

# Rain cover trial WUR/Randwijk

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# Introduction



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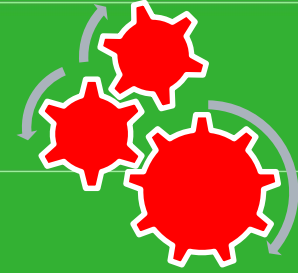
## Purpose

- System innovation for (large step in) independancy of chemical crop protection

(at least no chemicals from EU-list “candidates for substitution”; no chemicals with risks for ...)

- Priority: natural and biological crop protection
- Stimulate pollinators and natural predators
- Succesfull prototype in 2022 (proof of principles)

# Analysis problems EU-list



*EU-list fungicides:*

- 1. Fruit rot/fruit skin diseases**
2. Scab

*EU-list insecticides:*

- 1. Apple blossom weevil** (Anthonomus pomorum)  
**apple sawfly,** (Hoplocampa testudinea)
2. **Green capsid bug,** (Lygocoris pabulinus)  
**rosy apple aphid** (Dysaphis plantaginea)

# Production system Protected Apple Cult. (PAC)

- Diseases:

- **Keep the crop dry:**

full rain cover

rain water storage/re-use



6 apple cvs

1 pear cv



- Powdery mildew:

no permanent rain cover

(cultivar), sanitation, **chemicals**

# Pest control

Belangrijkste plagen appel	potentiële relevantie van natuurlijke plaag-bestrijding			
	0	1	2	3
groene appelwants	■	■		
roze appelluis, appelbloesemkever, fruitmot, appelzaagwesp, wintervlinder		■	■	
bladrollercomplex			■	■
kommaschildluis, groene appeltakluis, bladmineerders, appelgrasluis, appelbloedluis			■	■
vruchtbladroller, fruitspintmijt, appelroestmijt				■
-				■
-				■

1. Stimulation natural predators (flower borders)
2. Biological control (3 products)
3. Pheromones (Isomate CLS Plus; experimental)

## 4. *Physical measures*

- a. *Traps (apple blossom weevil, apple sawfly)*
- b. *Walls Cravo Rafter (green capsid bug, August)*
- c. *Roof Cravo Rafter (rosy apple aphid, October)*

# Use of chemical agents

(herbicides included, pheromones excluded):

	<b>Number chemical sprayings</b>	<b>Number Chemical agents</b>
<b>IPM</b>	<b>25</b>	<b>20</b>
<b>Hypothesis PAC</b>	<b>0-6</b>	<b>0-3</b>
<b>Prediction PAC 2020</b>	<b>5</b>	<b>3</b>

# Thank you for your attention



## “Thinktank” Protected Apple Cultivation:

**WUR:** Rien van der Maas (projectleader),

Marcel Wenneker, Herman Helsen, Peter Frans de Jong,

Karin Winkler, Rob van Tol, Arjen de Groot, Marianne Groot, Peter van Elk,

Marc Ravesloot, Dalphy Harteveld, Bert Lotz, Jurgen Kohl

**Fruitgrowers:** Berend Jan van Westreenen, William Pouw, Pieter Jans Jansonius

**Fruitconsult:** Henny Balkhoven, Jan Peeters

**VGB Watertechniek:** Theo Heesakkers

Subsidized by

# Biological control

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- Introduction of predatory mites from neighboring orchards  
(against fruit spider mite and apple rust mite)
- *Bacillus thuringiensis* subsp. *aizawai*/XenTari  
(against winter moth (*Operophtera brumata*))
- *Cydia pomonella* granulose virus/Madex Plus  
(against codling moth (*Cydia pomonella*);  
when Isomate feromones are not effective)



# Feromones

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Isomate CLS Plus:

- Codling moth (*Cydia pomonella*)
- main leafroller species:
  - Pandemis heparana
  - Archips podana
  - Adoxophyes orana
  - Spilonota ocellana