

Skadegörare i ekologisk äppelodling i Sverige - Vad forskar vi på i framtiden?

Marco Tasin

Integrated Plant Protection

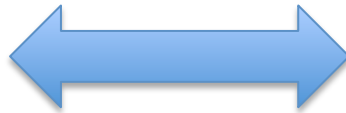
SLU Alnarp

"Framtidens ekologiska produktion av äpple i Norden"

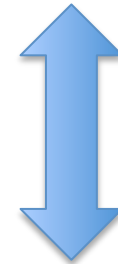
Organic and IPM through co-operation

(projects are co-operation based)

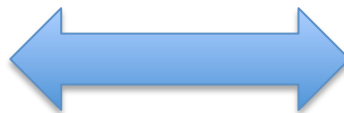
Research



Growers



Companies



Field Advisors

Key pests

Web-based forecasting of Tortricids



• Optimization of pesticide use

• Reduction of pesticide dependency

Mating disruption of tortricids



Forecasting of sawfly



• Optimization of biopesticides

• Elimination of unnecessary insecticide use

Warning system for apple fruit moth



• Reduction of the impact on orchard resilience

Natural enemies (resilience)

Functional biodiversity in orchards



• Increased performance of natural enemies

• Effect of pesticides on natural enemies and biocontrol

Management effect on natural enemies



Semiochemicals and conservation biological control



Habitat manipulation



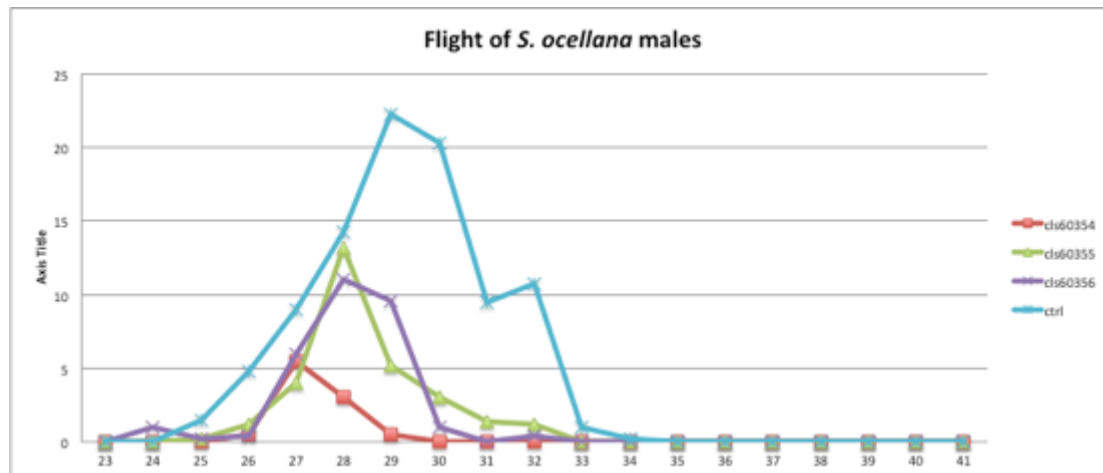
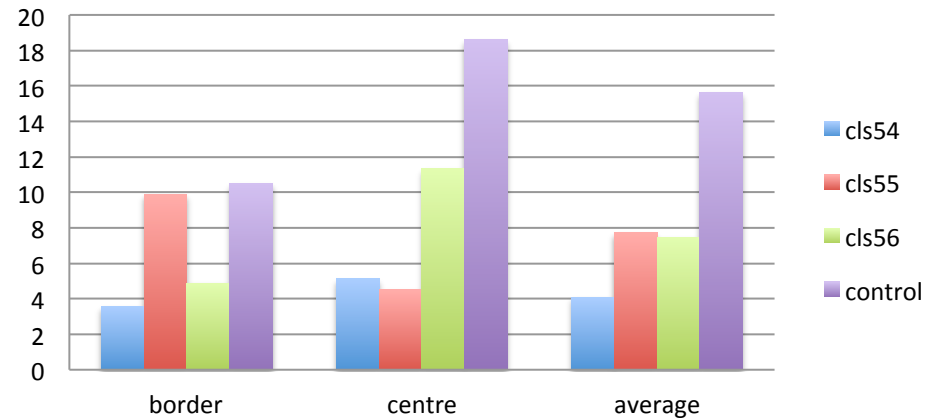
• Key natural enemies and cycles

Optimized pest control and low environmental impact

Field experiment with new improved pheromone formulation (*S. ocellana*) - 2014

- *Cydia pomonella*
- *Pandemis heparana*
- *Adoxophyes orana*
- *Archips podana*
- *Archips rosana*
- *Spilonota ocellana*

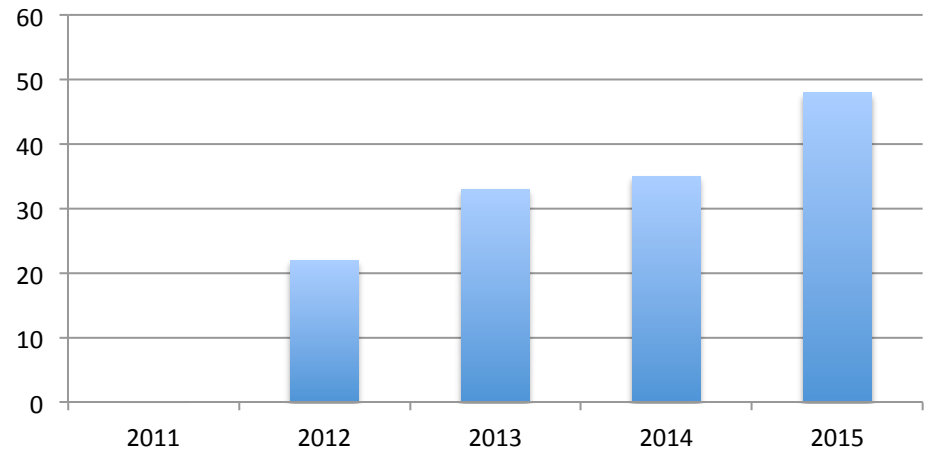
Damage at harvest as % of infested fruits in orchard G and K



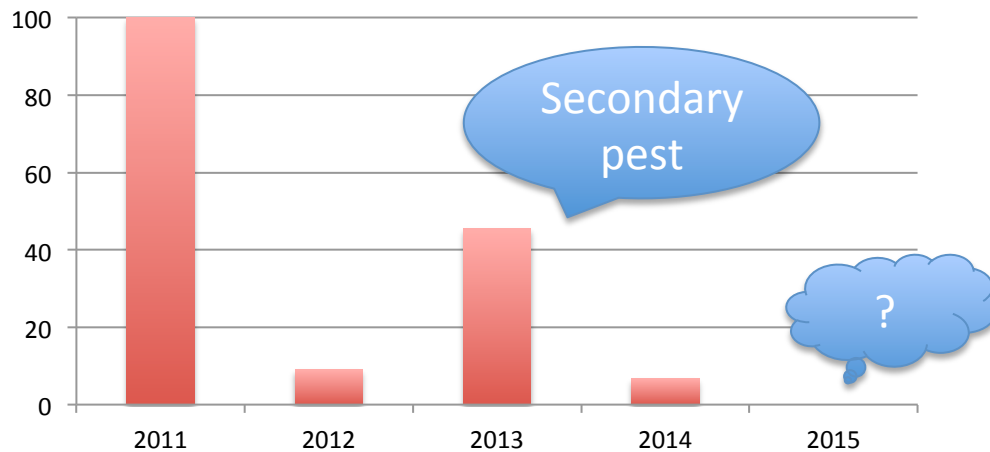
....to be continued in 2015

Multispecies MD: main result (2012-2014)

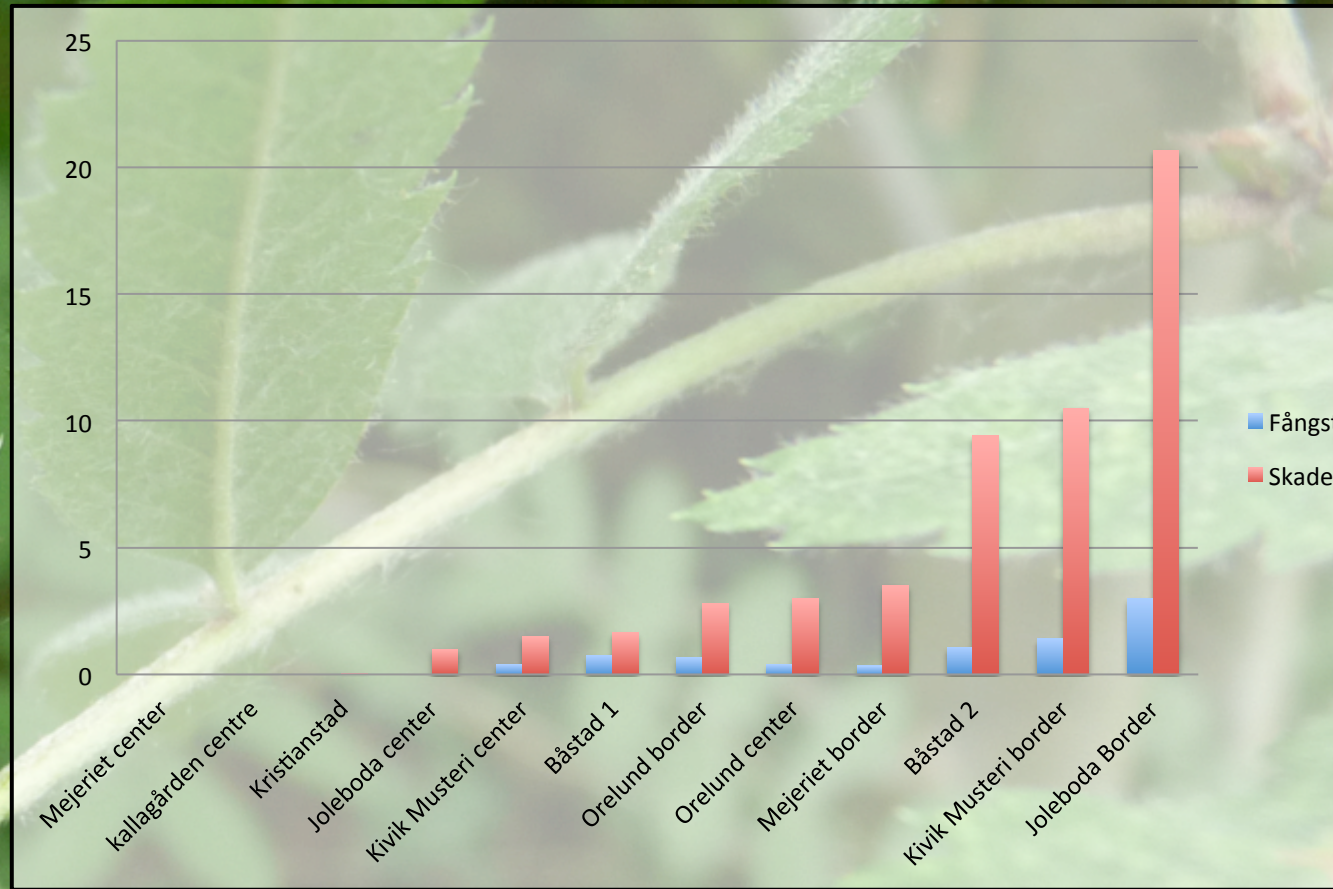
Hectare Isomate CLS



Insecticide use (%)

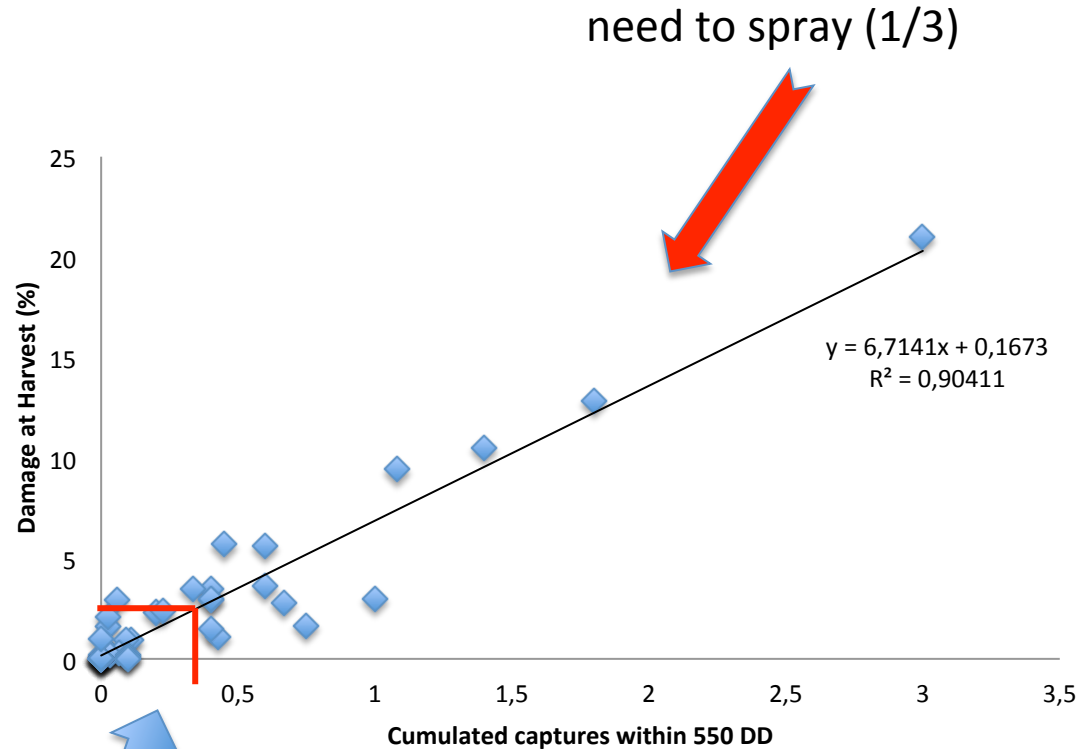


Apple Fruit Moth attack and cairomone catches (Sweden, 2014)



Apple Fruit Moth – monitoring with the kairomone

(Skåne, Hardanger, Telemark, Sogn 2012-2014)

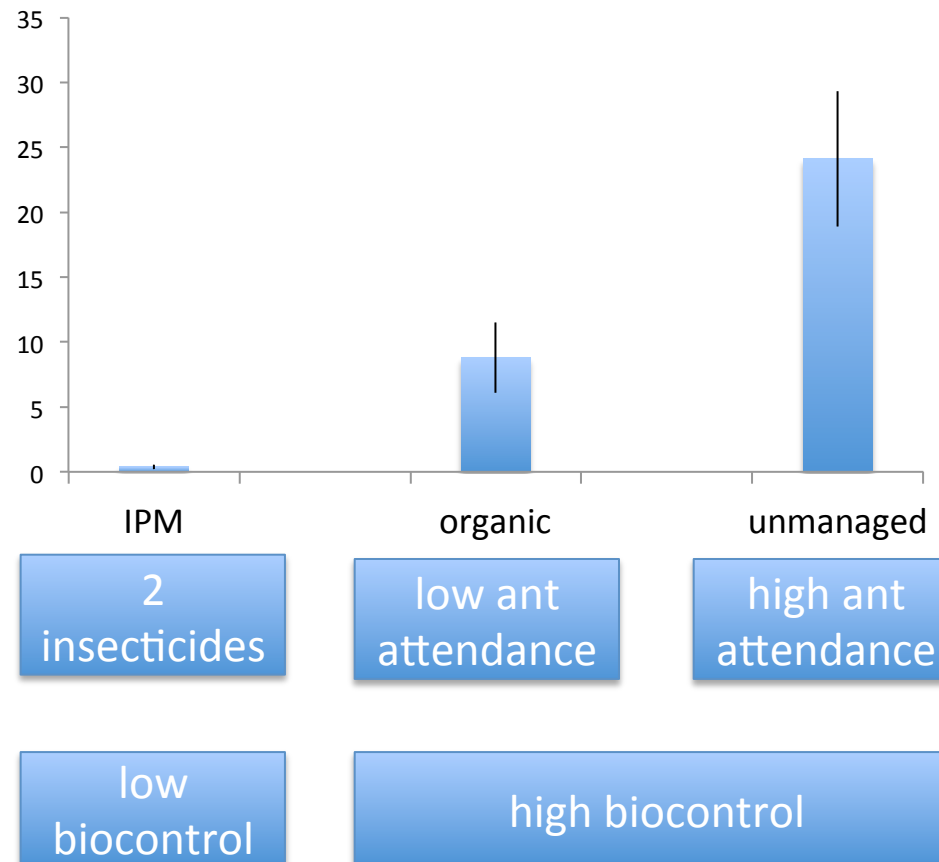


no need to spray (2/3)



Knudsen & Tasin, 2015

Damage by RAA (2014)



Timing of *Quassia amara* application (basic substance?)

See also the Poster Wo 24

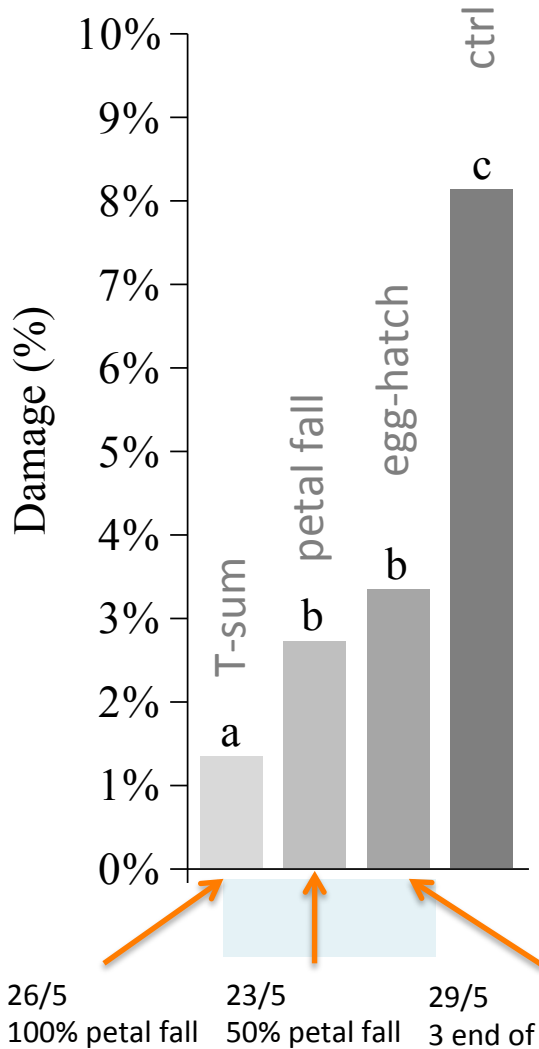


Photo Dipesh Neupane



Photo Weronika Swiergiel, Dipesh Neupane

Our experience with pests showed:

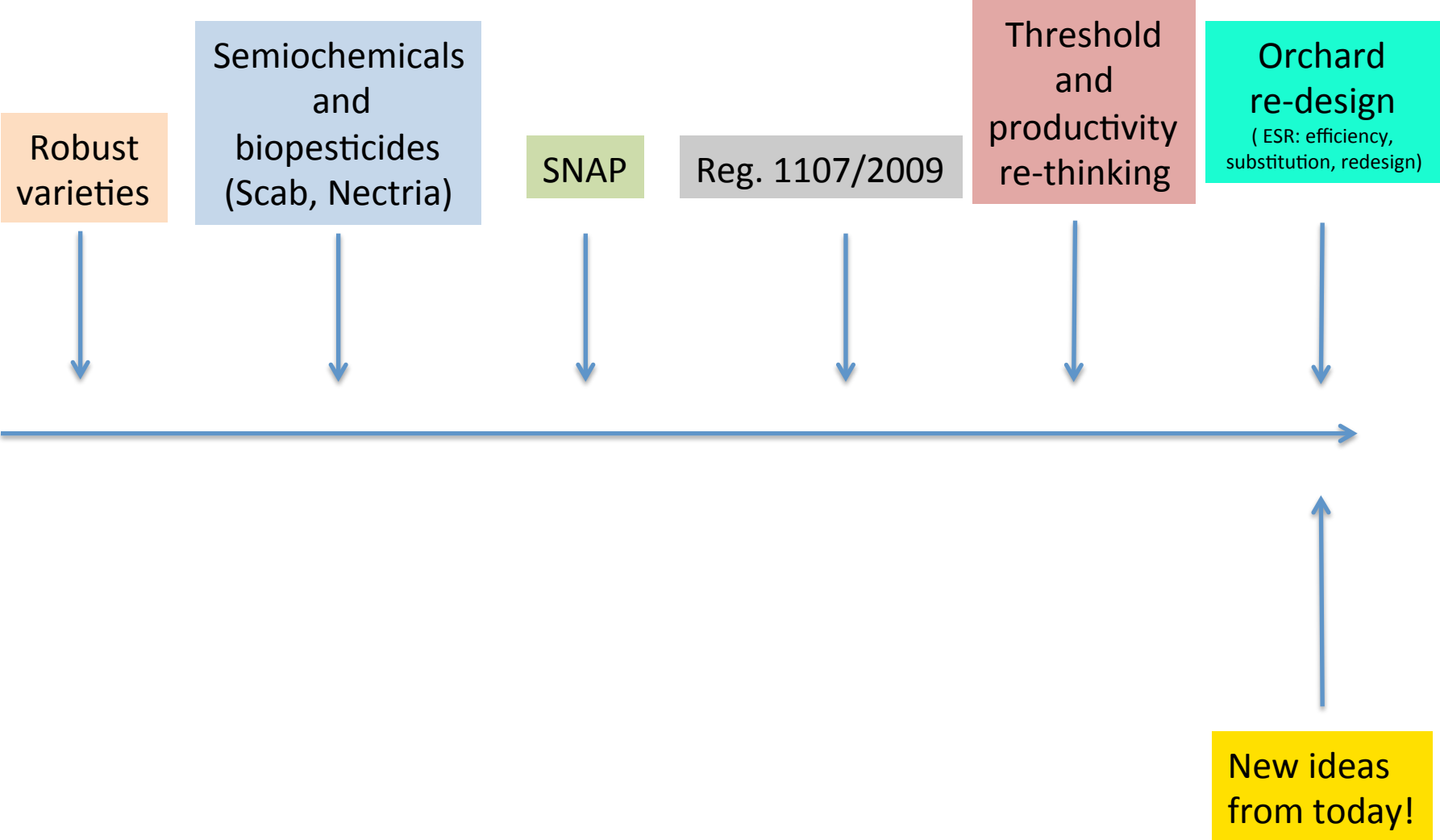
Tortricids: MD is a reliable alternative to BT
(improving the formulation toward *S. ocellana*)
(field scouting)
(registration: 2016?)

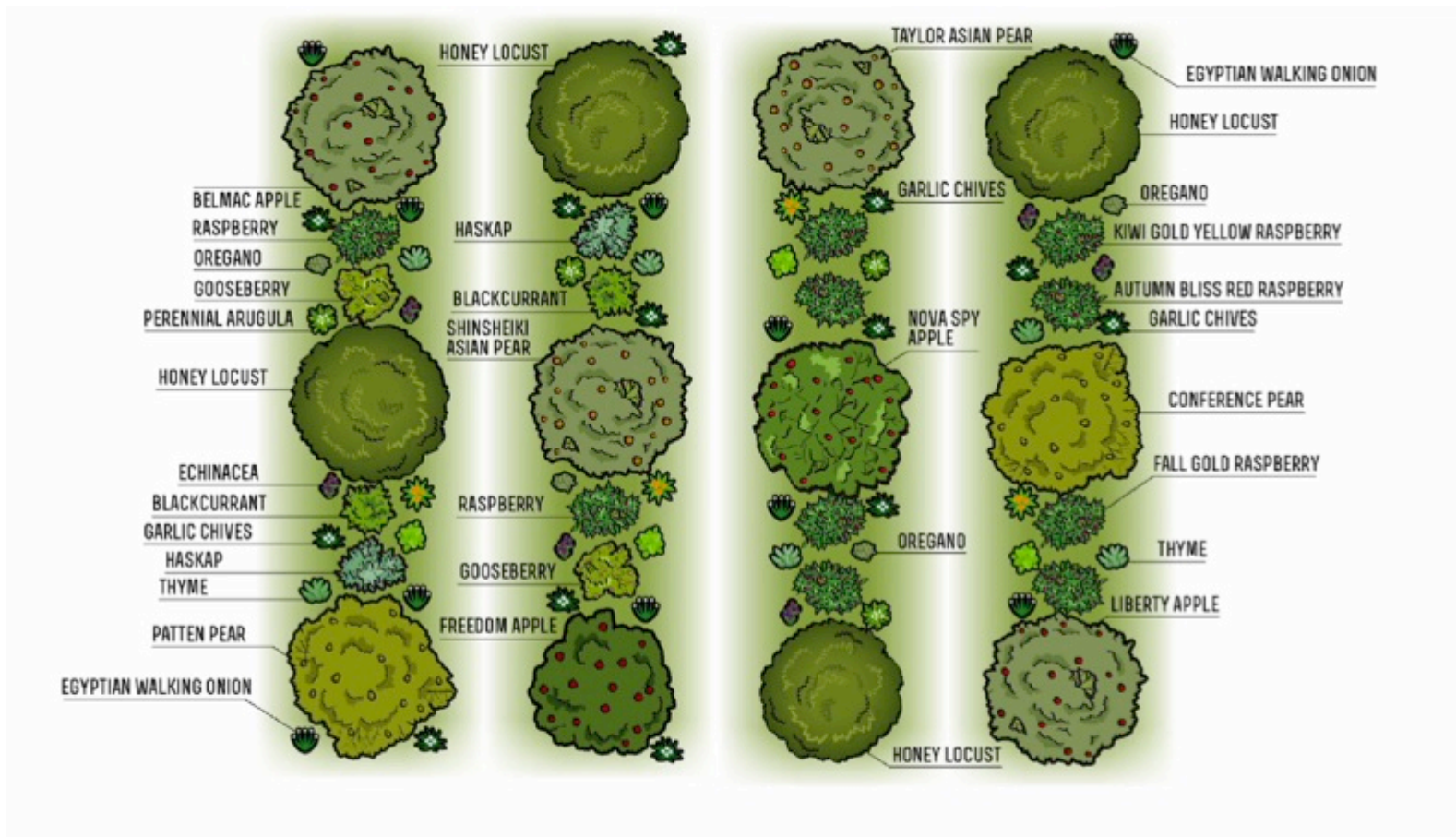
Apple Fruit Moth: the kairomone trap is efficient
(reduction of insecticide use – oil?)
(less and less damages over the last decade > climate change)

Rosy Apple Aphid: biocontrol has a very high potential
(reduction of insecticide disturbance)
(provision of non-crop vegetation and shelters)
(habitat manipulation to divert ant attendance)

Apple Sawfly: *Quassia amara* showed a high efficacy
(standardization of the biocidal activity)
(registration as a base substance in the EU; Reg. 1107/2009)

The organic apple toolbox

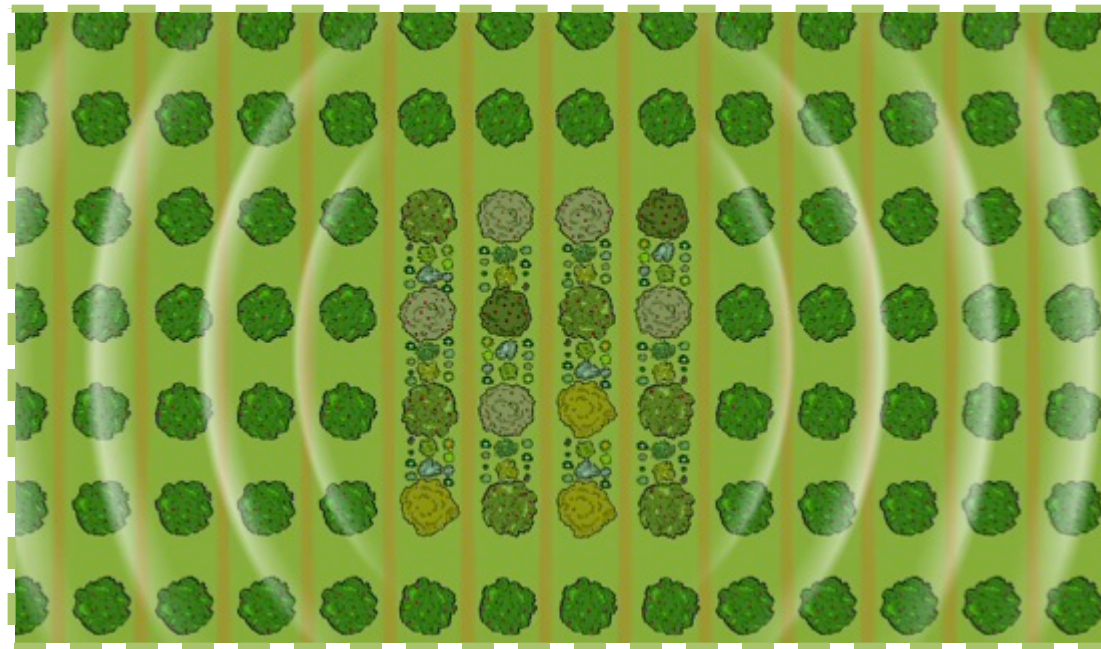




Efficiency, Substitution and Re-design
 (Multifunctionality, polyculture, sustainability)

“Cultivators of the Earth are the most valuable citizens.
They are the most vigorous, the most independent, the most virtuous
and they are tied to their country and wedded to its liberty and interest
by the most lasting bands”

Thomas Jefferson



EU: -10-20% of the growers
(increase in food no needed)

Rural development and growers viability

The role of Organic production in providing ecosystem services