KOPPERT
BIOLOGICAL SYSTEMS

Obstacles and solutions in pest management in organic greenhouse horticulture in practice nowadays

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OVERVIEW

- Koppert history
- Pollination with bumble bees
- Spider mite control
- Blowing in the wind
- The use of mirids
- White fly control
- Mealybugs
- Aphid control
- Difficult and new pests


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HISTORY

Original packaging first *Phytoseiulus* from Switzerland

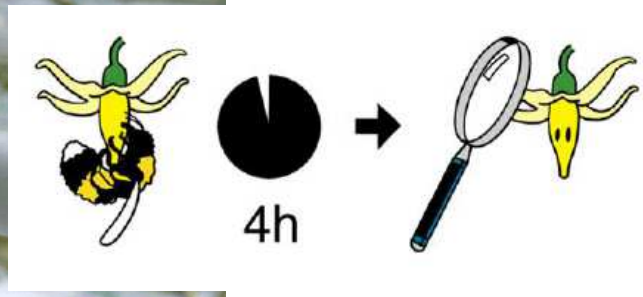
First commercial fair (live rearing system of P.p.)

HISTORY

Product range nowadays:

- Beneficial insects, mites, 50 species in > 200 types of packaging
- Pollinators (bumble bees, flies)
- Microbial products, (>250)
- Sticky traps, pheromones …

POLLINATION



POLLINATION

Artificial lighting in tomato, disorientated bumble bees. No UV.

Wireless Bee home. Nest boxes can be opened and closed between 10-2

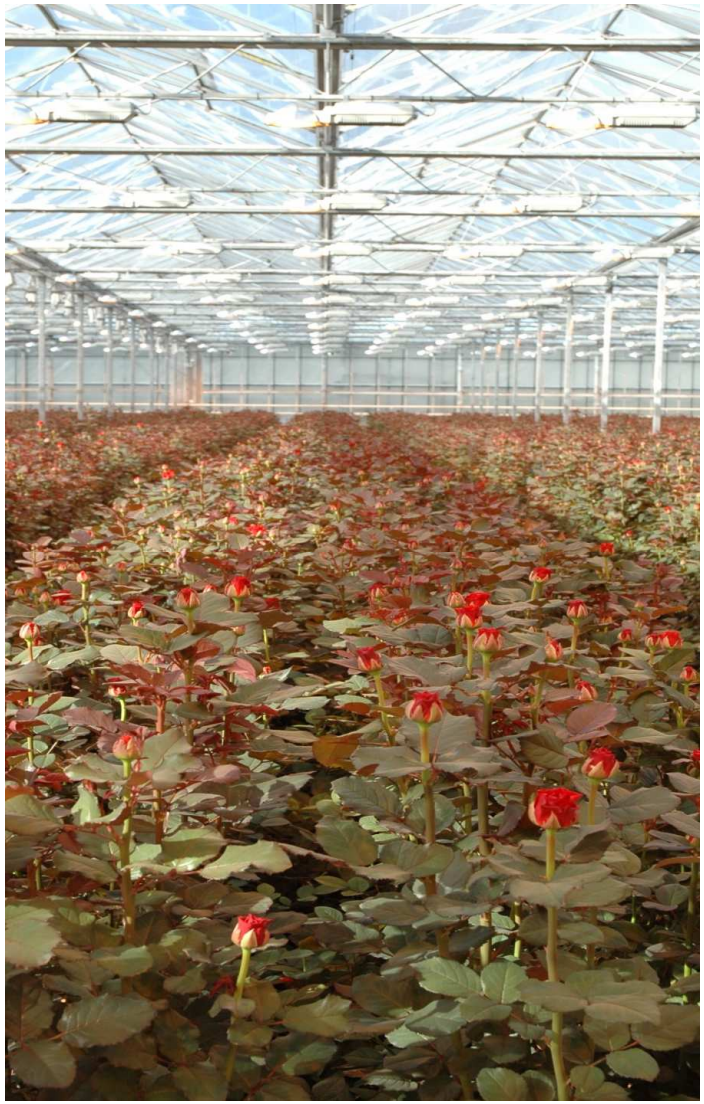
SPIDER MITE CONTROL

Chemically almost impossible

With predatory mites relatively easy


Phytoseiulus persimilis

SPIDER MITE CONTROL



Distribution of beneficials can be:

- Time consuming
- Uneven
- Or even impossible

BLOWING (MITES) IN THE WIND

BLOWING IN THE WIND

Extremely good distribution.

Also small blowers available

WHITE FLY CONTROL

Greenhouse whitefly

Trialeurodes vaporariorum

Silverleaf white fly

Bemisia tabaci

WHITEFLY CONTROL

Different release systems

- Sachets (bran, bran mites, predatory mites)
- Cards with parasitoid pupae

THE USE OF MIRIDS

Mirids can eat a wide variety of prey species

If prey is scarce they can also live from plant juices

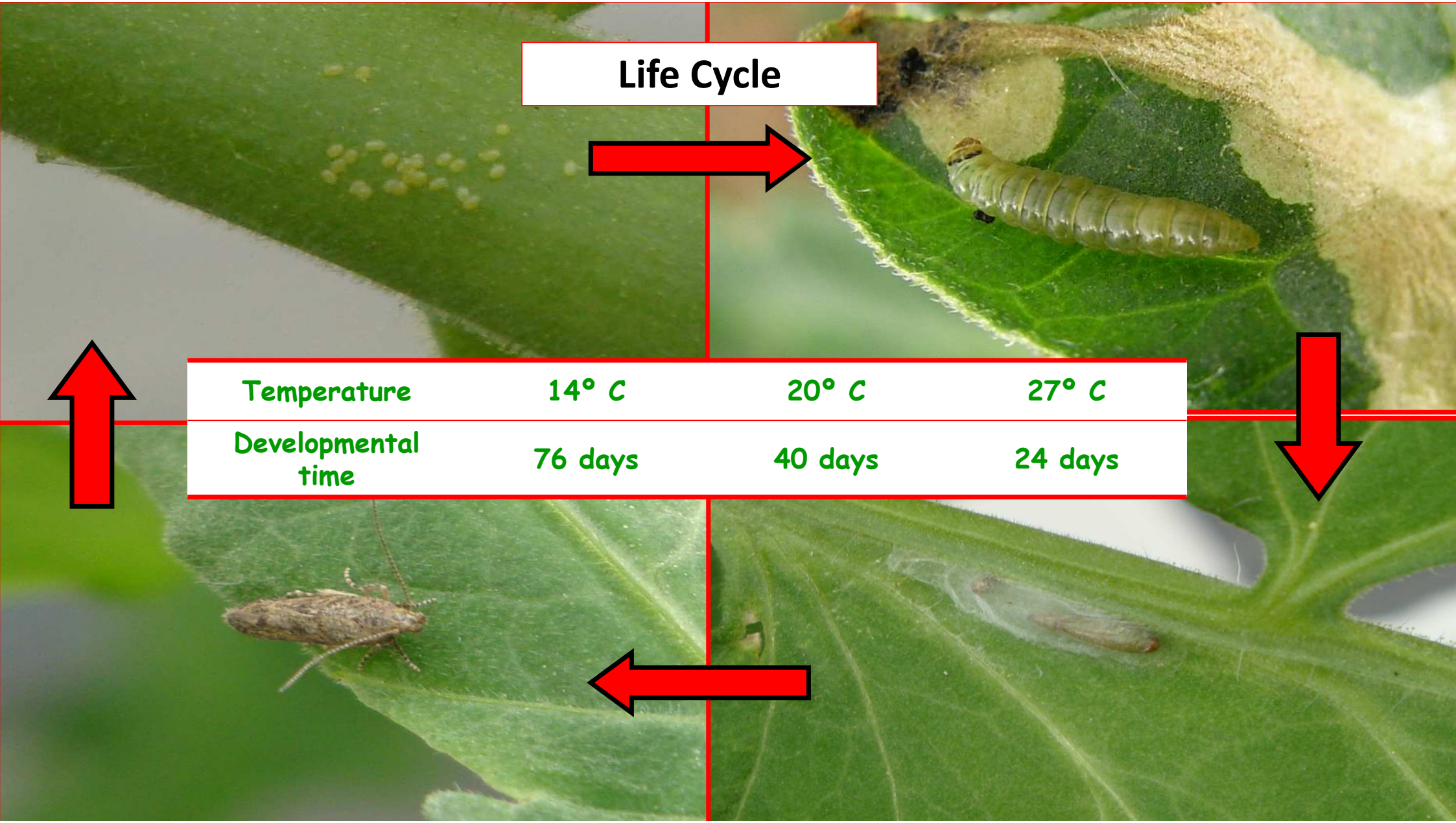
Building up a population can take some time, but when settled they will not fluctuate with prey density

“Standing army”

Sometimes plant or fruit damage can be an issue

Macrolophus pygmaeus

A new invader (2006) : *Tuta absoluta* , tomato leafminer


Life Cycle
Temperature
14° C
20° C
27° C
Developmental time
76 days
40 days
24 days

THE USE OF MIRIDS

Nesidiocoris tenuis

Tuta →

Tuta + Nesi →

MEALYBUGS

Cryptobug-L larva

Adult Cryptobug

- Mealybugs are an increasing problem (roses, pot plants, etc.)
- Adult Cryptolaemus tend to fly away
- Larvae stay

- New product:
  Cryptolaemus montrouzieri larvae
- Pack size: 500 ml bottle
  Contains: 1000 larvae in buckwheat hulls

APHID CONTROL

APHID CONTROL

Myzus nicotianae “red Myzus”

APHID CONTROL

Aphid control with parasitoids is often disrupted by hyperparasitoids

Is it possible to to work with the gall midge *Aphidoletes aphidimyza* preventively?

In order to keep aphid population as low as possible before introducing parasitoids.

Less mummies, less hypers…

Alloxysta victrix

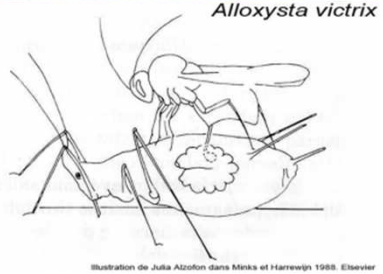
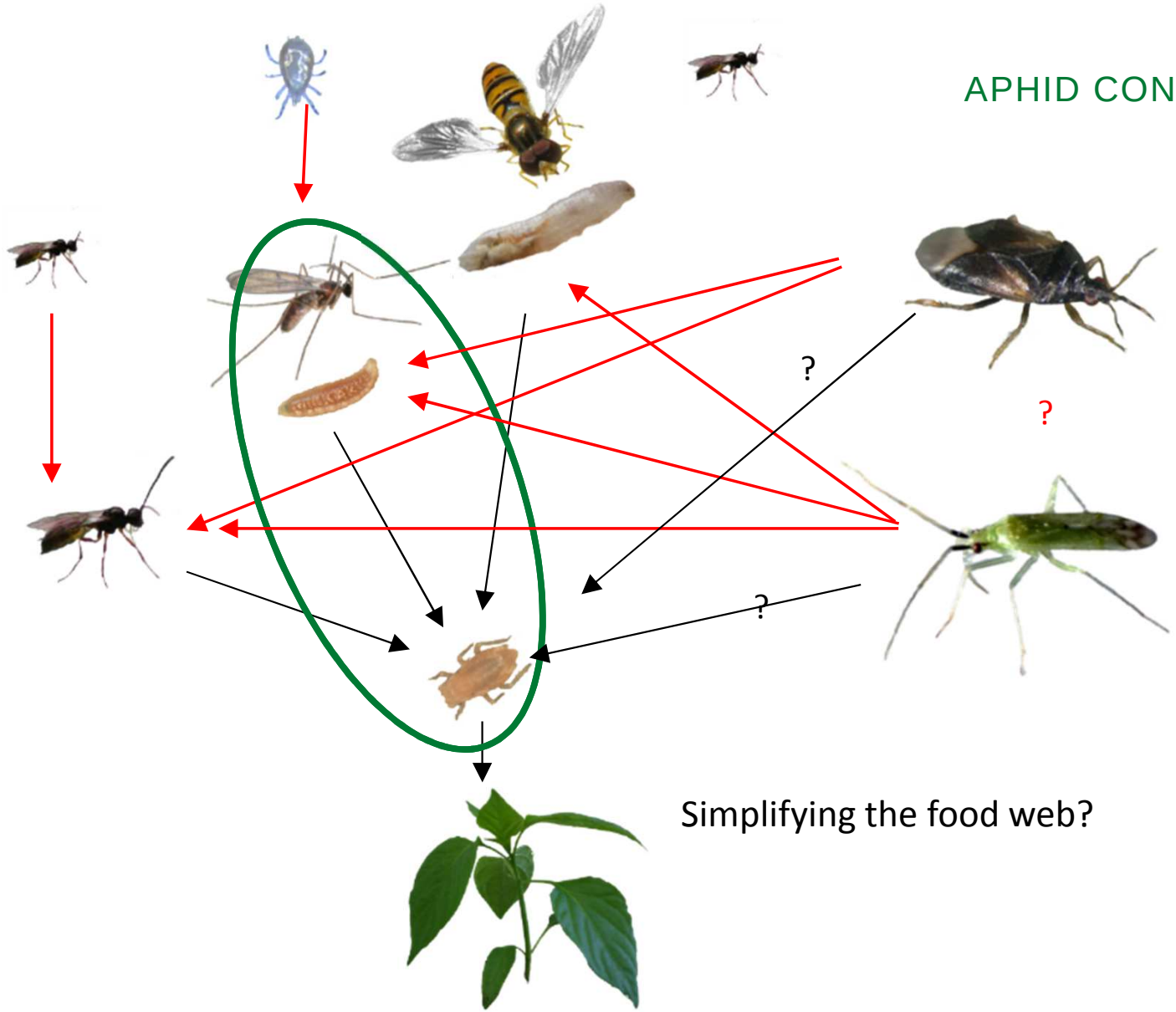


Illustration de Julia Alzofon dans Minks et Harrewijn 1988. Elsevier

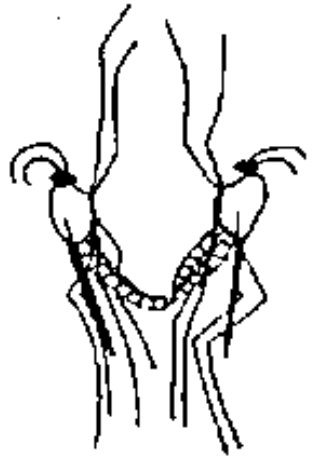
APHID CONTROL



Simplifying the food web?

APHID CONTROL

Aphidoletes aphidimyza



APHID CONTROL

APHID CONTROL

Traditional system with bankerplants and parasitoids

Treatment with only Aphidoletes

- 4 hectare
- From week 5 every two weeks 2 Aphidoletes / m^2
- Sampled every two weeks with small bankers
- Releasing parasitoids when aphids are found

Results

- Continuous presence of gall midge larvae on all small banker plants (feb - juli)
- Aphelinus was only found in March - April. Beginning only close to bankers
- “Aphelinibank” greenhouse 2 times corrected with pirimicarb against Macrosiphum euphorbiae
- Aphidend greenhouse , 1 time Myzus found (with Aphidoletes larvae present) Release of A*. colemani.* Under control.
- Half July both greenhouses went chemical because of caterpillars.
- Good result, with limited costs

DIFFICULT AND NEW PESTS

Thrips

Echinothrips

Tomato russet mite

Caterpillars (e.g. *Chrysodeixis*)

Lygus

Nezara viridula, stink bug

Drosophila suzukii

Thank you for your attention !

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