Almeria: to be or not to be ?

- Key solution was the predatory mite *Amblyseius swirskii* which predates whiteflies, thrips and broad mites.

- *Amblyseius swirskii* was collected in Israel by a Ph.D. student (Maria Nomikou) from the University of Amsterdam

- What would have happened if Israel and its neighboring countries would have considered *A. swirskii* a national treasure, hampering its exportation?????????

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Foreign exploration, why ?

- Many pests are exotic, invasive organisms which become a pest due to the absence of natural enemies.
- Tomato, an exotic crop which is hostile to many natural enemies.
- Invasive species threaten existing biological control programs
  - *Tetranychus evansi*
  - *Tuta absoluta*
  - *Scirtothrips dorsalis*
  - *Phenacoccus solani*
  - ...

⇒ Biological control is a SYSTEM !

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Case study: *Tetranychus evansi*

- Origin
- Appearance
- Risks for existing augmentative biological control programs
- Solution: *Phytoseiulus longipes*, Brazilean strain
- Permits ?

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Summary of Key Concerns

1. **Slow permitting process**
   - Threat for existing biocontrol programs in case of a new *exotic invasive pest*

2. **Low profitability** and turnover of the biocontrol industry
   - Permitting process might be more costly than the total benefits.
   - No IPR's on beneficial insects and mites. Copying by other producers.
   - What does benefit sharing entail? How much? How long? From when onwards?

- **Remark** : unintentional importation of beneficial insects and mites on plant material. E.g. the predatory mite *Phytoseiulus persimilis* was first found on orchids which were imported in Germany from Chile in the 1950's by Dr. Dosse.

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Beneficial Insects and Mites

- **Not genetically modified** by :
  - Selective breeding or domestication
  - Genetic modification

- **No derivatives. The organism is seen as a whole.**

- **No Intellectual Property Rights** on natural enemies.
  - Anybody can start mass-rearing the same organism for the same purpose.
  - The results of research become immediately public knowledge.

- **Not continually extracted** from Nature.
  - Only few individuals are collected and thereafter mass-reared for release.
  - Organism remains available in its natural environment to all possible users.

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Proposal

- **Access**
  - Facilitate collecting of beneficial insects and mites for biological control. Free access and fast permitting procedures (only for parasites and predators, not for other types of insects and mites)
  - Notify local authorities about collecting activities.
  - Collaborate with local research institutes.

- **Benefit Sharing**
  - Exempt beneficial insects and mites from Benefit Sharing ($$$), on the condition that :
    - They are not genetically modified,
    - They are not patented.
  - In case an effective beneficial insects or mite has been found, make the knowledge and organisms available to the farmers and researchers of the country of origin.

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Statement

If we share our pests, then we should also share the biological control agents against these pests.

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Reference

- Submission of views on the terms of references by IOBC, ICIPE and IBMA at the Windhoek, Namibia meeting in December 2008. See minutes p. 109.

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Thank you !