Food and Agriculture Organization of the United Nations

International Plant Protection Convention

Department for Environment Food & Rural Affairs

Emerging threats to plant health and food security

Mariangela CIAMPITTI The perspective of Europe region

London, 21 – 23 September 2022

International Plant Health Conference

PROTECTING PLANTS PROTECTING LIFE

Europe region and new plant pests

Xylella fastidiosa (Olive quick decline syndrome)

Bursaphelenchus xylophilus (Pine Wood Nematode)

Hymenoscyphus fraxineus (Ash dieback)

Agrilus planipennis (Emerald Ash Borer)

Halyomorpha halys (Brown Marmorated Stink Bug)

Popillia japonica (Japanese Beetle)

Anoplophora glabripennis (Asian Longhorn Beetle)

Anoplophora chinenis (Citrus Longhorn Beetle)

Aromia bungii (Red Neck Longhorn Beetle)

and more…….

Popillia japonica
Justin Starr, Photography

Bursaphelenchus xylophilus
Universidade de Evora, PT

Agrilus planipennis
A. Ismailov, RU

Anoplophora glabripennis
PPS Regione Lombardia, IT

Emergency situations

Unexpected situations due to:

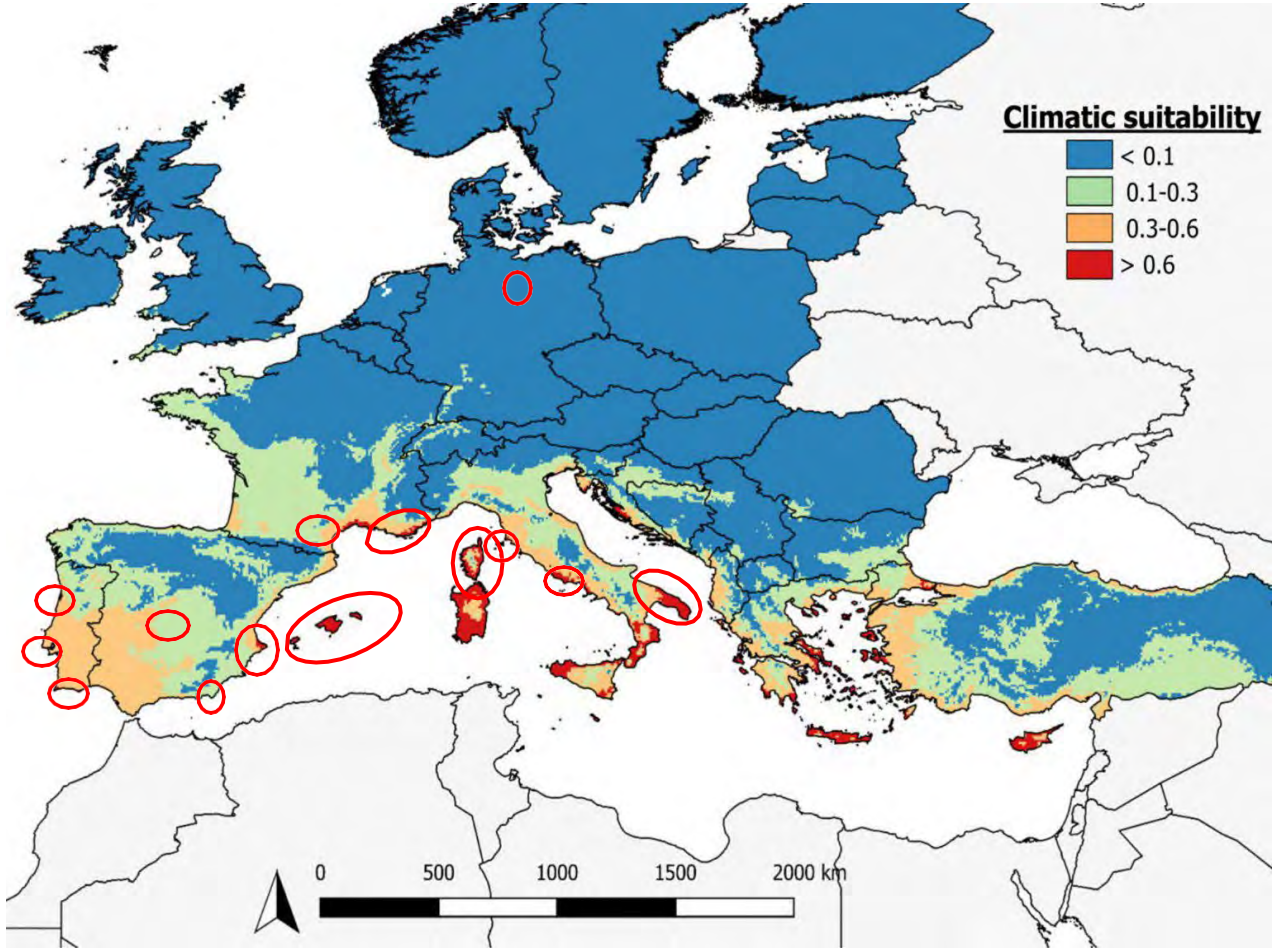
- accidental introduction of unknown pests and/or pests for which no risk assessment had previously been carried out
- disregard for the pest risk of some pathways
- undervaluation of certain risk assessment factors due to:
  - climate change
  - effective tools to control the pest no longer available (e.g. withdrawal of authorizations of several plant protection products)
  - opening of new trade flows (new commodities and new pathways)
  - changes in political scenarios

Halyomorpha halys
PPS Regione Lombardia, IT

Xylella fastidiosa

2013	Puglia, **Italy**
2014	Iran
2015-16	Corsica/Mainland, **France**
2016	**Germany**
2016-17	Balearic Island/Alicante, **Spain**
2017	Israel
2018	Madrid & Almería, **Spain**
2018	Tuscany, **Italy**
2019-21	**Portugal**
2020	Occitania, **France**
2021	Lazio, **Italy**
2022	

pauca, fastidiosa & multiplex
novel genotypes (ST)
novel host species



Estimated climatic suitability map for *X. fastidiosa* according to a SDM ensemble model with four thresholds. Update of the Scientific Opinion *on Xylella fastidiosa* www.efsa.europa.eu/efsajournal109 **EFSA Journal** 2019;17(5):5665

Source: Maria Saponari

Institute for Sustainable Plant Protection National Research Council – Bari (Italy)

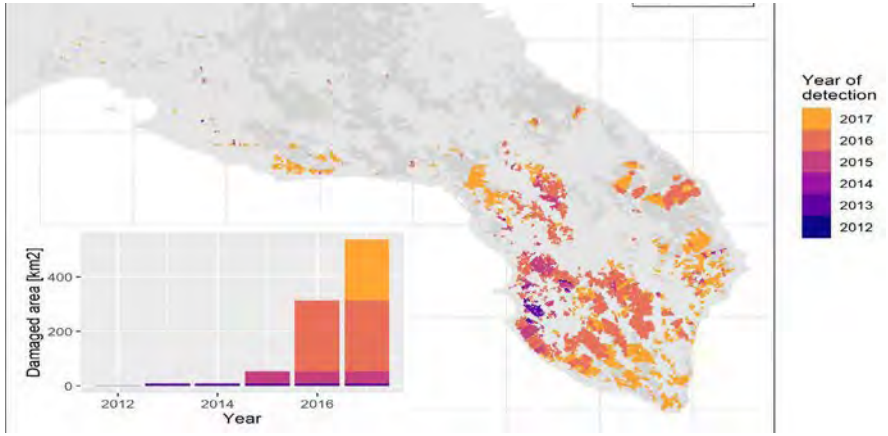
Xylella fastidiosa: impact on olives trees in Italy

In autumn 2013, the area of olive trees infested with *Xylella fastidiosa* was about **80 km²**

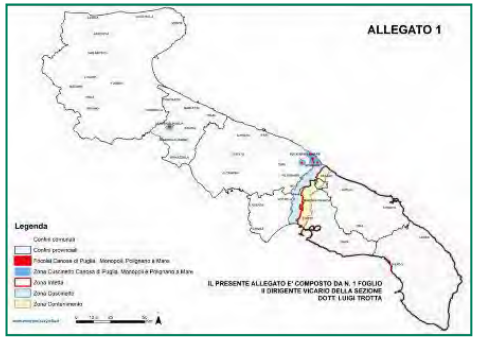
Currently, the demarcated area is about **8.000 km²** = 40% of the Apulia region

In 9 years, the area has increased **100 times**!

Soil tillage to control the vector *Philaenus spumarius, CNR, IT*



A 2017 study based on satellite images estimated the presence of around 6.5 million olive trees with severe damage (> 50 % of the crown) https://doi.org/10.1073/pnas.1912206117



25 million olive trees are present in the demarcated area

It is currently estimated that more than **10 million olive trees** are damaged

Sampling for *Xylella fastidiosa, CNR, IT*

Xylella fastidiosa impact on landscape & culture in Apulia

www.perledipuglia.it

Olive trees completely compromised by *X. fastidiosa*

© puckillustrations - Adobe Stock

Uprooted olive trees for the implementation of eradication measures

LaPresse/Vincenzo Livieri

How to be prepared? Pest Risk Analysis and comprehensive impact assessment

Economic impact

Producer profits that result from changes in quality, production costs, yields or price levels

Changes to producer costs or input demands, including the costs of implementing eradication and/or containment measures

Costs of environmental restoration and prevention measures

Resources needed for additional research and advice

Social impact

Employment

Food security and safety

Mental health and human well-being

Environmental impact

Native plants, biodiversity and ecosystem services

Health of forests, landscapes, public and private green areas

Rice harvest in Lombardia, *Prima*Pavia, IT

How to be prepared? Early detection & prompt reaction

Careful planning of surveillance activities to use human and financial resources cost-effectively

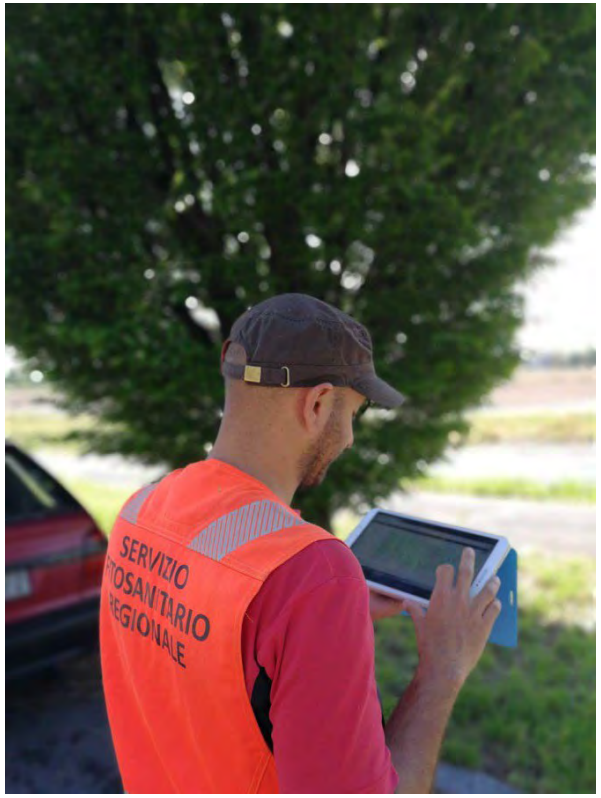
Implementation of survey programmes using innovative tools including traps and web apps for data collection

Setting up sampling procedures for symptomatic and asymptomatic plant materials

Performing inspections and diagnostics

Ensuring there is a legal basis for the implementation of urgent control measures in the event of unexpected situations

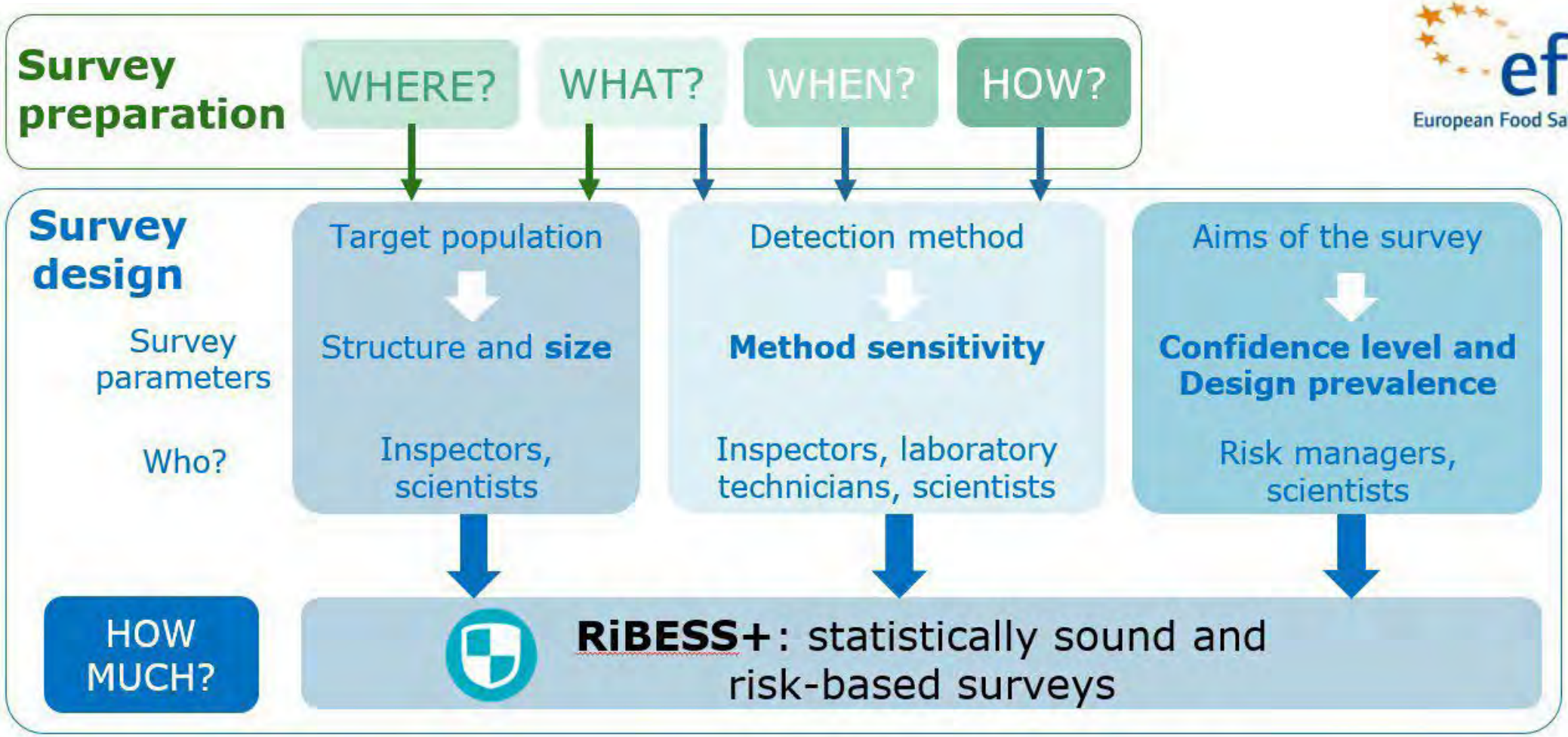
Communication and information sharing with stakeholders



Field data input into the MORGANA web app and sending information to survey plan managers and to the lab
PPS Regione Lombardia, IT

Sampling in maize fields for the early detection of *Pantoea stewartii,*
PPS Regione Lombardia, IT

How to be prepared? From Survey preparation to Survey design



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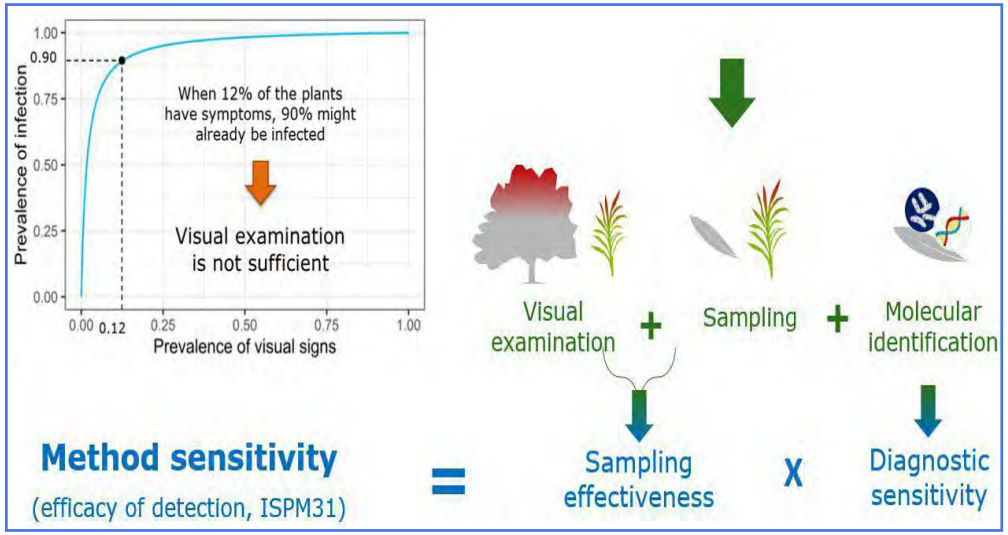
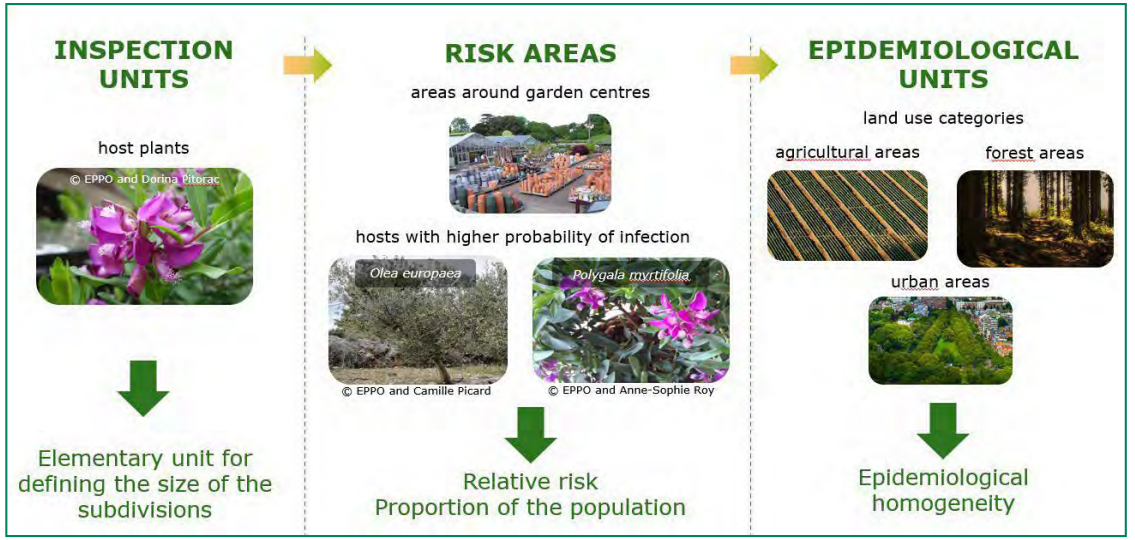
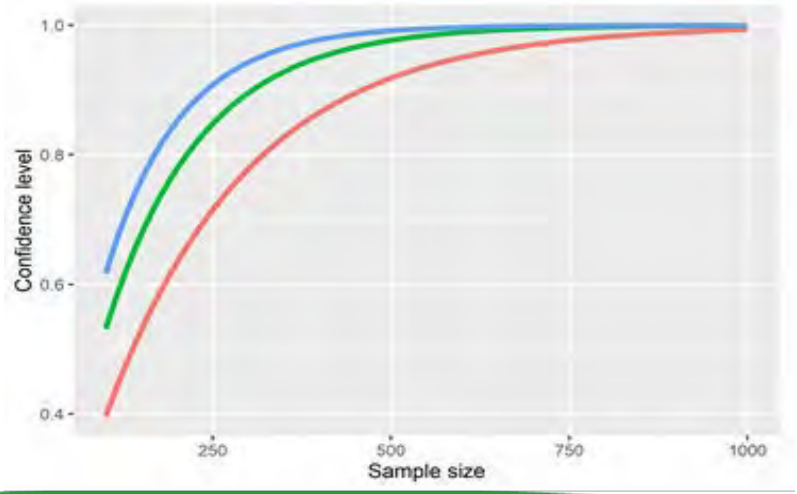
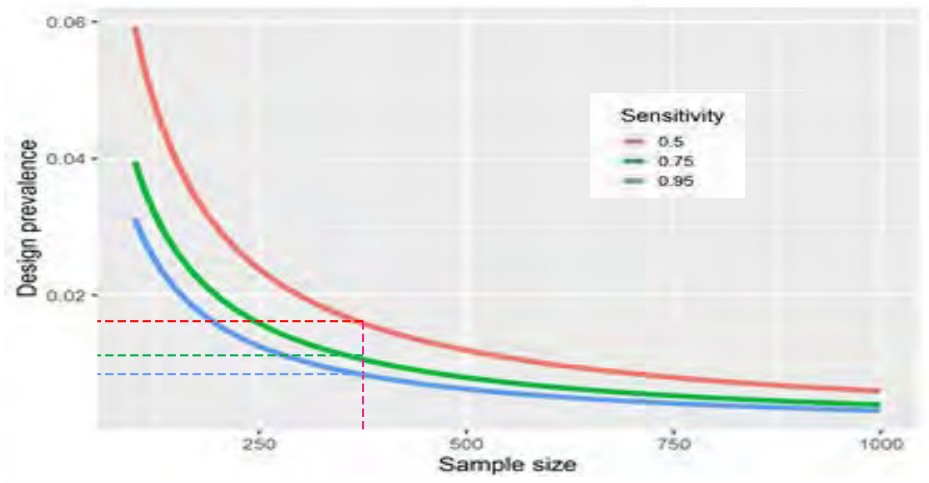
Detection method, target population & Interrelation of survey parameters









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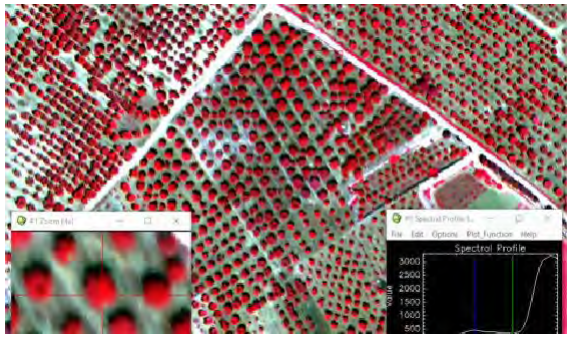
How to be prepared? Research & innovation on *Xylella fastidiosa*

Leccino and Favolosa FS-17 authorised by NPPO for the regeneration of the olive-growing heritage

Drone, aircraft and satellite surveys can identify plants potentially affected by the bacterium



Sniffer dogs trained to detect the bacterium within plants for planting

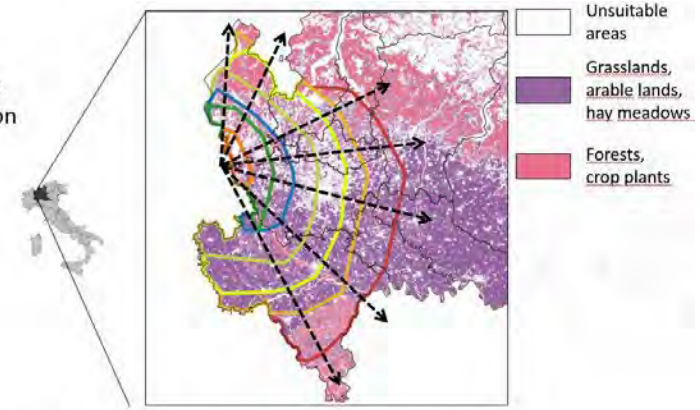
XylApp (and XylAppUE), developed by CIHEAM Bari, to optimize and streamline the collection, geolocation and archiving of data on plant material and/or insect samples

Source: Donato Boscia
Institute for Sustainable Plant Protection National Research Council – Bari (Italy)

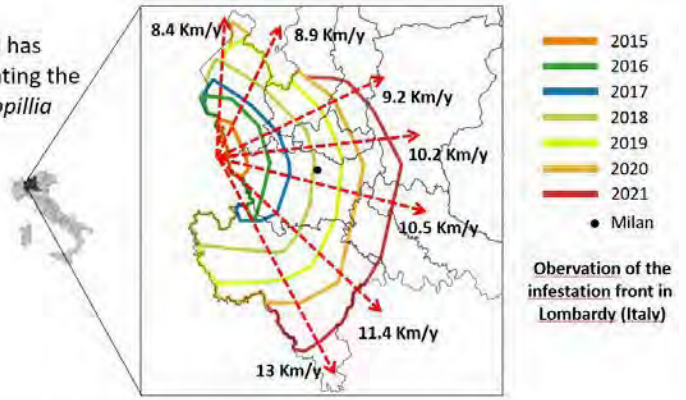
How to be prepared? Research & innovation on *Popillia japonica*

Modelling the spread dynamics

Results
A model has been developed for interpreting the influence of land-use on the speed of invasion of *Popillia japonica*



Results
A reaction-diffusion model has been developed for estimating the speed of the invasion of *Popillia japonica*



Prof. Gianni Gilioli, University of Brescia, IT

"Attract & Kill" Strategy

National Committee on *Popillia japonica*, IT

Innovative and sustainable approach to apply insecticides and biocontrol agents to control larvae in the soil

Prof. Nicola Mori, University of Verona, IT

How to be prepared? Research & innovation on *Anoplophora spp.*




Surveys for *A. glabripennis* with binoculars, platforms and treeclimbers

Trapping for *A. glabripennis* and *A. chinensis*

Root destruction by grinding machines to control the larvae of *A. chinensis*

Re-planting of non-sensitive trees in place of destroyed ones

Information and engagement of citizens and stakeholders

Source: PPS Regione Lombardia, IT

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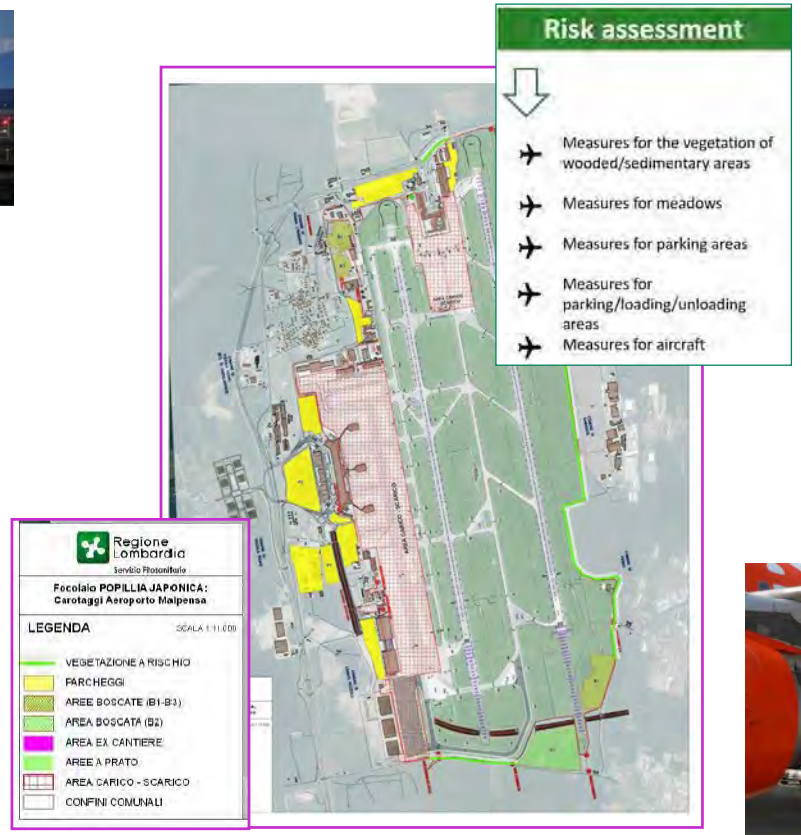
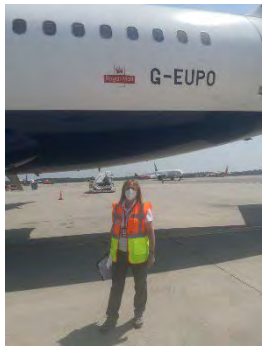
Measures to manage the risk of *Popillia japonica* spreading via aircrafts



Pest risk management plan at Milano Malpensa airport 2021-2025 (follow-up of 2016-2020 plan)
The plan identifies activities and official measures to be implemented at Malpensa airport and in the immediate vicinity in order to reduce the risk of Popillia japonica spreading via aircraft and passengers :

5 risk levels: as the risk increases, the areas involved and the time frame of the application of measures increase:



Risk level assessment and inspections of the application of measures are carried out by phytosanitary inspectors:

Source: PPS Regione Lombardia, IT

Raising public awareness of plant health

Social cards

YouTube Influencer

EPPO

Russian (Estonian NPPO)

German (Austrian NPPO)

Azeri

Macedonian

Turkish

and many more ….

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Promoting a “culture” of plant health among the younger generation

Raising awareness of the importance of Plant Health and its environmental and social impact, in particular on **food security**

Message from Ralf Lopian to the students at the award ceremony for the school contest

Fostering the desire of the younger generation to become personally involved in protecting green spaces and ecosystems

The 3 training programmes on plant health one for each level of education

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Global network: *Spodoptera frugiperda* (FAW) Technical Working Group

The FAO/IPPC Technical Working Group on Quarantine and Phytosanitary Measures for Global Action on *Spodoptera frugiperda* (FAW) Control

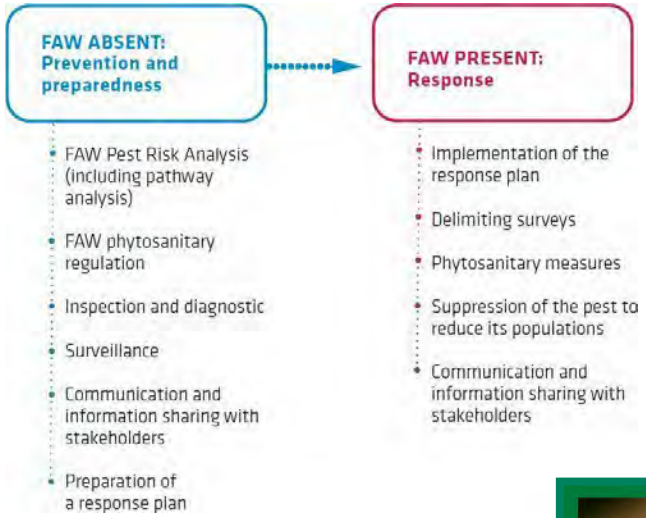
FAO/IPPC Fall Armyworm Technical Working Group (TWG)

NEPPO · CSIRO · Regione Lombardia Plant Protection Service · CABI · PPPO · Pacific Community Communauté du Pacifique · GrowAsia · Australian Government Department of Agriculture, Water and the Environment

Prevention: implementing and promoting globally harmonized quarantine and phytosanitary measures

Preparedness: implementing and promoting globally harmonized FAW surveillance, management, and engagement resources

Response: promoting globally harmonized contingency and response resources and training materials



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What we learnt

- To be ready and prepared
- To be innovative
- To be authoritative
- To raise awareness of plant health
- To promote a “culture” of plant health among the younger generation
- To global network

EUROPHYT data (2018- till October 2020) processed by the Lombardy Plant Protection Service

Analysis of trade flows and interceptions as the basis for planning import inspections for *Spodoptera frugiperda*
PPS Regione Lombardia, IT

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International Plant Health Conference

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Mariangela CIAMPITTI @pestsurvey
Regione Lombardia, NPPO Italy

Regione Lombardia
Plant Protection Service

Thank you for your attention

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