

The current status of the tomato borer *Tuta absoluta* in Greece and Cyprus

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National Agricultural
Research Foundation



Agricultural Research Institute



منظمة وقلية
النباتات للشرق
الاقصى
NEAR EAST PLANT
PROTECTION
ORGANIZATION

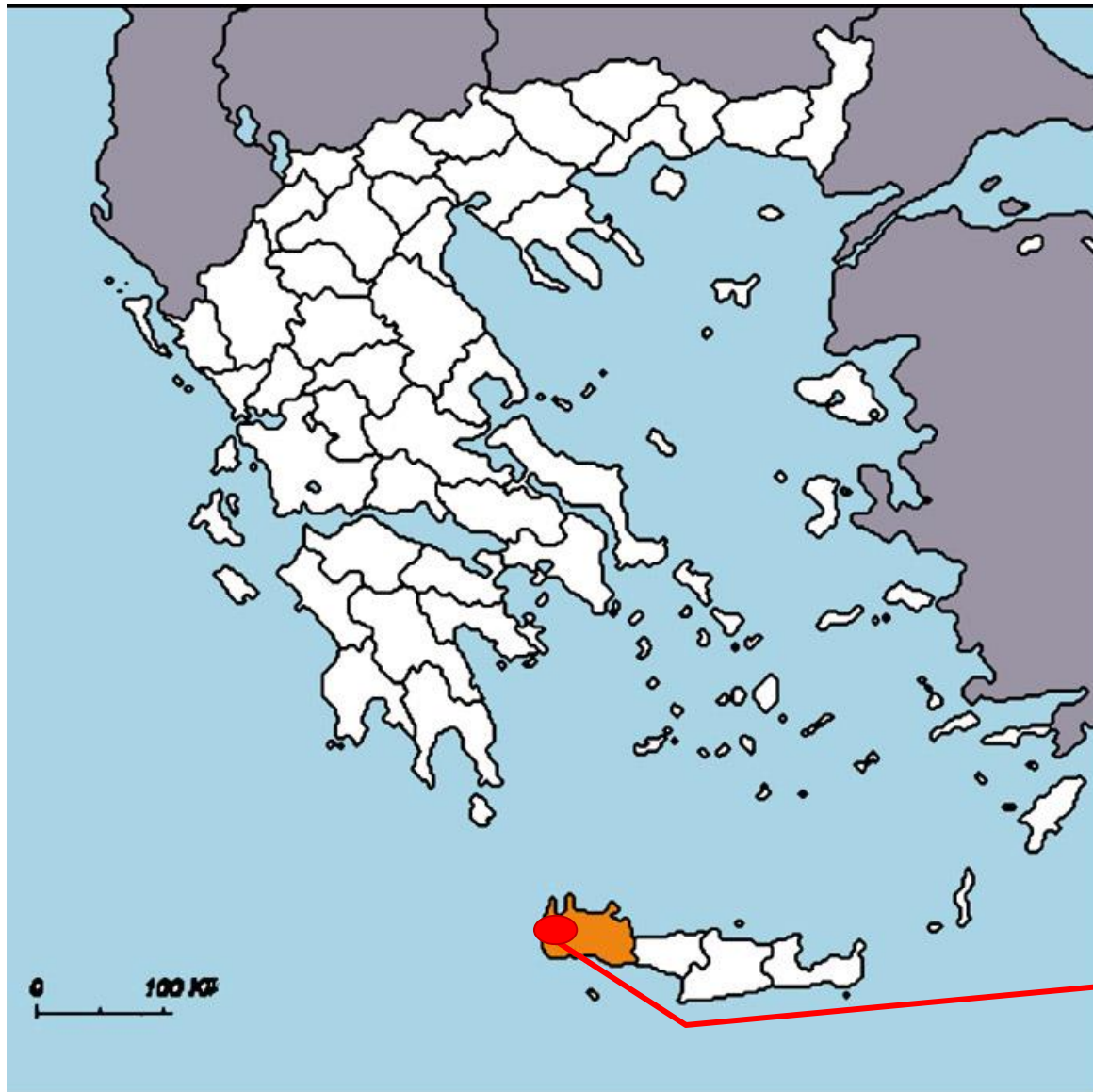
EPPO/IOBC/FAO/NEPPO

Joint International Symposium on management of *Tuta absoluta*
Agadir, Morocco, November 16-18, 2011

Tuta absoluta in Greece and Cyprus



Detection of *Tuta absoluta* in Greece



June 2009

First
Report of
Tuta absoluta

Detection of *Tuta absoluta* in Greece

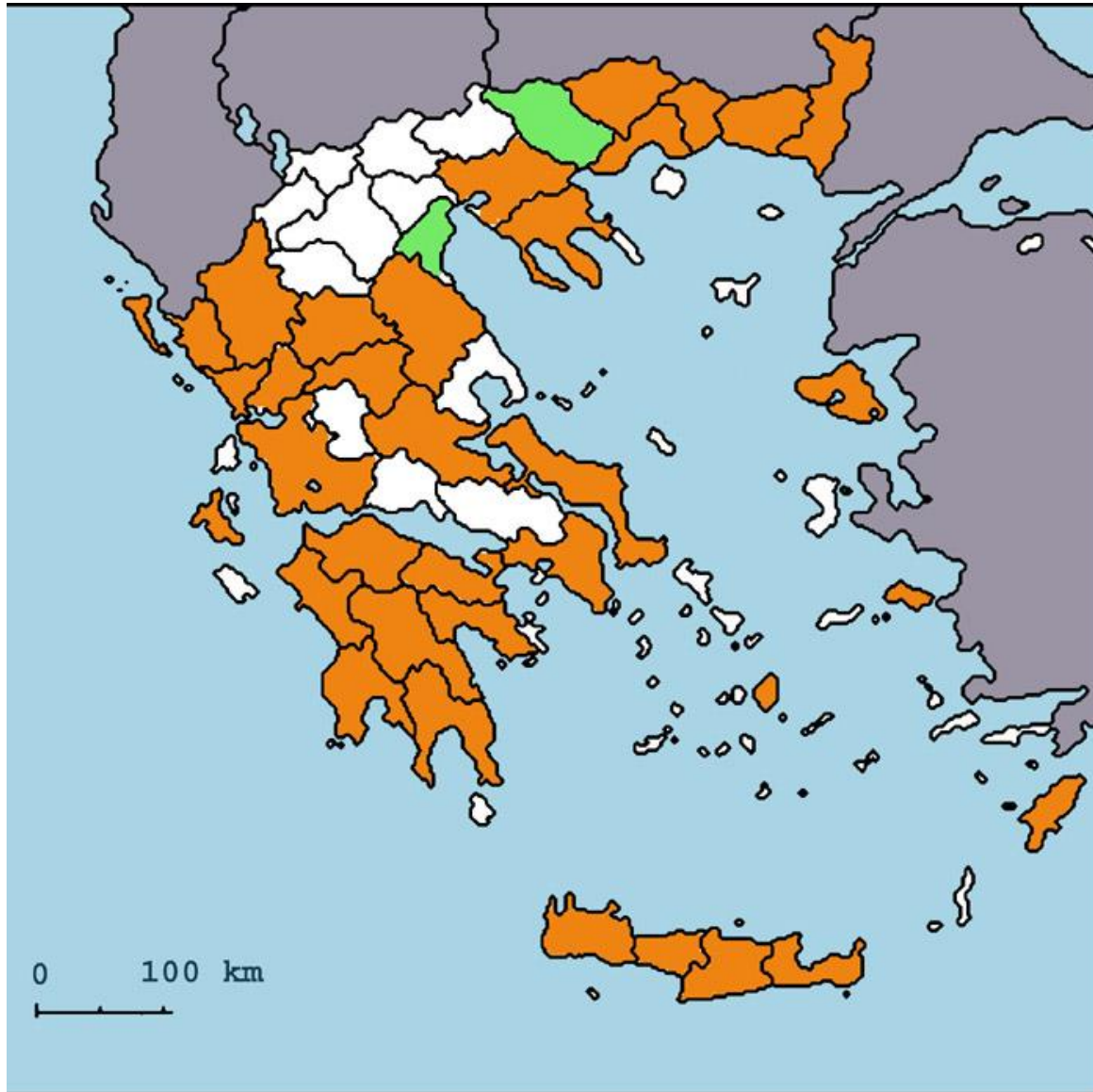


Official Survey
Ministry of Agriculture

 **Υπουργείο Αγροτικής Ανάπτυξης & Τροφίμων**
ministry of rural development and food

September 2009

Detection of *Tuta absoluta* in Greece



Official Survey
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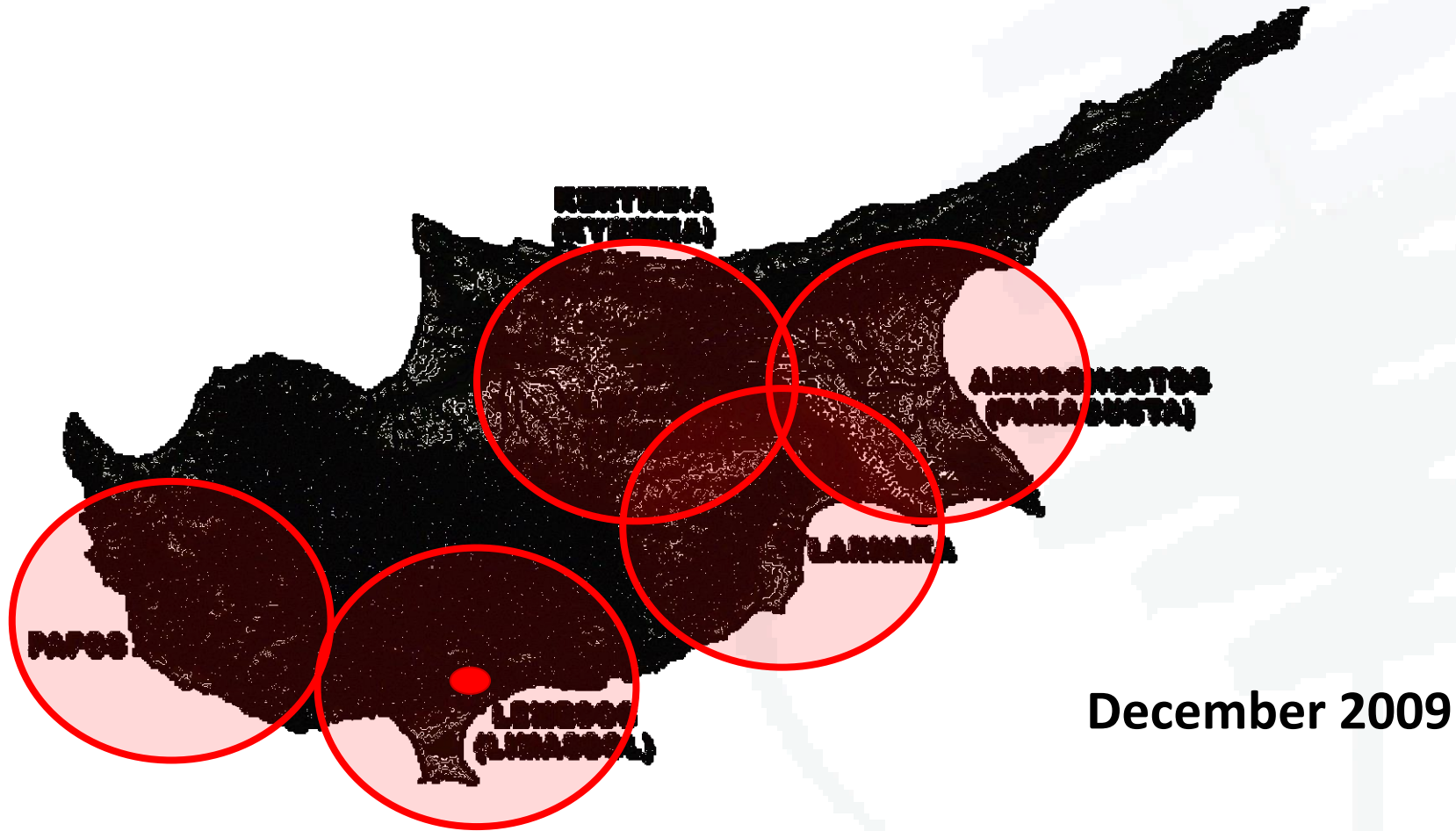
November 2009

Detection of *Tuta absoluta* Cyprus



November 2009
First
Report of
Tuta absoluta

Detection of *Tuta absoluta* Cyprus



December 2009

Initial damage levels by *Tuta absoluta*



Open field tomato / Agia Pelagia, Crete / Aug. 2009



Initial damage levels by *Tuta absoluta*



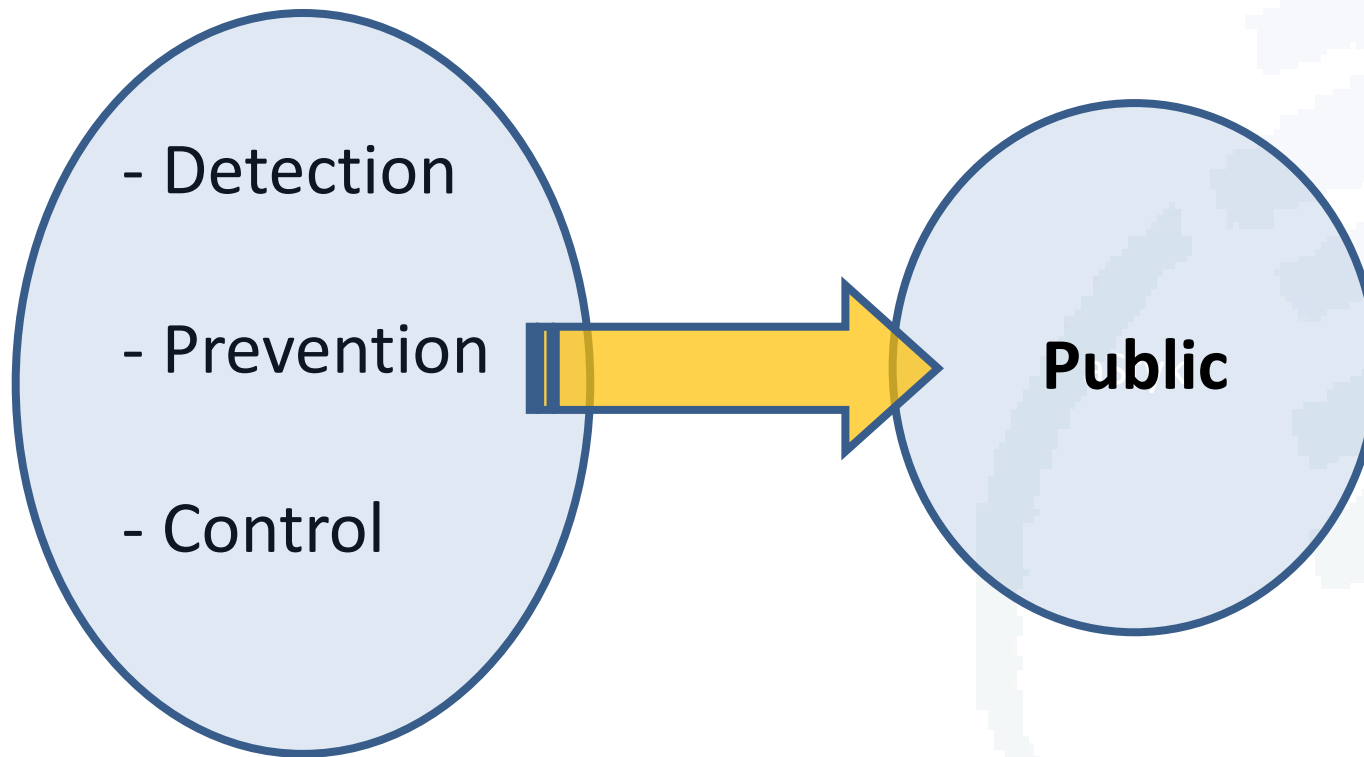
Initial damage levels by *Tuta absoluta*



Both for Greece and Cyprus :
over 60% damage in many cases in the first year after invasion

Open field tomato / Agia Pelagia, Crete / Aug. 2009

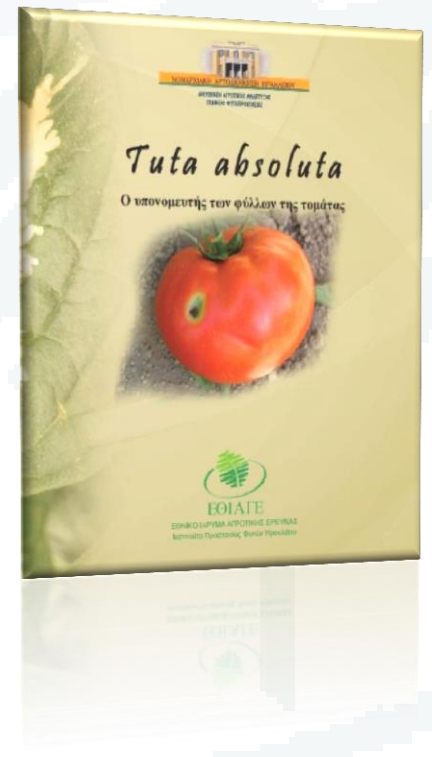
Integrated Management of *Tuta absoluta* for Greece and Cyprus



Integrated Management of *Tuta absoluta*

Public awareness campaigns

- Press releases
- Organization of scientific meetings
- Presentations by experts to the public
- Publication of official pest management guide



Integrated Management of *Tuta absoluta*

- Detection

- Prevention

- Control



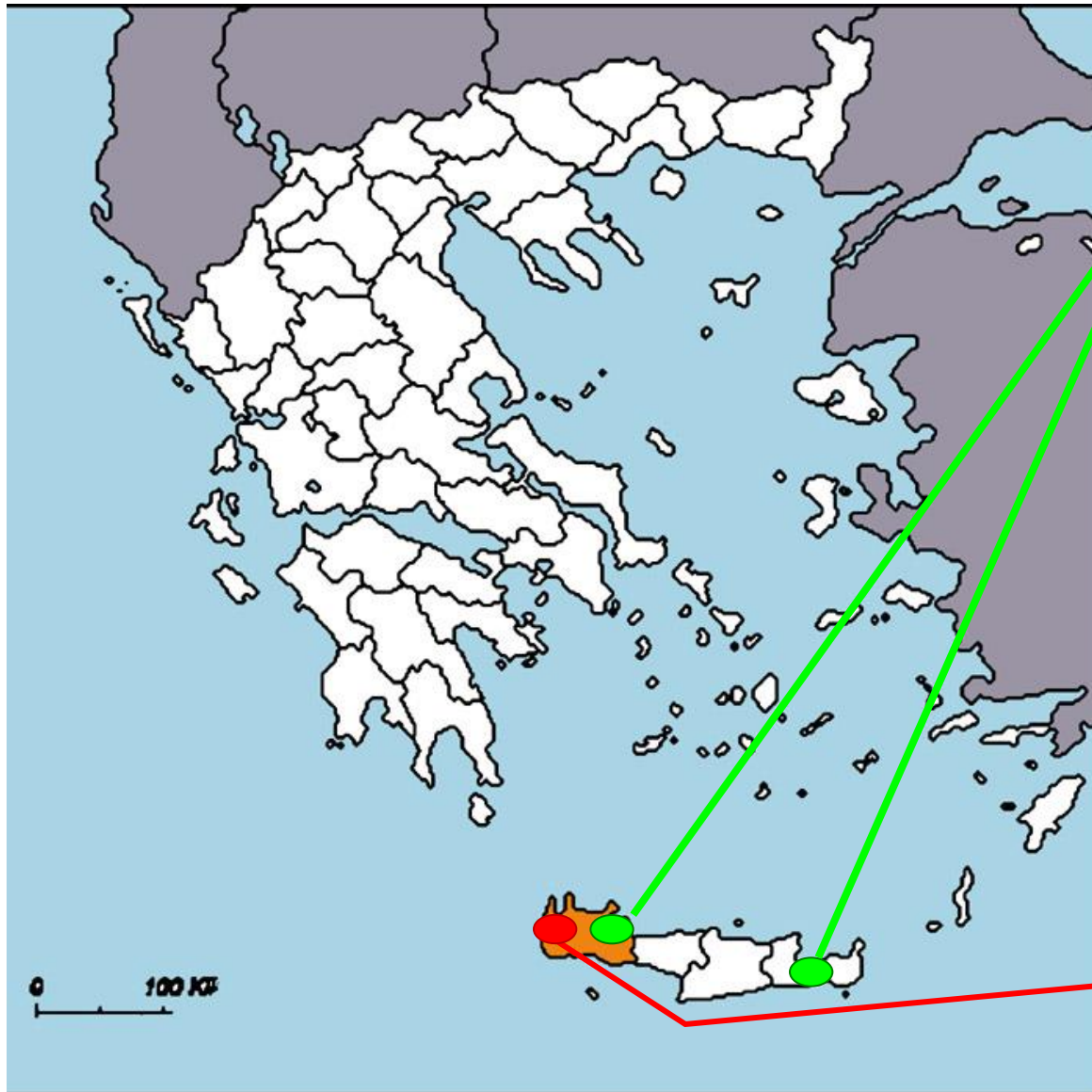
Accurate detection of *Tuta absoluta*



June 2009

First
Report of
Tuta absoluta

Accurate detection of *Tuta absoluta*



April - May 2009
Damage reports
Phthorimaea operculella



June 2009
First Report
Tuta absoluta

Accurate detection of *Tuta absoluta*

Tuta absoluta and *Phthorimaea operculella*
cause identical symptoms on tomato leaves and fruits



Tuta absoluta



Phthorimaea operculella
Potato tuber moth

Accurate detection of *Tuta absoluta*

Tuta absoluta and *Phthorimaea operculella* can be easily distinguished in the field



Tuta absoluta



Phthorimaea operculella

Accurate detection of *Tuta absoluta*

Tuta absoluta and *Phthorimaea operculella*
can be easily distinguished in the field



Tuta absoluta



Phthorimaea operculella

Accurate detection of *Tuta absoluta*

Current status of the tomato leafminer *Tuta absoluta* in Greece

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The tomato leafminer, *Tuta absoluta* (Meyrick), was recorded in Crete (Greece) for the first time in June 2009. The species was subsequently identified in various geographically distant regions in Crete, Peloponnesus and Western Greece. Damage has been reported in tomato and aubergine greenhouse crops as well as in open field tomato crops. In two cases, infestations of the indigenous lepidopteran species *Phthorimaea operculella* (Zeller) erroneously alarmed farmers and local agronomists, as symptoms caused by the two species on tomato leaves and fruits are identical macroscopically. In collaboration with the Ministry of Rural Development and Food an official survey is under way to accurately define the extent of the *T. absoluta* establishment in the country, while constructing the basis for integrated management of the pest.

2 The tomato leafminer, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) is a major pest of tomato, *Lycopersicon esculentum*, as well as other solanaceous crops (EPPO, 2005). After hatching, National Agricultural Research Foundation in collaboration with the Benaki Phytopathological Institute has investigated eight suspect cases of infestation on greenhouse and open field tomato

Roditakis E., Papachristos D. and Roditakis N. E. (2010)
Current status of tomato leafminer *Tuta absoluta* in Greece.
EPPO Bulletin 40:1, 163–166

Integrated Management of *Tuta absoluta*

Early Detection

- Familiarization with the pest /symptoms
- Thorough scouting for infestations
- Use pheromone traps (2-4tr/ha)



Integrated Management of *Tuta absoluta*

- Detection

- Prevention

- Control



Prevention of *Tuta absoluta* infestations

Preventing pest invasion

- Greenhouse ventilation openings covered with insect proof nets (side and roof openings)
- Install automated double doors
- Repair damages on greenhouse sides

Use of pest free material

- Transplant plant material from nurseries with phytosanitary certificate
- Use insect free transport material

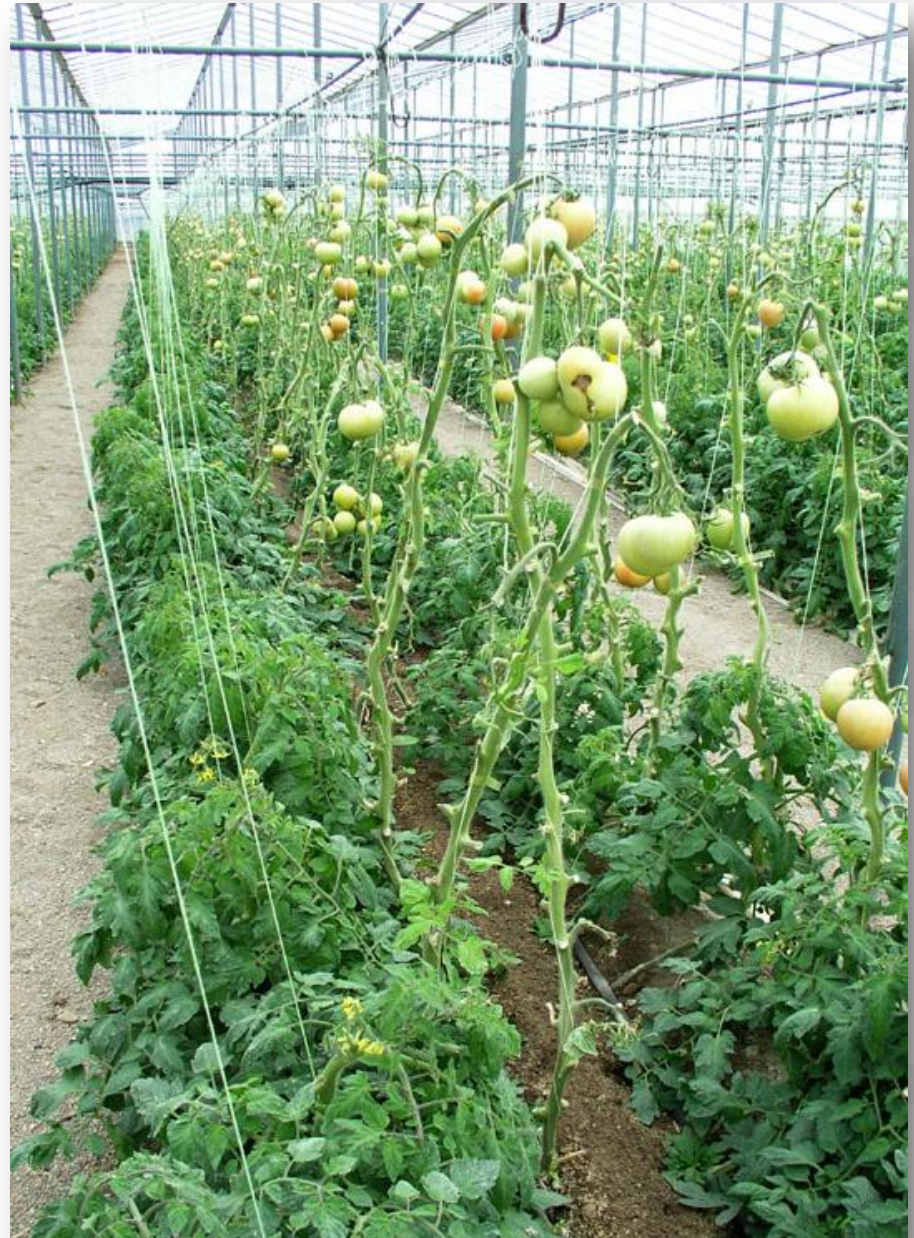
Avoiding continues cultivation of tomato

Thorough weed removal

Soil sterilization (solraization + 1,3 dichloropropene)

Prevention of *Tuta absoluta* infestations

**Continues cultivation
of tomato**



Prevention of *Tuta absoluta* infestations

Preventing pest invasion

- Greenhouse ventilation openings covered with insect proof nets (side and roof openings)
- Install automated double doors
- Repair damages on greenhouse sides

Use of pest free material

- Transplant plant material from nurseries with phytosanitary certificate
- Use insect free packing / transportation material

Avoiding continues cultivation of tomato

Thorough weed removal

Soil sterilization (solraization + 1,3 dichloropropene)

Integrated Management of *Tuta absoluta*

- Detection
- Prevention
- Control



Control of *Tuta absoluta* infestations

- Mass trapping of males (30 -60 tr/ha)
- Hand removal of infestations
- Preserving / releasing predators
- Use registered insecticides



Nesidiocoris tenuis

Control of *Tuta absoluta* infestations

Registered insecticides for *Tuta absoluta* in Greece



Active ingredient	Trade name	Group
cloranthraniliprole / Rynaxypyr®	ALTACOR 35 WG	Diamides
flubendiamide	BELT 24 WG	
emamectin benzoate	AFFIRM 095 SG	Avermectins
spinosad	LASER 480 SC	Spinosyns
indoxacarb	STEWARD 30 WG	Oxadiazine
metaflumizone	ALVERDE 24 SC	Semicarbazone
<i>Bacillus thuringiensis ssp kurstaki</i>	BATHURIN 32000 WP BACTOSPEINE 6,4 WG XENTARI 3 WG	Microbial disruptors of insect midgut membranes
chlorpyrifos	PYRINEX 25 CS	Organophosphate

Control of *Tuta absoluta* infestations

Registered insecticides for *Tuta absoluta* in Cyprus



Active ingredient	Trade name	MoA
Chlorantraniliprole + abamectin	Voliam Targo 063SC	GR28+6
Flubendiamide	F-DIAMIDE	GR28
Chlorantraniliprole	Altacor 35WG	GR28
<i>Bacillus thuringiensis</i> var <i>Kurst.</i>	Dipel, Belthirul, Foray, Agree, Bolas, Kraken, Iepinox etc.	GR11
Flufenoxuron, Diflubenzuron	Cascade, Qatar, Dimilin, Forester	GR15
Indoxacarb	Steward	GR22a
Spinosad	Tracer	GR5
Azadirachtin	Oikos 10EC, Neemec, NeemAzal, Charger, Agrimor-stop	UN
Lufenuron	Match	GR15
Metaflumizone	Alverde	GR22b
Emamectin benzoate	Affirm	GR6

Current status of *Tuta absoluta* for Greece and Cyprus

Tuta absoluta is a manageable pest with the current IPM scheme

Less than 10% damages in both open field & greenhouses crops when growers followed expert advice

Cases of localized outbreaks are scarce but still reported

Introduction of predators from the nurseries to achieve early establishment is investigated (Peridikis D. pres com)

Preservation of natural enemies and compatibility with available chemistries is a key issue

Acknowledgements

Funding



Region of Crete / Prefecture of Heraklion

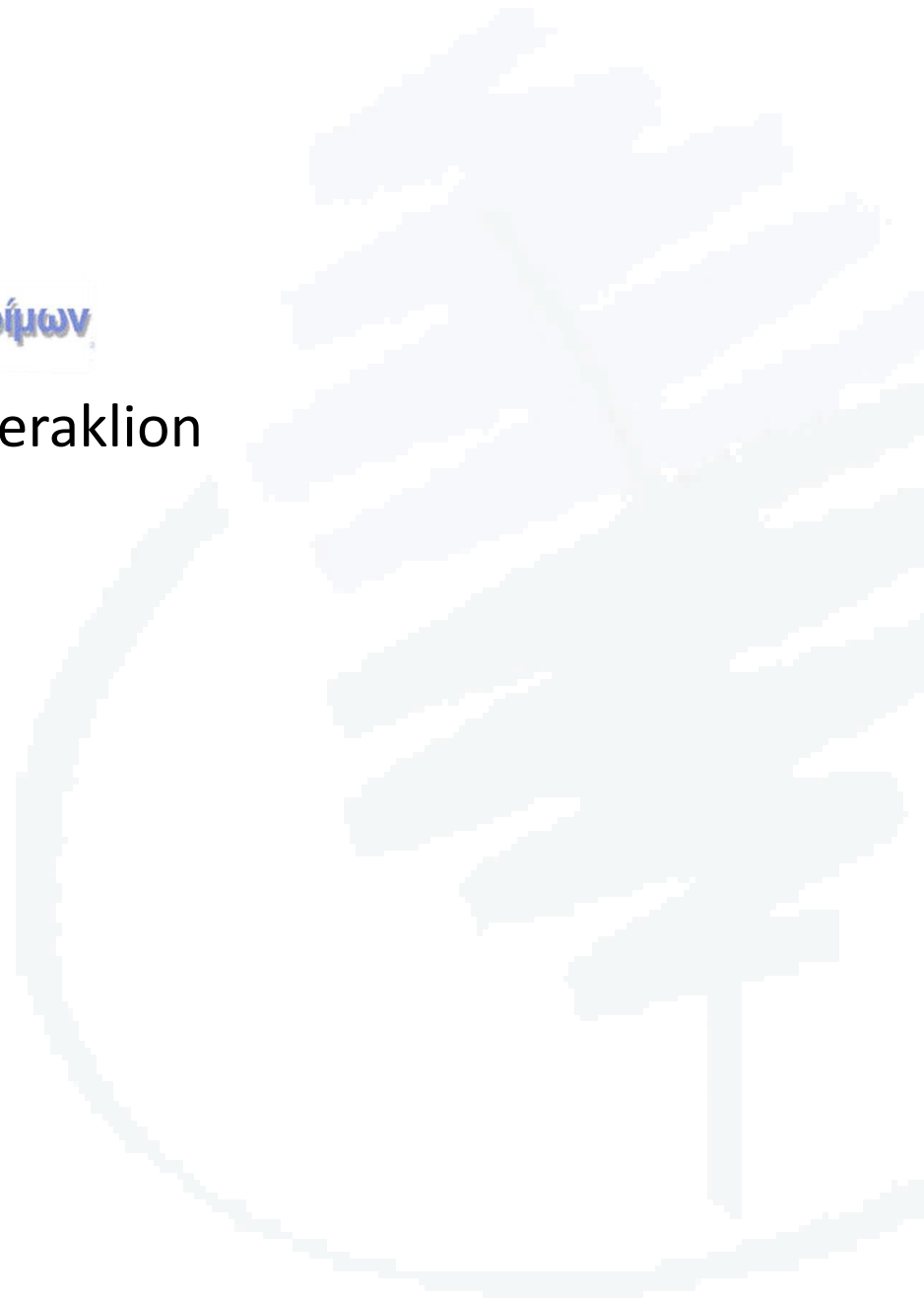
Collaborators

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Paraskeuopoulos A. (GR)



Thank you for your attention!

Σας ευχαριστώ!

