Minor Crops in the EU

The Importance of Biocontrol to Close Minor Uses Gaps

2017 Western Region SLR/CLC meeting
April 25-27, 2017; Ft. Collins, Colorado

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Co-funded by the European Union
Content

- General Introduction
- EU Minor Uses Database (EUMUDA)
- Biocontrol Solutions
- Way forward
Substance A

Approved at Community level

Regulation (EC) No 1107/2009

Approval

One decision applying to all 28 Member States
Regulation (EC) No 1107/2009

Authorisation

Plant protection products (formulations) containing the substance A

Authorised at national level
EU Minor Uses Coordination Facility

- Coordinator started work September 2015
- MUCF is fully staffed since November 2016
- Working with existing Commodity Expert Groups
- Funded initially by EU, France, Germany and Netherlands
- Long term funding strategy; other funders welcome!
Minor Uses - Definition

Regulation (EC) No 1107/2009 - Article 3(26):
Use of a plant protection product in a particular Member State on plants or plant products which are:

(a) not widely grown in that Member State, or

(b) widely grown to meet an exceptional plant protection need.
**Minor Uses - Importance**

Only **3%** of the cultivated area, but representing **22%** of the value of the entire EU plant production value.

Across the EU these minor crops represent a value of more than **70 billion Euros** per year.
From ‘Minor crops’ to ‘Speciality crops’!
The first year has been used to lay the foundations for the years to come.

The number of quantitative outputs will increase from the second year onwards.
When writing this editorial from the EPPO headquarters, we can clearly notice that spring is arriving in Paris. Also for many crops this is the start of a new growing season and the products of all these ‘minor crops’ will find their way to tables across the region.

The first Newsletter of the EU Minor Uses Coordination Facility is now in front of you. From the start of this EU project in 2015 a lot has been initiated and already accomplished. Since November last year we are fully staffed. But we are not yet there, a lot still needs to be done.

Last January an important event took place. We organised our first ‘Stakeholder Advisory Forum’. It was well attended and an intensive exchange of views took place on many issues. One of the main topics that was discussed, was the long-term funding strategy for the Coordination Facility. Funds are guaranteed for three years, but not all minor use needs will be solved in this period!
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Why a ‘new’ EUMUDA?

- Some of the information is outdated
- Origin of some information is not traceable
- Status of projects is unclear

**BUT**

- Basic structure of EUMUDA has been maintained
- Fields have been kept, but aligned with EU database (PPPAMS)
Steps to be taken...

A case is any unsolved problem in the minor use needs table. A project will be carried out by a Commodity Expert Group.
A minor use need has been identified and entered in EUMUDA

Minimum data:
1 crop
1 pest
1 Member State
1 date

Case will be displayed in the “Minor Uses table of needs”
Every case has a unique number
An unsolved case will become a project and will be carried out by a Commodity Expert Group
The Coordination Facility will check databases for possible solutions e.g. PPPAMS, Homologa, the IR-4 and C-IPM databases.
**Amblyseius barkeri**

A natural enemy used in products against mites.

**NOMENCLATURE** Approved name: No approved name.
Common name: No common name.

**BIOGEOGRAPHY** Indigenous to Europe, Africa, Israel and USA.

**TARGETS** *Phytoseius pallidus* (cyclamen mite); *Polyphagotarsonemus latus* (broad mite, yellow tea mite, citrus silver mite).

**CROPS** Strawberry. Indicative list only: always check the country-specific label for detailed list of registered crops.

**BIOLOGICAL ACTIVITY** Mode of action: Adults and nymphs locate prey and consume their internal contents.

**PRODUCTS** Amblyline bar (Syngenta).

**Amblyseius californicus**

A natural enemy and acaricide used in products against mites.

**NOMENCLATURE** Approved name: No approved name.
Common name: No common name. **Other name:** Formerly *Neoseiulus californicus*.

**BIOGEOGRAPHY** Indigenous to Mediterranean and tropical areas.

**TARGETS** *Panonychus citri* (citrus red mite); *Tetranychus urticae* (two-spotted spider mite, red spider mite); *Raoiella indica* (red palm mite); *Brevipalpus spp.*; *Polyphagotarsonemus latus* (broad mite, yellow tea mite, citrus silver mite); *Panonychus ulmi* (European red mite, fruit tree red spider mite); *Tetranychus cinnabarinus* (carmine spider mite, cotton red spider mite).

**CROPS** Fruit-bearing vegetables; Spice crops; Berries; Ornamentals (protected); Flower crops; Grapes. Indicative list only: always check the country-specific label for detailed list of registered crops.

**BIOLOGICAL ACTIVITY** Mode of action: Adults, nymphs and larvae locate and consume the internal contents of their prey. All prey stages are targeted, with a preference for early stages. In the absence of prey the mites can also survive on pollen.

**PRODUCTS** Spical-Plus (Koppert B.V.); Triple Threat (Nature's Control); *Neoseiulus californicus* (Rincon-Vitova Insectaries); Spical (Koppert B.V.); *Neoseiulus californicus* (Arboce Organics); Predatory Mite, *Neoseiulus californicus* (Bugs for Growers); *Neoseiulus californicus* (Tip Top Bio-Control); Amblyline cal (Syngenta); Californicus (Biological Services); Californicus (Bugs for Bugs); Californicus-Breeding System (Biobest); Californicus System (Biobest); Spider Mite Control – Californicus (Buglogical Control Systems).
What are the benefits?

- A new tool for CEGs, using same structure and same information as before, but with a more detailed follow up of each project
- A more accurate and consistent information for each case / project
- With additional fields for an easier follow up of the authorization process: same GAP information as in PPPAMS, for a better exchange of information
- Information can be entered with list of selection, harmonized with EU lists of reference (functions, formulations, ....)
Commodity Expert Groups

Currently there are 7 Commodity Expert Groups (CEG):

- CEG fruit and vegetables
- CEG ornamentals
- CEG tobacco
- CEG rice
- CEG hops
- CEG seeds
- CEG mushrooms

- Focus in CEG is (still) very much on chemical solutions!
The mission of the Facility is 'to enable farmers in the EU to produce high quality crops by filling minor uses gaps through efficient collaboration to improve availability of chemical and non-chemical tools within an integrated pest management (IPM) framework'.
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Integrated Pest Management (IPM)

- IPM ≠ no (chemical) pesticides
- IPM =
  - Low pesticide input management;
  - Consideration of all available plant protection measures;
  - Pests and diseases kept at levels which are economically and ecologically justifiable;
  - Healthy crops with least possible disruption to agro-ecosystems.
Definition of "non-chemical methods"

- ‘Non-chemical methods’ means alternative methods to chemical pesticides for plant protection and pest management, based on agronomic techniques, or physical, mechanical or biological pest control methods.
**Biological Market Overview**

--- Introduction ---

**Product Types**

- **Biological Products**
  - Biofertilizers
  - BioStimulants
  - Microbials
  - Abiotic Stress Mgmt

- **Biological Control Products**
  - BioPesticides
  - Biochemicals
  - Microbials

**Macroorganisms**

- Insects
- Mites
- Nematodes

**Biofertilizers**
- Microbials used to enhance plant nutrient uptake from soil
- Nitrogen fixing bacteria make up largest group
- Others include mobilizers of specific nutrients (zinc, sulfur) and mycorrhizal fungi

**BioStimulants**
- Seaweed Extracts make up the largest segment in this group
- Microbials, primarily bacteria, often used as seed or soil treatment to aid in nutrient assimilation
- Organic acids and humic acid extracts used as soil amendments, formed by the microbial degradation of plant matter

**BioPesticides**
- Biopesticides are derived from natural materials, such as plants, bacteria and certain minerals. Biopesticides target specific pests and are inherently less toxic than synthetic pesticides.

**Biochemicals**
- Plant Extracts: Semiochemicals, Organic Acids
- Plant Extracts make up the largest segment in this group
- Semiochemicals (pheromones) has the largest actual number of products
- Largest challenge for Plant Extracts is manufacturing and consistent quality in the active ingredient(s)

**Microbials**
- Bacteria, Fungi, Viruses, Protozoa, Yeasts
- Bacteria, followed by Fungi make up the largest groups commercially (50%)
- Microbials are the largest market of biopesticides at US$1.3Bn
- Biggest challenges for microbials are formulation robustness: 1) Shelf-life, 2) Stability, 3) Performance enhancement

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29-July-2015
Biological Pesticides

**Microbials**
- Viruses, Bacteria & Fungal Pathogens
  - Found naturally in soil, used in food, feed & unregulated uses

**Macrobials**
- Predators, parasites & nematodes
  - Living organisms found to naturally protect crops

**Semiochemicals**
- Pheromones, Plant volatiles
  - Communication tools found in nature with no killing effect

**Natural & Biochemical Products**
- Botanicals & Other Natural substances
  - Products derived from nature

Regulated as PPPs
Not usually regulated as PPPs
Increasing Interest in Biological Control

- It fits within IPM-strategies for a sustainable agriculture (SUD).
- To overcome problems with resistance. Applications with conventional chemicals can be alternated with biological control.
- Residues. More and more large supermarkets apply a zero-residue policy. When replacing the last chemical treatments by biological a zero-residue situation can be achieved.
- The lack of new chemical active substances.
An invasive pest where a structured tiered approach would have worked better - *Tuta absoluta*

- Mass trapping early solution
- Physical barriers
- Mating disruption
- Lure and kill solutions
- Invertebrate Biocontrol solutions
- Microbial biocontrols
- Chemical solutions
Biocontrol Solutions for *Tuta absoluta*

**Pheromone**
- Mass trapping
- Mating disruption

**Invertebrate BCAs**
- *Nesidiocoris tenuis*
- *Trichogramma archaea*

**Microbial BCAs**
- *Bacillus thuringiensis*
SCLP availability... can support many minor uses!

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Main target crops</th>
<th>Scientific name</th>
<th>Main target crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adoxophyes honmai</td>
<td>tea, pome fruits, etc.</td>
<td>Mamestra brassicae</td>
<td>vegetables, etc.</td>
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<tr>
<td>Adoxophyes orana</td>
<td>pome fruits, stone fruits, etc.</td>
<td>Melanotus okinawaensis</td>
<td>sugarcane</td>
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<tr>
<td>Anarsia lineatella</td>
<td>stone fruits, stone fruits, etc.</td>
<td>Melossopters latifloraeus</td>
<td>nuts, etc.</td>
</tr>
<tr>
<td>Archips argyrospilus</td>
<td>pome fruits, etc.</td>
<td>Nakana feralis</td>
<td>kiwi</td>
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<tr>
<td>Archips breviplicana</td>
<td>pome fruits, etc.</td>
<td>Ostrinia nubilalis</td>
<td>corn, pepper, vegetables, etc.</td>
</tr>
<tr>
<td>Archips fuscocupreanus</td>
<td>pome fruits, etc.</td>
<td>Pandemis heparana</td>
<td>pome fruits, etc.</td>
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<tr>
<td>Archips rosanis</td>
<td>pome fruits, etc.</td>
<td>Pandemis limitata</td>
<td>pome fruits, etc.</td>
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<tr>
<td>Argyrargenia luguniana</td>
<td>grapes, pome, stone fruits, etc.</td>
<td>Pandemis pyrusana</td>
<td>pome fruits, etc.</td>
</tr>
<tr>
<td>Autographa nigrisigna</td>
<td>vegetables, etc.</td>
<td>Parapediasia teterella</td>
<td>turf grass</td>
</tr>
<tr>
<td>Carposina sasakii</td>
<td>stone fruits, etc.</td>
<td>Pectinophora gossypiella</td>
<td>cotton</td>
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<tr>
<td>Chilo suppressalis</td>
<td>rice</td>
<td>Phyllonycter ringoniella</td>
<td>pome fruits</td>
</tr>
<tr>
<td>Chloristoneura rosaceana</td>
<td>pome fruits, stone fruits, etc.</td>
<td>Planotettix octo</td>
<td>pome fruits, etc.</td>
</tr>
<tr>
<td>Cossus insularis</td>
<td>stone fruits, etc.</td>
<td>Plodia interpunctella</td>
<td>grain products</td>
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<tr>
<td>Cryptophlebia illepidia</td>
<td>nuts, etc.</td>
<td>Plutella xylostella</td>
<td>vegetables, etc.</td>
</tr>
<tr>
<td>Cryptophlebia leucotreta</td>
<td>citrus, grapes, etc.</td>
<td>Sesamia inferens</td>
<td>sugarcane</td>
</tr>
<tr>
<td>Cryptophlebia ombredella</td>
<td>nuts</td>
<td>Spodoptera depraevata</td>
<td>turf grass</td>
</tr>
<tr>
<td>Ctenopseustis obliquana</td>
<td>pome fruits, etc.</td>
<td>Spodoptera exigua</td>
<td>pepper, vegetables, etc.</td>
</tr>
<tr>
<td>Cydia caryana</td>
<td>nuts</td>
<td>Spodoptera litura</td>
<td>vegetables, etc.</td>
</tr>
<tr>
<td>Cydia molesia</td>
<td>pome, stone fruits, etc.</td>
<td>Stathmopoda sericinus</td>
<td>stone fruits, etc.</td>
</tr>
<tr>
<td>Cydia pomonella</td>
<td>pome, stone fruits, etc.</td>
<td>Stathmopoda sericinus</td>
<td>persimmon, etc.</td>
</tr>
<tr>
<td>Endopis vitana</td>
<td>grapes</td>
<td>Synanthedon celtidoides</td>
<td>stone fruits, etc.</td>
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<tr>
<td>Epiphilus postvittana</td>
<td>pome fruits, etc.</td>
<td>Synanthedon hector</td>
<td>stone fruits, etc.</td>
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<tr>
<td>Eupœcilia ambigua</td>
<td>grapes</td>
<td>Synanthedon myopaformis</td>
<td>pome fruits, etc.</td>
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<tr>
<td>Grapholitha dimorpha</td>
<td>stone fruits, etc.</td>
<td>Synanthedon pictipes</td>
<td>stone fruits, etc.</td>
</tr>
<tr>
<td>Grapholitha pruininae</td>
<td>pome, stone fruits, etc.</td>
<td>Synanthedon scutula</td>
<td>pome, stone fruits, etc.</td>
</tr>
<tr>
<td>Helicoverpa armigera</td>
<td>vegetables, cotton, etc.</td>
<td>Synanthedon tenius</td>
<td>stone fruits, etc.</td>
</tr>
<tr>
<td>Heliothis assulta</td>
<td>pepper, vegetables, etc.</td>
<td>Synanthedon tipuliformis</td>
<td>currants, etc.</td>
</tr>
<tr>
<td>Homona magnanima</td>
<td>tea</td>
<td>Trichoplusia ni</td>
<td>vegetables, etc.</td>
</tr>
<tr>
<td>Keiferia lepopsicea</td>
<td>tomato, etc.</td>
<td>Tuta absoluta</td>
<td>tomato, etc.</td>
</tr>
<tr>
<td>Lobesia botrana</td>
<td>grapes, olives, etc.</td>
<td>Vitacea polistiformis</td>
<td>grapes, etc.</td>
</tr>
<tr>
<td>Lyonetia clerkella</td>
<td>stone fruits, etc.</td>
<td>Zeuzera pyrina</td>
<td>olive, grapes, pome fruits, etc.</td>
</tr>
</tbody>
</table>

Just 14 of them are available in Europe
What about new innovations?

- Endophytes
- Triggers for turning on defence mechanisms
- Microbiomes
- Electric weed control
- Vibration as a tool for interfering with communication in pest species, including courting rituals
- Sound as a tool for interfering with communication in pest or predatory species
Biopesticides Steering Group (BPSG)

The Biopesticides Steering Group was established by the Working Group on Pesticides in 1999 to help member countries to harmonise the methods and approaches used to assess biological pesticides.
Warning Bell

- The more specific a product is the less impact it has on the environment
- The more specific a product is the greater the expected efficacy on a target
- The more specific a product with complex modes of action, the less chance of resistance development
- The more specific a product is the smaller the size of the market
- The more specific a product is the higher the impact of regulatory costs
Conclusion

Biological solutions can provide excellent tools for sustainable agriculture and to fill minor use gaps!
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The ambition of the MUCF

- ‘Level playing field’ for EU growers of ‘speciality crops’
- Focus on ‘non-chemical’ solutions
- Solve ‘regulatory hurdles’
- Encourage EU mind set of all parties involved
- Carry out EU projects to solve national issues
- EU-fund for minor use projects
- Continuity of the MUCF

**Benefits**

Solve minor use problems!
THANK YOU FOR YOUR ATTENTION

ANY QUESTIONS

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