

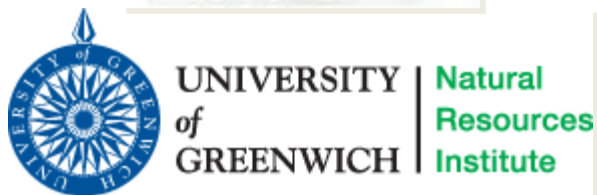
Softpest Multitrap

Management of strawberry blossom weevil
and European tarnished plant bug in
organic strawberry and raspberry
using semiochemical traps

Partners:









Latvian Plant Protection
Research Centre Ltd



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Department
of Economic Affairs FDEA
Agroscope Changins-Wädenswil
Research Station ACW

<p>Strawberry blossom weevil, SBW (<i>Anthonomus rubi</i>)</p>	<p>European tarnished plant bug, ETB (<i>Lygus rugulipennis</i>)</p>	<p>Raspberry beetle, RB (<i>Byturus tomentosus</i>)</p>
		
		
<p>The pest insects damage to be managed with traps are in <u>left</u>: <i>Anthonomus rubi</i>, a small weevil severing flower buds in strawberry and raspberry, <u>middle</u>: <i>Lygus rugulipennis</i>, a mirid bug causing misshapen strawberries, and <u>right</u>: <i>Byturus tomentosus</i>, a beetle with larvae feeding in raspberries. (Photos: N. Trandem)</p>		

Study sites 2007 and 2008



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The aim: To develop knowledge about how to manage populations of strawberry blossom weevil (*Anthonomus rubi*), European tarnished plant bug (*Lygus rugulipennis*) and the raspberry beetle (*Byturus tomentosus*) in organic strawberry and raspberry so that these two soft fruit crops can be grown without significant economic losses by these pests.

Work packages :

WP 0 Project management

WP 1 Chemical analysis of plant volatiles

WP 2 Pest insects in strawberry

WP 3 Pest insects in raspberry

WP 4 Trap design and lure development

WP 1 Chemical analysis of plant volatiles

WP leader: Anna-Karin Borg-Karlson, KTH

Task 1.1 Investigate and compare flower and host leaf volatiles from raspberry and strawberry as potential synergists of the strawberry blossom weevil (SBW) aggregation pheromone (KTH, UCPH)

Task 1.2 Identify flower and host volatiles tailored to the European tarnished plant bug (ETB) with potential synergy with male sex pheromone. Identify flower constituents that attract the females (KTH, NRI, UCPH, LPPRC).

Task 1.3 Identify host volatiles from unhealthy/dying (e.g. fungi infested) strawberry plants that might act as repellents (KTH) in order to add repellents in control strategy.

Task 1.4 Develop and produce lures based on plant volatiles for field testing. (KTH, NRI, BFP, LPPRC)

WP 2 Pest insects in strawberry

WP leader: Nina Trandem, BFP

Task 2.1 Investigate overwintering sites and seasonal distribution of European tarnished plant bug (ETB) and strawberry blossom weevil (SBW) in strawberry crops as affected by crop age, cropping methods and landscape parameters (BFP, EMR, UCPH).

Task 2.2 *Determine whether selected host plant volatile(s) identified in Task 1.2 are active as synergists for the sex pheromone in attracting tarnished plant bug (ETB) in strawberry, and whether selected host volatile(s) from raspberry identified in Task 1.1 are active as synergists in attracting strawberry blossom weevil (SBW) in strawberry. (BFP, BFO, UCPH, EMR, NRI, KTH, LPPRC).*

Task 2.3 *Determine whether the characteristic host volatiles from unhealthy/dying plants identified in Task 1.3 are active in repelling strawberry blossom weevil (SBW) in strawberry fields (BFP, KTH).*

Task 2.4 *Conduct large-scale field experiments to explore the density and pattern of trap deployment for tarnished plant bug (ETB) and strawberry blossom weevil (SBW) in strawberry for population suppression (BFP/BFO, EMR, UPCH, NRI, KTH).*

WP 3 Pest insects in raspberry

WP leader: Catherine A. Baroffio, ACW

Task 3.1 *Investigate overwintering sites and seasonal distribution of the strawberry blossom weevil (SBW) and raspberry beetle (RB) in raspberry crops as affected by crop age, cropping methods and landscape parameters (Year 1, 2; UCPH, ACW, BFO).*

Task 3.2 *Field evaluation of host plant volatile synergist(s) for the SBW-aggregation pheromone (year 2. KTH, ACW, BFO).*

Task 3.3 *Conduct large-scale field experiments to explore the density and pattern of trap deployment for SBW (Year 2, 3; ACW, UCPH, BFO)*

WP 4 Trap design and lure development

WP leader: Jerry Cross, EMR

Task 4.1 *Optimise trap designs and method of deployment for strawberry blossom weevil (SBW) mass trapping in strawberry and raspberry (EMR, LPPRC, ACW, BFO/BFP, NRI).*

Task 4.2 *Optimise trap designs and method of deployment for European tarnished plant bug (ETB) mass trapping in strawberry (EMR, LPPRC, KTH, NRI).*

Task 4.3 *Conduct field experiments to determine whether the same trap design can be used with acceptable results for SBW and ETB on strawberry, and whether the lures can be used in the same trap without interference (EMR, LPPRC, NRI).*

Task 4.4 *Conduct field experiments to determine whether the same trap design can be used with acceptable results for SBW and raspberry beetle (RB) on raspberry, and whether the lures can be used in the same trap without interference (ACW, NRI, BFO, BFP).*

WP0 Project management <i>Coordinator:</i> <i>Atle Wibe, BFO</i>	Task	Project year																	
		1						2						3					
		Project months						Project months						Project months					
		02	04	06	08	10	12	14	16	18	20	22	24	26	28	30	32	34	36
WP1 Chemical analysis plant volatiles <i>Leader:</i> <i>Anna-Karin Borg-Karlson, KTH</i>	1.1	■	■	■	■	■	■	■	■	■	■	■	■						
	1.2	■	■	■	■	■	■	■	■	■	■	■	■						
	1.3		■	■	■	■	■		■	■	■	■	■						
	1.4		■	■					■	■				■	■				
WP2 Pest insect in strawberry <i>Leader:</i> <i>Nina Trandem, BFP</i>	2.1	■	■	■	■	■	■												
	2.2							■	■	■	■	■	■						
	2.3								■	■	■	■	■						
	2.4		■	■	■				■	■	■	■	■	■	■	■			
WP3 Pest insects in raspberry <i>Leader:</i> <i>Catherine Baroffio, ACW</i>	3.1	■	■	■	■	■	■												
	3.2							■	■	■	■	■	■						
	3.3		■	■	■				■	■	■	■	■	■	■	■			
WP4 Trap design and multitrap development <i>Leader:</i> <i>Jerry Cross, EMR</i>	4.1		■	■	■				■	■	■	■	■						
	4.2		■	■	■														
	4.3								■	■	■	■	■	■	■	■			
	4.4													■	■	■			

Expected results:

Effective, pest-specific mass trapping in strawberry and raspberry will be developed and combined into single multitrap for the target crops. The work will target organic soft fruit growers in all countries in Europe where these pests are damaging

Dissemination plan and/or exploitation of results:

- Project reports for funders
- 4 articles in peer-reviewed journals
- Proceedings in connection to international and national conferences
- Articles in professional magazines and journals