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Termőföldtől az asztalig

Regulation and use of biological control agents in Hungary

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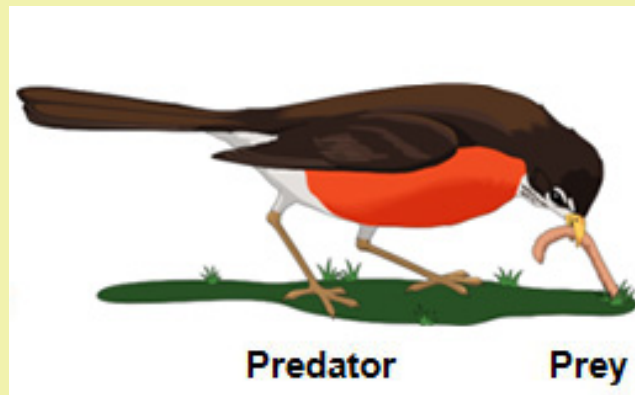


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Biological control is an environmentally sound and effective means of reducing or mitigating **pests** and pest effects through the use of natural enemies.

Biological control ISSN: 1049-9644

Editors: J.D. Harwood, J.H. Hoffmann, E.E. Lewis, J Liu, R. Melnick, J.P. Michaud, P. Ode, J.K. Pell



Types of biological control agents



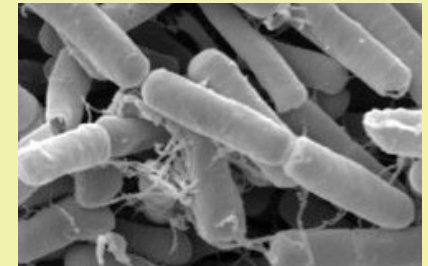
- Macroorganisms

- Predators
- Parasitoids
- Pollinators



- Microorganisms

- Bacteria
- Fungi
- Virus



- Plants



- Tools

- Mass trap
- Mating disruption
- Trap





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Biological control

Eco production

IPM

General production

Biological control \neq ecological production



Legal background



Directive 2009/128/EC (SUD):

Articles 3 & 12, Annex III

Regulation on PPP authorization 1107/2009 EC

Decree 43/2010. FVM on pesticide use:

Annex 8 about IPM principles

Decree 89/2004. FVM about authorization

Annex 9 – authorization of not PPPs

National Action Plan



Authorization of biological control agents in Hungary 1



- **Macroorganisms**

not PPP, not under the scope of 1107
in many countries not to be registered

- HU: To be registered according to national decree 89/2004 FVM , annex 9 (not PPPs)

- Data requirements:

- Identity of the formulation containing macro-organisms
- Biological properties
- Biological activity, mode of action, efficacy
- Effects on human health, non-target organisms and the environment
- In case of newly introduced organism the opinion of environmental authority is essential
(bad example of *Harmonia axyridis* - harlequin ladybird)



Authorization of biological control agents in Hungary 2

- **Plant Protection Tools – not PPP**
- **Traps** without pheromones or with pheromones but not used for mass trapping are not PPPs
- **Tools** containing repellents against wild moles
- Simplified data requirement
 - description of tool and substance,
 - description of application
 - efficacy



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- **Plant Protection Tools - PPP**
- **Mass traps and mating disruption pheromone treatments**
- **1107/2009 EC regulation – zonal evaluation,**
- **Pheromone must be on EU positive list**
- **A.s. and product data requirement**



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- Microorganisms (Bacteria, Fungi, Virus)
- To be considered as plant protection products
- 1107/2009 EC regulation is relevant
- Not specially 'light' data requirements
- Active substance can be 'Low risk substance', PPP can be 'Low risk product'
- Advantage: longer approval for a.s. (15 years vs. 10 years)
shorter PPP evaluation time for zRMS (120 days vs .1 year)



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**EU regulation
1107/2009 EC**

**HU decree
89/2004 FVM**

**Microorganisms
(biopesticides)**

**PP Tools ,
pheromones**

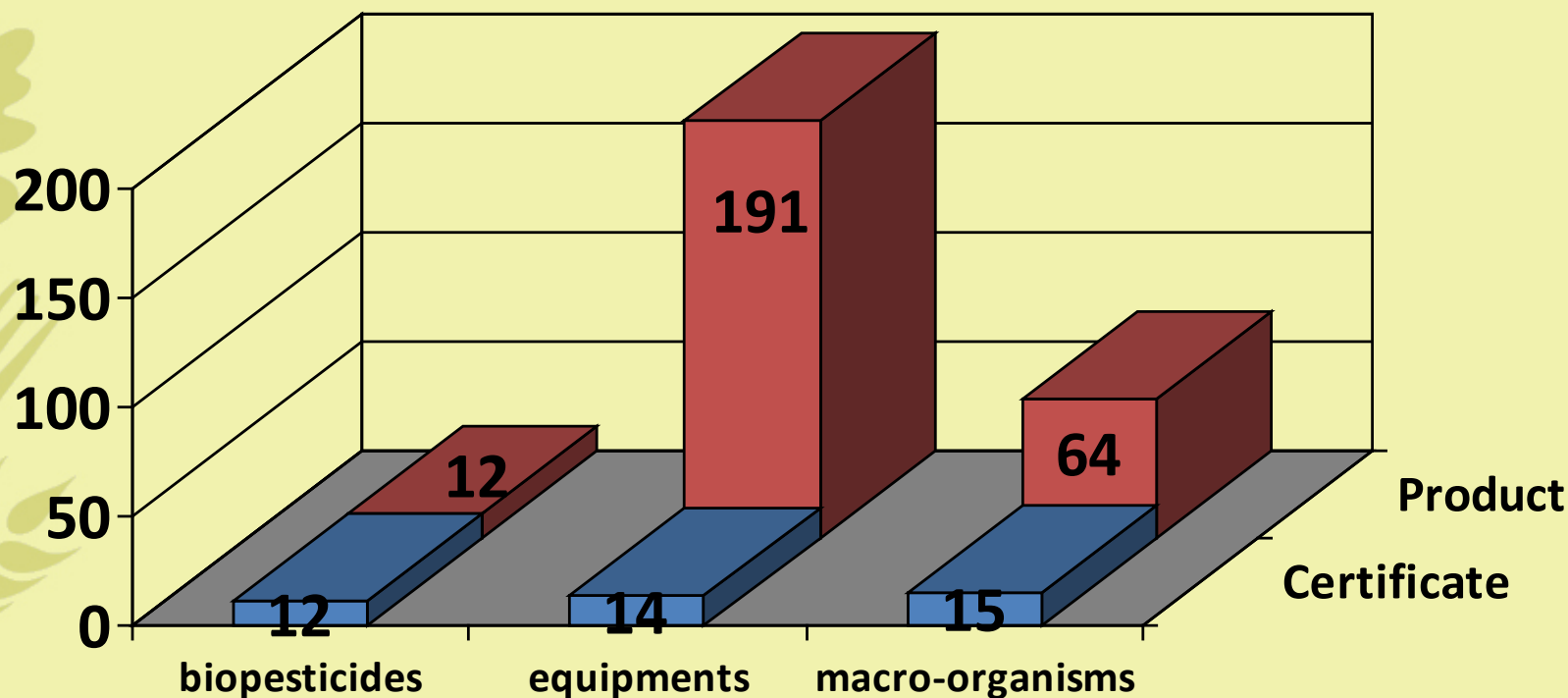
Macroorganisms



Number of products and certificates authorized in Hungary



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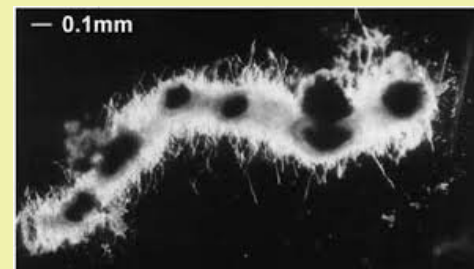


Biopesticides authorized in Hungary

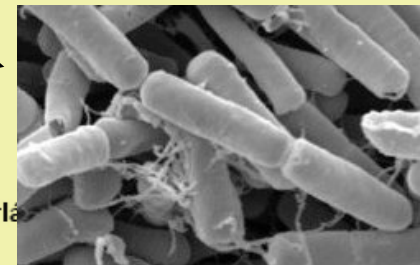


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- **Control of pathogens (i.e. bacteria and fungi in the soil, on the root system, also on the leaves, shoots and fruits):**
- Blossom Protect (*Aureobasidium pullulans* + citric acid)
- Boni Protect, Botector (*Aureobasidium pullulans*)
- Constans WG (*Coniothyrium minitans*) →
- Mycostop (*Streptomyces griseoviridis*)
- Polyversum (*Pythium oligandrum*)



- **Control of pests by microorganisms:**
- *Bacillus thuringiensis*: Bactospeine WG, DiPEL DF, Novodor FC
- *Beauveria bassiana*: Naturalis-L →
- *Cydia pomonella Granulo Virus*: Carpovirusine, Madex



Macroorganisms authorized in Hungary

- **Predatory mites:** Biobest Ragadozó Atka, Koppert LIMONICA, SPIDEX, SPICAL, ENTOMITE, MACRO-MITE, SWIRSKI-MITE, THRIPEX (*Amblyseius californicus*, *Amblyseius andersoni*, *Amblyseius degenerans*, *Amblyseius swirskii*, *Amblydromalus limonicus*, *Hypoaspis miles*, *Hypoaspis aculeifer*, *Macrocheles robustulus*, *Phytoseius macropilis*, *Phytoseiulus persimilis*)

Biobest Amblyseius (*Amblyseius cucumeris*)

- **Hymenopteran parasitoids:**

Biobest Encarsia, Koppert EN-STRIP (*Encarsia formosa*)

Koppert ERCAL (*Eretmocerus eremicus*)

Biobest Fürkészdarázs, Koppert APHIPAR, ERVIPAR, APHILIN, MIGLYPHUS, MINUSA, PLANOPAR, TRICHOSTRIP (*Aphidius colemani*, *Aphidius ervi*, *Aphelinus abdominalis*, *Coccidoxenoides perminutus*, *Diglyphus isaea*, *Leptomastix dactylopii*, *Trichogramma achea*, *Trichogramma brassicae*)

Trichoplus Fürkészdarázs (*Trichogramma pintoi*, *Trichogramma evanescens*)



Macroorganisms authorized in Hungary 2



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- **Control of pests by macroorganisms :**
- **Predatory bugs:** Biobest Macrolophus, Koppert MIRICAL (*Macrolophus caliginosus*)
- Biobest Orius, Koppert THRIPOR (*Orius laevigatus*)
- Koppert NESIBUG (*Nesidiocoris tenuis*)
- **Predatory ladybird beetles:** Biobest Ragadozó Katicabogár (*Adalia bipunctata*, *Cryptolaemus montrouzieri*, *Delphastus catalinae*)
- **Control of pests by entomopathogenic nematodes:**
- Biobest Parazita Fonálféreg, Nemacel, Nemastar, Nemasys-M, Nematop (*Steinernema feltiae*, *Phasmarhabditis hermaphrodita*, *Steinernema carpocapsae*, *Heterorhabditis bacteriophora*)



Pollinators and natural insecticides



- Pollinator: *Bombus terrestris* - Biobest Virágbeporzó, Bumble Bee Poszméh Virágbeporzó, Koppert Poszméh Virágbeporzó



- Natural insecticides – natural pyrethrins, pyrethrum: Bioplantella Flora Koncentrátum & Permet, Margareta Levéltetűirtó Aeroszol, Vape Garden-Fito Levéltetű Elleni Aeroszol, Vape Garden-Fito Pajzstetű Elleni Aeroszol



Recent development and result



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- An alien chalcidoid parasitoid wasp, *Torymus sinensis* (fam. Torymidae) was introduced and released in Hungary for the biological control of the invasive alien species, oriental chestnut gall wasp, *Dryocosmus kuriphilus* (fam. Cynipidae) – as a viable management option.

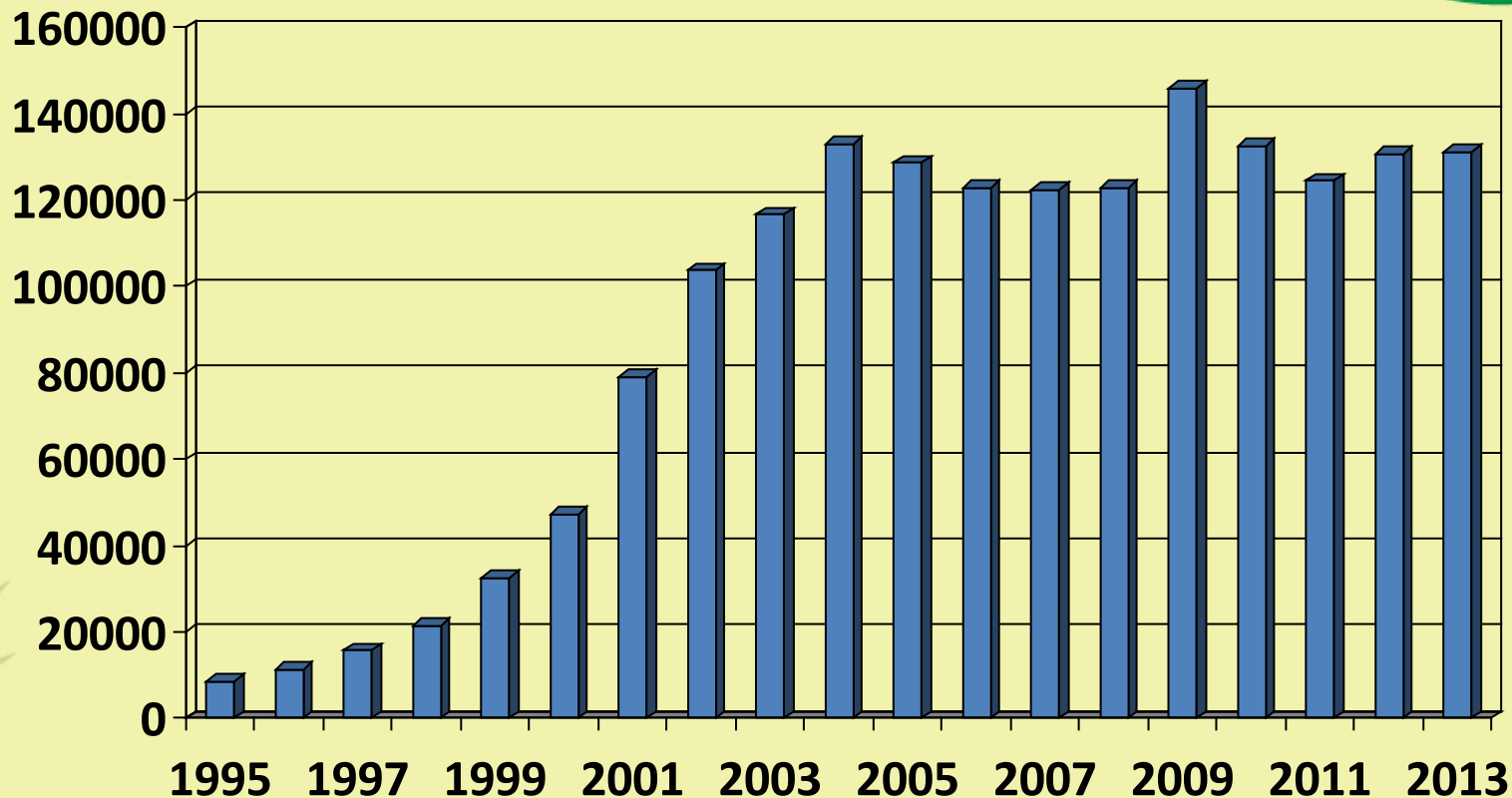




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Area of eco-production in Hungary

now cc. 2,5% of total agricultural area



source: Biokontroll Hungária kft 2015



Practical significance of macroorganisms in Hungary



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- Mostly used: Trichogramma in field vegetables and sweet corn
A > 20.000 ha
- Predatory mites in field ornamentals, vegetables
- Glasshouse use (non-eco !) - A > 2000 ha
- Glasshouse use (eco) – A < 2ha



Due to legislative reasons we do not have exact data on use of biological control agents





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- **New challenges – new hemipteran invasive alien species arrived: *Nezara viridula* & *Halyomorpha halys* (both fam. Pentatomidae), etc.**





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Thank you for the attention!

