ERANET C-IPM/workpackage 3 Minor Uses

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C-IPM Coordinated Integrated Pest Management in Europe

C-IPM, Workpackage 3 Minor Uses

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Objective Workpackage 3:
Longer-term (sustainable) IPM solutions for M.U. problems

Tasks:

1. Establish a Table of Needs IPM (finalized)
2. Identify existing solutions/ongoing research and R&D IPM priorities: finalised yesterday
3. Contribute to transnational calls and Strategic Research Agenda (ongoing)

Task 3.1 Table of Needs

- Draft Table of Needs, discussed during Minor use meeting in Brussels October 2014, finalized at the end of 2014.
- Based on Table of Needs, 11 priorities identified the annual meeting 2014. Some are adressed in Calls or other activities.

1: Weeds (peas, beans, perennials, carrot),

2: Flies in vegetables (Delia/Psila flies),

3: Aphids in leafy vegetables,

4: Drosophila suzukii

5. Mites in small fruits

6: Insects in hops (Hop flea beetle, aphids, wireworms)

7: Whiteflies and thrips in protected crops

8. Soil borne pests (often polyphagous)

9: Leaf spots and Downy mildew in leafy vegetables,

10: Pests in legume crops (Downy mildew

11 Diseases in Stone fruits.

Minor Use in ERANET C-IPM research calls

First call: Three Minor use priorities topics (based on task 3.1 Table of Needs) were launched for transnational funding (research projects starting 2016): 1 out of 7 project selected specifically for minor use (**Uniforce**= research consortium on mites in small fruits).

Minor Use in ERANET C-IPM research calls

Second Call: 5 minor use topics were launched (out of 9). Selection of research projects will take place at the end of 2016.

- IPM for Delia/Psila flies
- Fruitflies: *Drosophila suzukii* and others fruitflies
- Mites (spider, rusts and bud) in berries and small fruits
- Thrips and whiteflies on protected crops
- Diseases in stone fruits.

Deliverable 3.2 Inventory and of available IPM tools for minor uses in Europe

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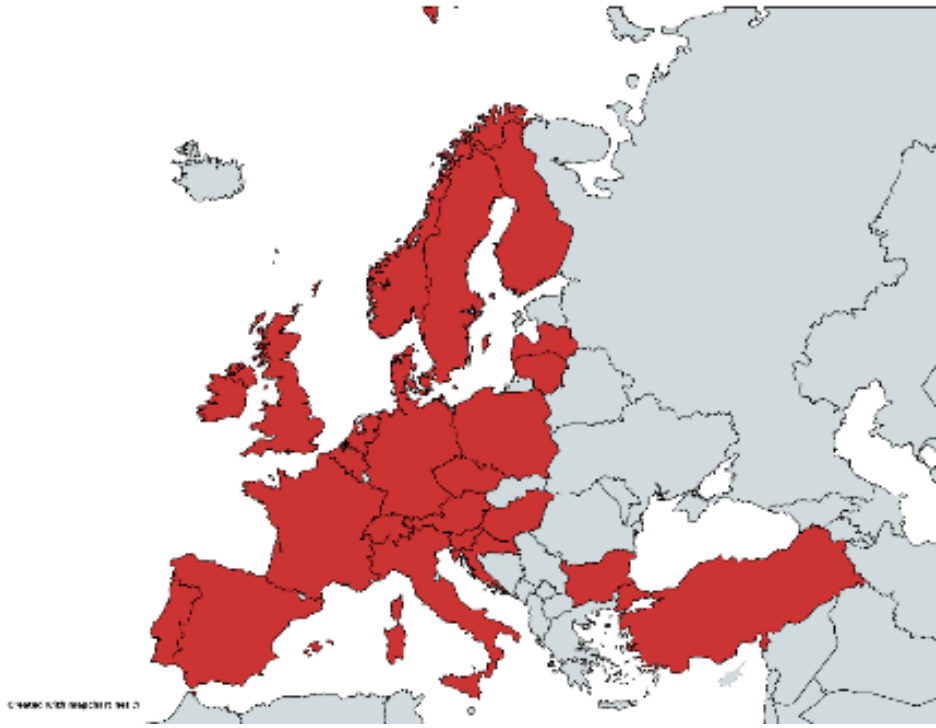
Aim of the study

- make an inventory where countries list the important target pest species in minor crops (**Crop x Pest combination**);
- identify the current **availability of IPM tools** to manage such target pests through a **database search**
- define the **knowledge gaps, bottlenecks of adaptation of tools**

Methodology

- **Crop x Pest** combinations were identified through questionnaire filled in by 23 countries
- in **total 2028** crop x pest cases
- 18 IPM tools were identified based on 2009/128/EC
- Literature research (CABI, ATTRA, ENDURE IC, IOBC)
- Expert evaluation
  - IOBC Meeting, Thessaloniki
  - Minor Use Commodity Group Freising



11 priority areas on minor uses

Number topic	Short description	Status
C1	Weeds (vegetables/herbs)	2014: 7 partners interested
C2	Flies in vegetables	Call 2015
C3	Aphids in vegetables	2014: 6 partners interested
C4	Fruitflies (e.g.*Drosophila suzukii*) in fruit crops	2014: 5 partners interested
C5	Mites in berries/small fruits	Call 2015
C6	Insects in Hops	2014: 1 partner interested
C7	Whiteflies/Thrips in ornamentals/vegetables	2014: 8 partners interested
C8	Soil borne pests and diseases	Call 2015
C9	Leaf spots/downy mildew in leafy vegetables	2014: 9 partners interested
C10	Pest/diseases in Legume crops	2014: 4 partners interested
C11	Diseases in Stone fruits	SRA (proposed after annual meeting)

Aphids in vegetables (example)

	Number of times that 23 countries reported on the target group	IPM sum points	IPM Tools																	
			1.1	1.2	1.3	1.4	1.5	1.6	2	3	4.1	4.2	4.3	4.4	5	6.1	6.2	6.3	7	8
Endive																				
Aphids, Aphididae	9	7			1	2	1	2	2		3			2,3						
Hyperomyzus lactucae	9	4		1	1		1		2,4											
Head lettuce																				
Nasonovia ribisnigri	9	7	5	1	6, 7		1	5								6,8				
Lettuce																				
Nasonovia ribisnigri	9	7	5	1	6,7		1	5								6,8				
Spinach																				
Hyperomyzus lactucae	9	4		1	1		1		2,4											
Watercress																				
Aphis nasturtii	9	2				8			8											

List of references

- 1 http://www.planthealthaustralia.com.au/wp-content/uploads/2013/01/Currant-lettuce-aphid-FS.pdf
- 2 http://www.plantwise.org/KnowledgeBank/FactsheetForFarmers.aspx?pan=20157800047
- 3https://attra.ncat.org/attra-pub/biorationals/search_results.php?pestType=&pestName=Myzus+persicae&actingredients=&tradeName=&Submit+Search=Submit+Search
- 4 http://www.plantwise.org/knowledgebank/datasheet.aspx?dsid=28291
- 5 http://www.iobc-wprs.org/pub/bulletins/iobc-wprs_bulletin_2008_34.pdf
- 6http://www.iobc-wprs.org/pub/bulletins/iobc-wprs_bulletin_2003_26_03.pdf
- 7http://www.iobc-wprs.org/expert_groups/2009_IOBC-wprs_WG_Integrated_Protection_of_Field_Vegetable_Crops_Meeting_Abstracts.pdf
- 8http://www.endureinformationcentre.eu/

o = more than 75% of the countries indicated that the tool is in practice

lo = more than 30% of the countries indicated that the tool is in practice

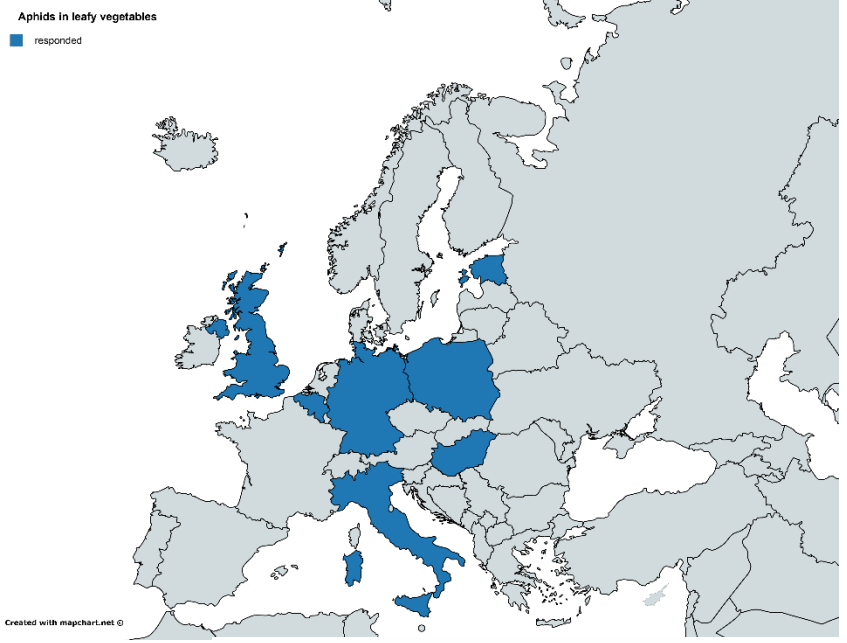
= more than 50% of the countries indicated a bottleneck

rotation, 1.2 cultivation techniques, 1.3 planting material, 1.4 water and nutrition management, 1.5 hygiene and quarantine measures, 1.6 conservation biological control, 2. monitoring, 3. decision support systems, 4.1 bio cal, 4.3 mating and feeding disruption, 4.4 biopesticides, 5. risk reduction of pesticides, 6.1 reduced doses, 6.2 reduced application frequency, 6.3 innovative pesticide application technologies, 7. anti-resistance strategy 8. of the success of the applied plant protection measures

D=is widely used in the country, ENVI= it would not be effective under the environmental conditions of the country, AGRO=not fitting to the agrotechnical practices, KNOWL= it is not widely known, or more research is needed, too expensive so it is not widely adopted

rkot, Blackberry, Black lack elder, Blue berry, Elderberry, ,European oseberry, Grape, Peach, spberry, Red currant, Sour trawberry, Sweet cherry	Number of times that 23 countries reported on the target group/Number of countries evaluated the availability	Evaluation criteria	IPM Tools																			
			Prevention								Monitoring DSS			Direct control measures					Reduced doses and pesticide risk re			
			1.1	1.2	1.3	1.4	1.5a	1.5b	1.5c	1.6	2a	2b	3	4.1	4.2a	4.2b	4.3	4.4	5	6.1	6.2	6.3	
a suzukii identified 11	9/12	PRACTICED	CH	HU,IT, NL,FR, SE,PT, GR	BE,SE, PT	PL,CH, HU,BE, SE,PT	CH,HU ,IT,UK, NL,BE, FR,DK, SE,PT, GR	CH,NL	IT,UK, NL,BE, GR	HU,BE, SE	PL,CH, HU,IT, UK,NL, BE,FR, DK,SE, GR	PL,CH, HU,IT, UK,BE, FR,SE	HU,UK ,BE,SE	PT	CH,HU ,UK,NL ,BE,FR, SE,PT	PL,CH, IT,UK, NL,BE, PT	CH,HU ,IT,UK, SE,PT, GR	CH,BE, PT	PL,HU, IT,UK, BE,PT	HU,NL, SE,GR	BE	SE	PL,CH HU,IT UK,NI BE,PT
		ENVI	PL,IT, UK,FR ,SE,PT	CH,BE	CH,HU ,UK,NL ,FR			PL,HU, IT,DK	CH,HU	UK	PT	NL,PT	CH,PT	GR,UK			NL,FR	IT,UK, FR,GR		CH,UK, BE,PT	HU	IT,BE	
		AGRO						SE,PT, GR	FR,DK, SE,PT						IT		PL	DK		DK	PL,IT		DK,SE
		KNOWL	BE	PL,DK	IT		PL,DK	BE,FR		PL,CH, SE		DK	PL,IT	PL,CH, HU,IT, BE,FR	PL,DK	HU		PL,HU, NL		PL,IT,F R	CH,FR	CH,HU ,FR,PT	
		BCD-NOM	HU									GR			GR	FR,DK, GR	BE					PL	

Summary evaluation for Aphids in leafy vegetables



Knowledge gap (research priority):

- Lack of IPM tools to control *Aphis nasturtii* in watercress

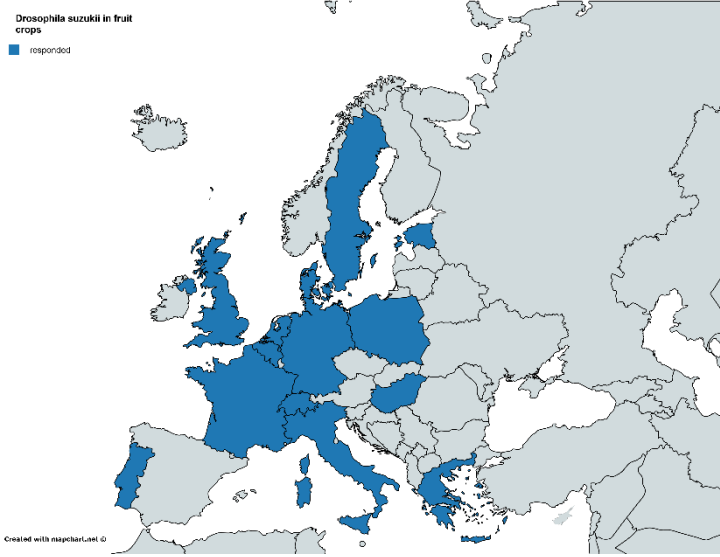
IPM Tool available but agrotechnical bottleneck:

- Biological control

IPM tool ready for knowledge sharing:

- Decision support systems, i.e. economic threshold levels
- conservation biological control
- innovative pesticide application technologies (seed treatment).

Summary evaluation for *Drosophila suzukii* in fruit crops



Knowledge gap (research priority):

- biological control
- conservation biological control
- innovative pesticide application technologies
- monitoring

IPM Tool available but

agrotechnical bottleneck:

- physical crop protection
- post-harvest clean up sprays

IPM Tool available but

economical bottleneck :

- physical crop protection

Summary evaluation for whiteflies/thrips in ornamentals/vegetables

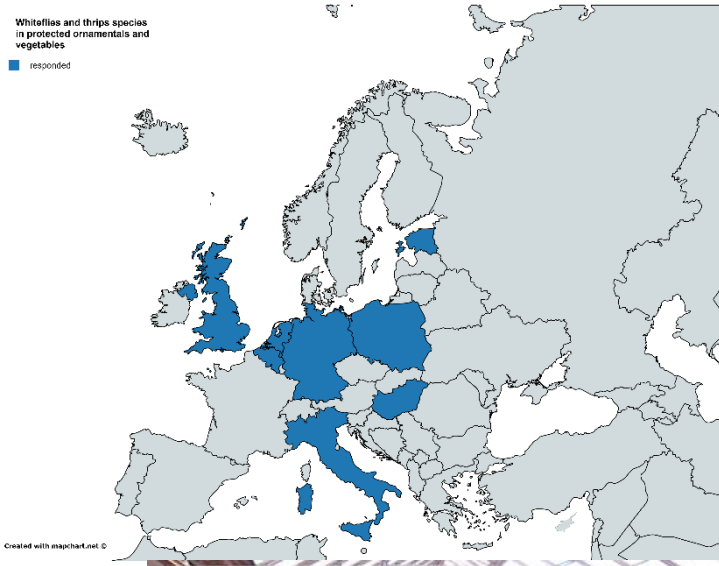
IPM Tool available but

economical bottleneck :

- biological control

IPM tool ready
for knowledge sharing:

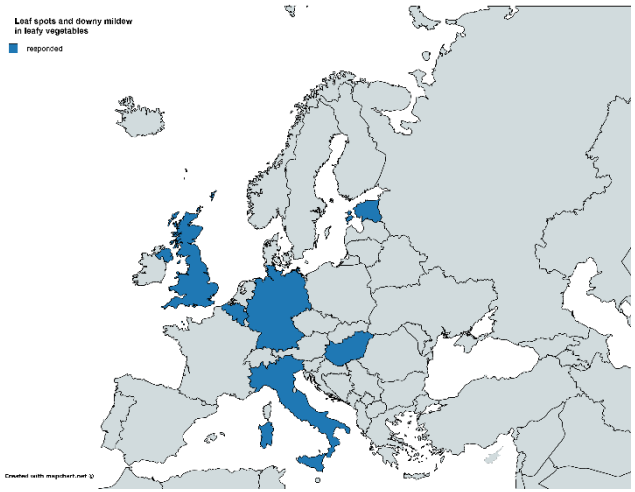
- biological control
- conservation biological control
- physical control tools
- resistant varieties



Summary evaluation for Leaf spots and downy mildew in leafy vegetables

Knowledge gap (research priority):

- lack of IPM tools for *Ramularia beticola* on beet leaves, *Peronospora valerianellae* in corn salad, *Cladosporium sp.* and *Peronospora farinosa f. sp. spinaciae* in spinach



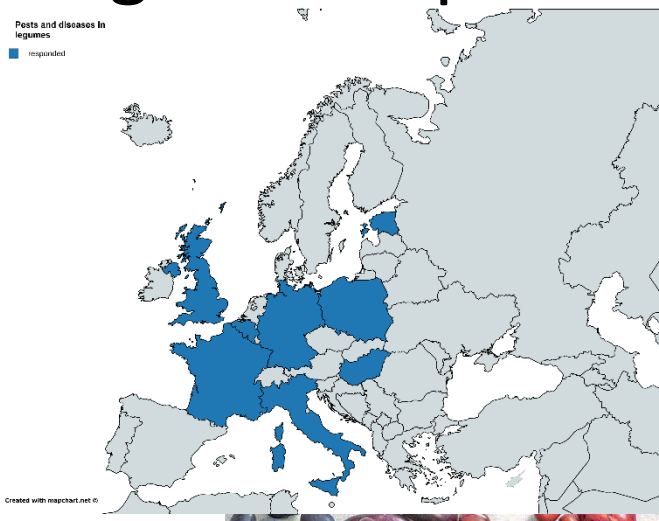
IPM Tool available but agrotechnical bottleneck :

- biological control
- application of reduced doses
- decision support systems for *Bremia lactucae*
- biological control, innovative pesticide application techniques for *B. lactucae*

IPM tool ready for knowledge sharing:

- decision support systems for *Bremia lactucae*
- biological control, innovative pesticide application techniques for *B. lactucae*

Summary evaluation for Invertebrate pests and diseases in legume crops



Knowledge gap (research priority):

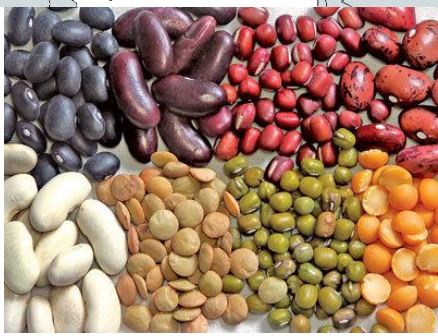
- biological control, biopesticides for *Delia platura*

IPM Tool available but agrotechnical bottleneck :

- Biological control and biopesticides
- seed treatment for *Delia platura*.

Not effective:

- Seed treatment for *Peronospora viciae* and aphids.



Not in practice for various reasons:

- Conservation biological control, decision support systems, physical control tools, the application of reduced dose of pesticides and innovative pesticide application technologies to control aphids, esp. *Aphis fabae*

Recommendations for the future
to be discussed…

IPM research inputs needed:

- *Aphis nasturtii* in watercress
- biological control, CBC, innovative pesticide application technologies, monitoring for *Drosophila suzukii*
- *Ramularia beticola* on beet leaves, *Peronospora valerianellae* in corn salad, *Cladosporium sp.* and *Peronospora farinosa f. sp. spinaciae* in spinach
- biological control, biopesticides for *Delia platura*

Recommendations for the future

Agronomic bottleneck:

- Biological control of aphids in leafy vegetables
- physical tool, post-harvest clean up sprays for *Drosophila suzukii*
- biological control, application of reduced doses for leafspots and mildew in leafy vegetables
- DSS, biological control, innovative pesticide application techniques for *B. lactucae*
- Biological control and biopesticides for pests and diseases in legumes, seed treatment for *Delia platura*

Economical bottleneck :

- physical crop protection for *Drosophila suzukii*
- biological control or whiteflies in protected crops

Recommendations for the future

Knowledge sharing:

- CBC, innovative pesticide application technologies for aphids
- biological control, CBC, physical control tools for whiteflies in greenhouses
- biological control, innovative pesticide application techniques for *Bremia lactucae* in leafy vegetables

General Networking

- resistant varieties for whiteflies in greenhouses
- DSS for aphids and for *Bremia lactucae* in leafy vegetables

Task 3.3: Lay the groundwork for the implementation of joint activities

Developed in close cooperation with relevant ERANET partners while focussing to Minor Uses

<u>Output of other ERANET activities are used:</u>

- Scenarious for coordinated activities beyond EC funded project period (Task 1.5);
- Guidance about future IPM network activities (D1.7);
- Priorities for the implementation of joint activities (Task 2.5);
- Final report on R&D for IPM, potential activities, partners, funding, scientific and technical resources (D2.5);

Task 3.3: Lay the groundwork for the implementation of joint activities

- Selected topics for 2016 Call: Do they cover minor uses? (known by the end of this year).
- Future beyond EC-funded project:
  - Frame of transnational cooperation, JPI FACCE ?
  - Potential for focussed Networks (on specific crops/solutions)?
- Synergistic work with Minor Uses coordination facility, with stakeholders, etc.

Thanks for your cooperation and input for our work and your attention today!