Regional PRA
Xylella fastidiosa
Near East and North Africa

NEPPO
منظمة وقاية النباتات للشرق الأدنى
Near East Plant Protection Organization

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INTERNATIONAL YEAR OF PLANT HEALTH 2020

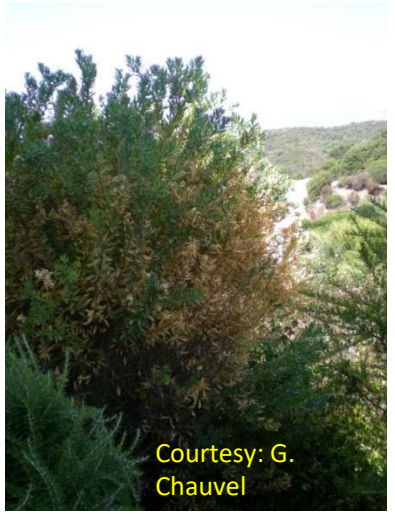
Background (1)

- *Xylella fastidiosa (Xf)*: six **subspecies:** *fastidiosa, multiplex, pauca, sandyi, morus* and *tashke*.
- Each with a different host spectrum.
- Absent in the NENA region except Iran
- Xf is able to multiply in **309** different plant species, symptomatically or asymptomatically.
- Presence of the vector in most or NENA regionn

Background (2)

- **2013**: Outbreak of *Xylella fastidiosa* (*Xf*) in Apulia (Italy) on olive: Olive Quick Decline Syndrome: ***Xf subsp pauca***

- **2015**: Detection of ***Xf subsp multiplex*** in
  - Corsica (*Polygala myrtifolia*)
  - Province-Alpes-Côte d'Azur (*Polygala myrtifolia*)



Curent situation and threat…

2016

2017

2018

pauca

Multiplex

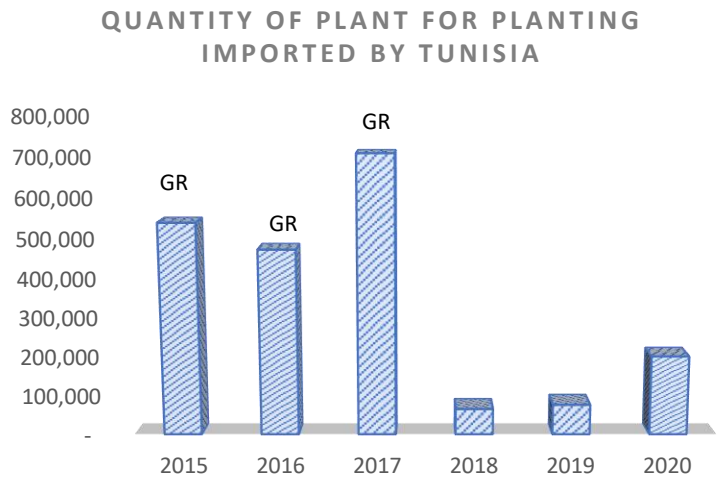
fastidiosa

Probability of Entry : Very Likely

- Pathways of entry:
  - Plant for planting
  - Vector
  - human movement

Trade (Importation)

- Important,
- Important quantity of the main host plants (olive, grapes, ornamentals, etc.)



Flux of movement

- Travelers (Migrants, Touriste)
- Movement of vehicles

Host plants

- Available within the region

Inspection at point of entry

- Asymptomatic plant
- Latent infection
- Illegal importation

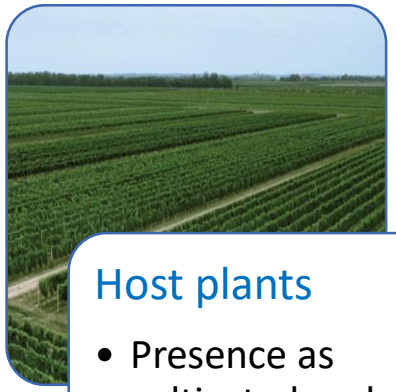
Probability of Establishment: Very likely

Plant for planting

- likely to be proximate to cultivated host

Vectors

- carried on imported plants sufficiently mobile to locate host

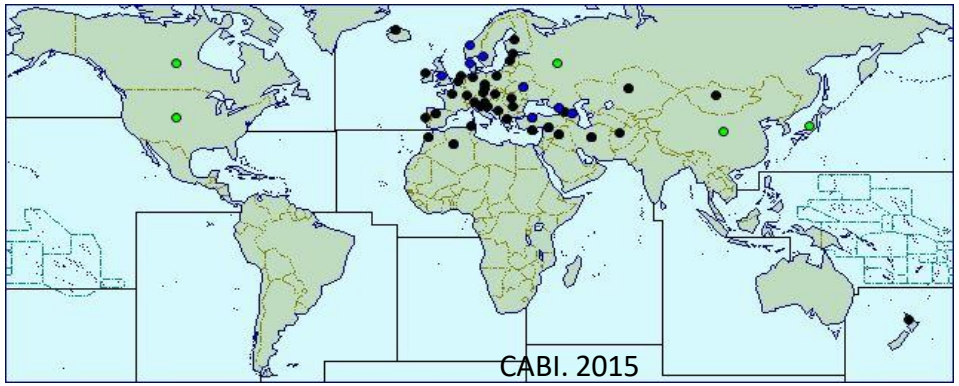


Host plants

- Presence as cultivated and as wild plants

Occurrence and good mobility of potential vectors, mainly *Philaenus spumarius*

Source: Wikipédia



CABI. 2015

Probability of Establishment: Very likely

- Similarity of climatic conditions with infected zones

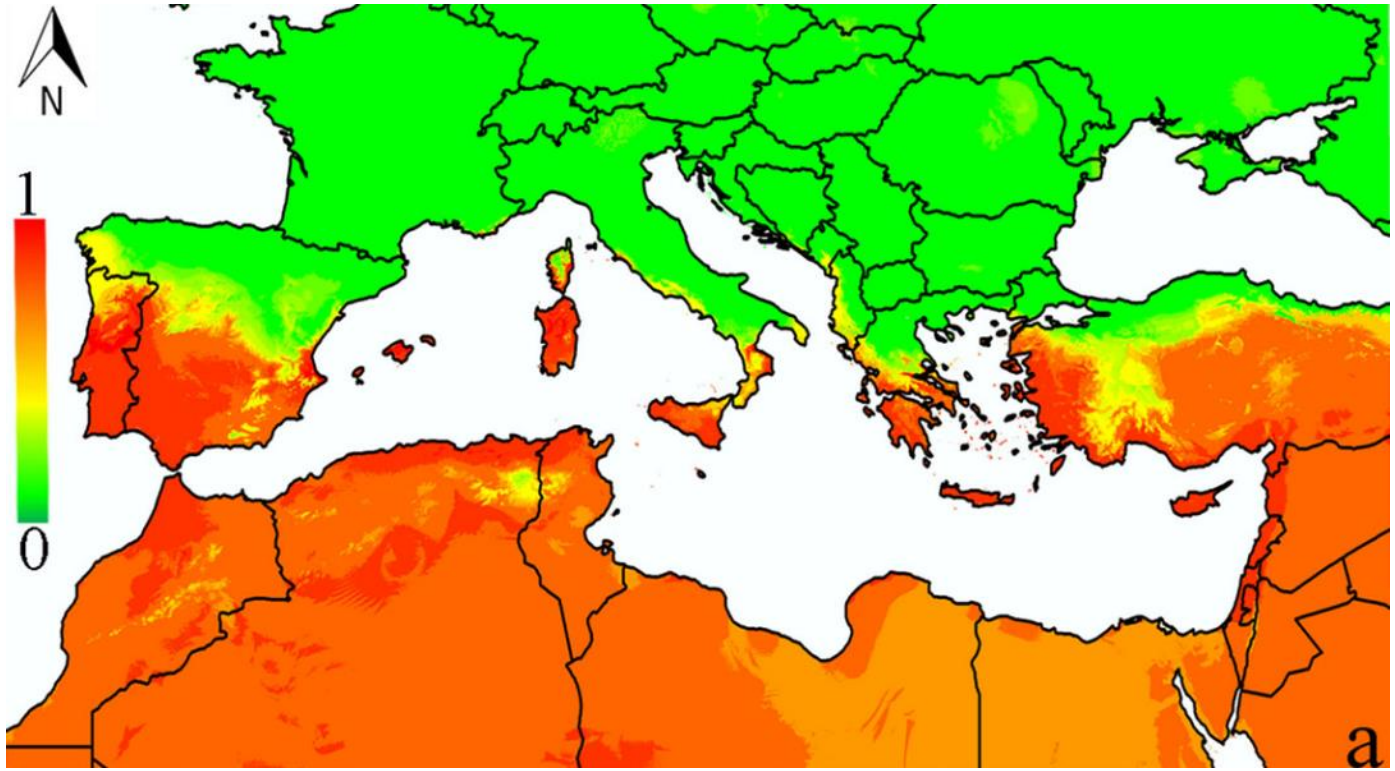
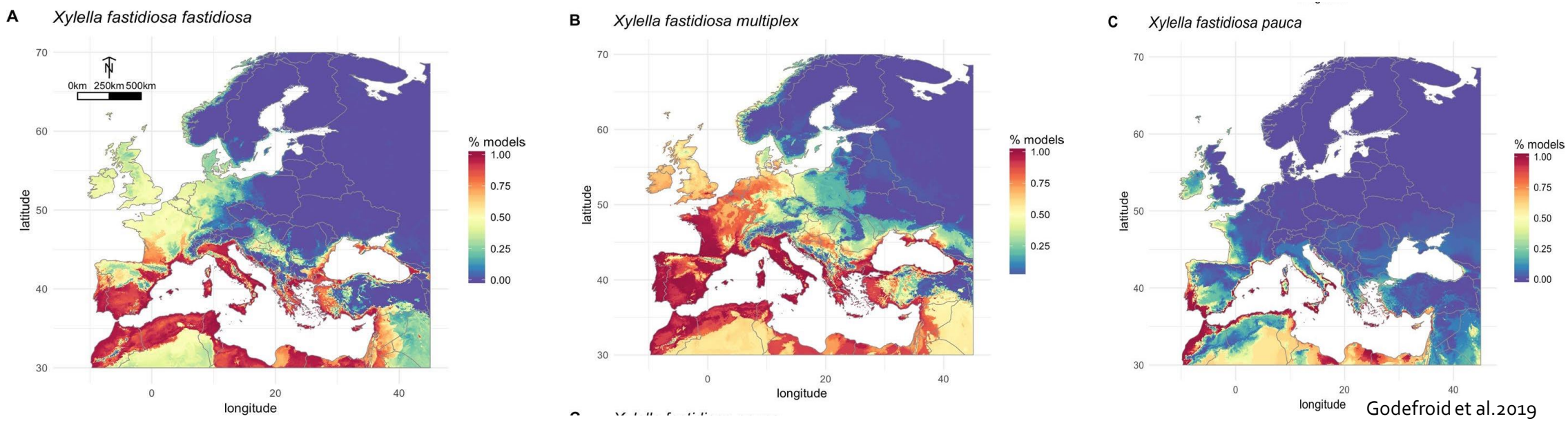


Figure: Current species distribution models (SDMs) of *Xf*, The probability of presence ranging from 0 (green) to 1 (red) (Bosso et al, 2016)

Probability of Establishment: Very likely

- Similarity of climatic conditions with infected zones



Godefroid et al.2019

https://doi.org/10.1038/s41598-019-45365-y

The subspecies *multiplex*, and to a certain extent the subspecies *fastidiosa*, represent a threat to most of Europe while the climatically suitable areas for the subspecies *pauca* are mostly limited to the Mediterranean basin

Probability of Spread: Quickly to Very Quickly

- Occurrence of large range of host plants;




- Presence of Xylem-fluid feeding insects, mainly the polyphagous spittlebug *Philaenus spumarius;*


- Trade and movement of persons within the country and within the region

Probability of Spread: Quickly to Very Quickly

- Prevailing climate similar to infested area: the regions at high risk encompass the Mediterranean coastal areas.

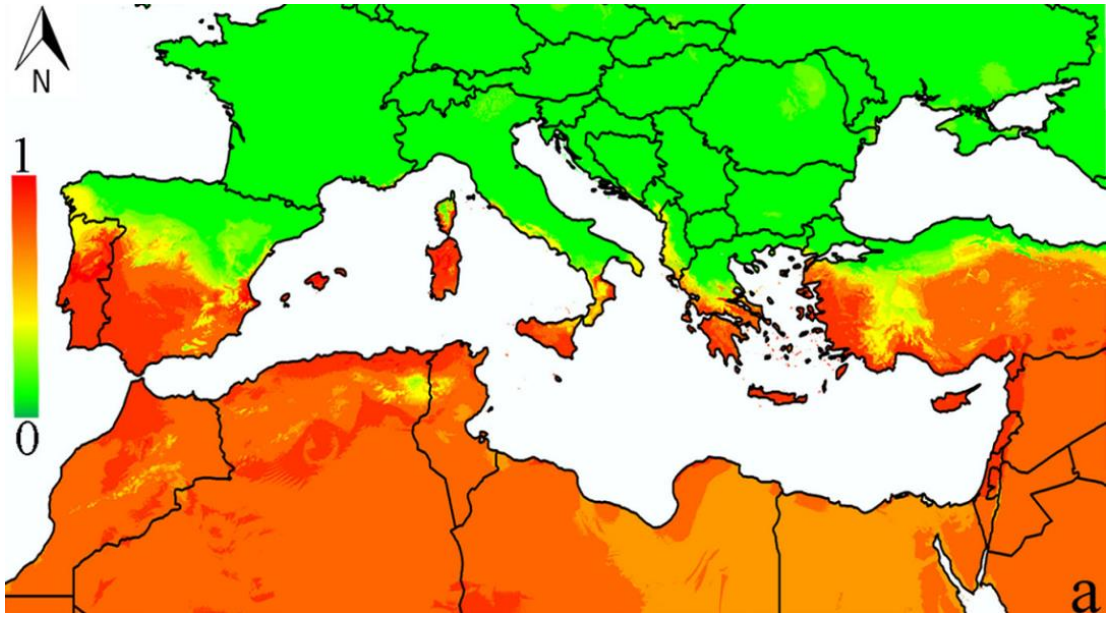


Figure: Current species distribution models (SDMs) of *Xf*, The probability of presence ranging from 0 (green) to 1 (red) (Bosso et al, 2016)

- Uncertainties on hosts plants, insects and their prevalence in the endangered area
- Management option, if established, are unlikely to meet the success and/or be economically viable

Consequences: Very high

Economic

High

- Importance of main crop for the region,
- For instance olive, the most cultivated crop,
- Lost of production,
- Access market

Social

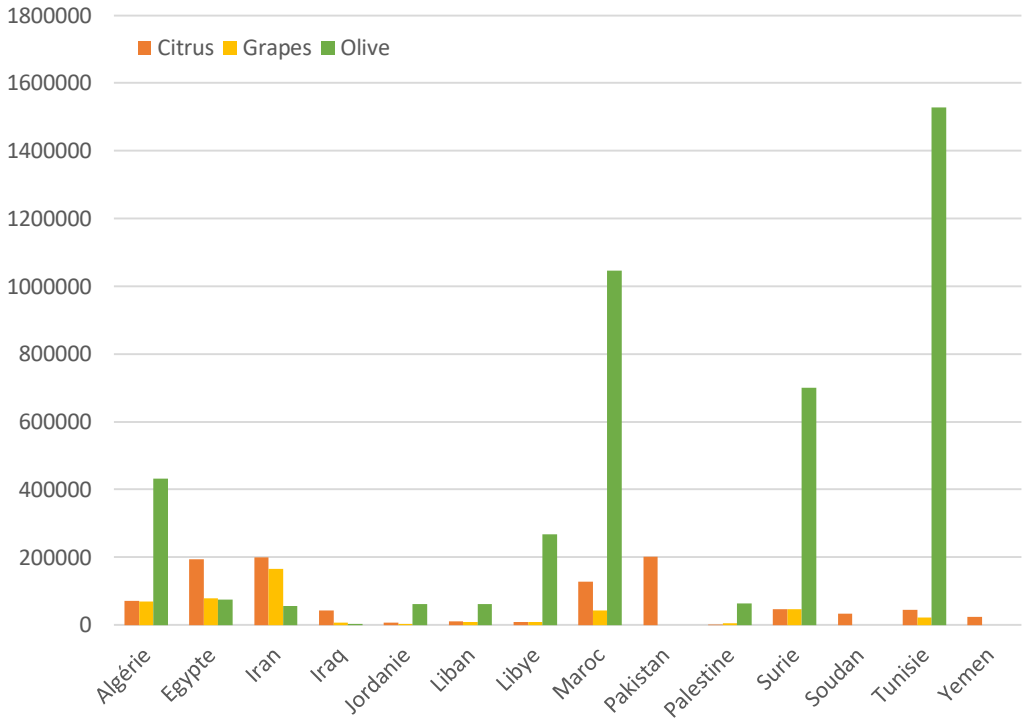
High

- Important small scale farmers (more than 80%): Palestine: 90%
- Considerable social and wellbeing capital at risk (lost of employment, decrease of income)
- food safety (Mediterranean diet)
- Movement of population from rural to urban area

Environmental

High

- Impact on biodiversity (Oaks: endemic area)
- Side effect of pesticide use



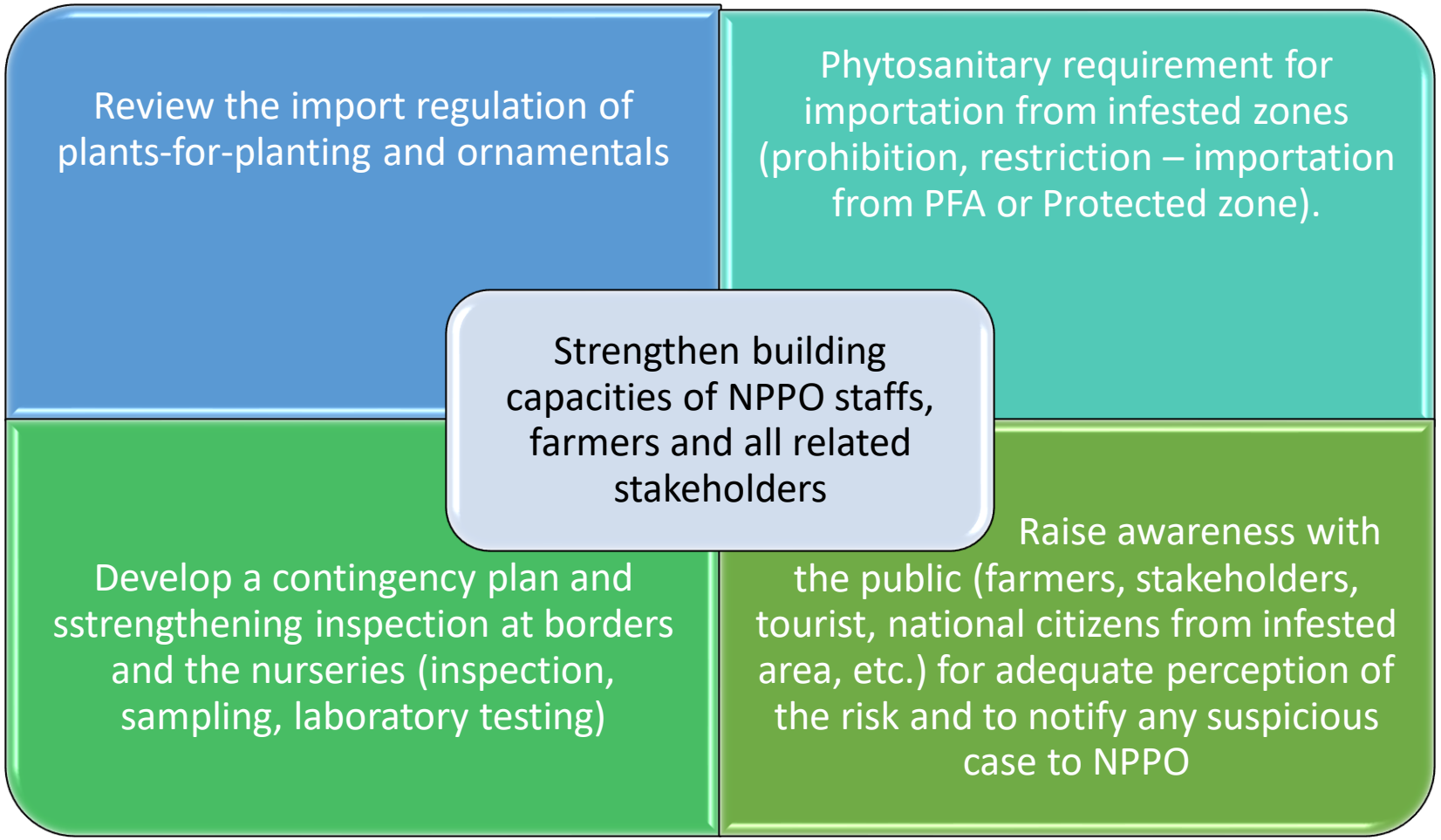
Management

- No available efficient chemical treatment to cure infected plants

- Eradication is very cost and hard to achieve

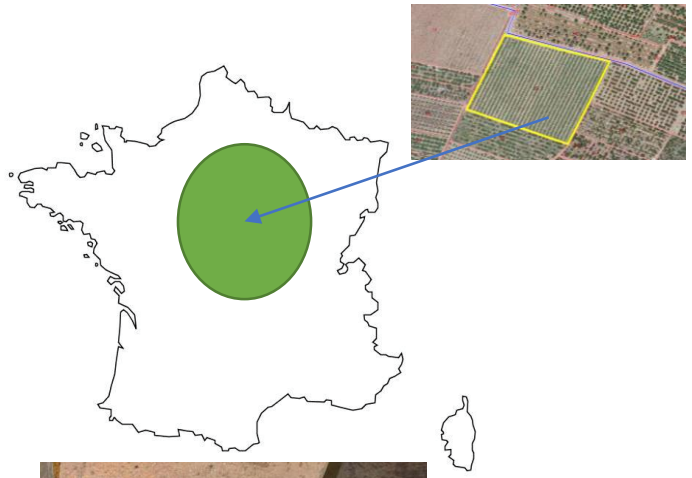
Only exclusion could prevent the entry of the bacteria

Mangement options: Exclusion



Pest Free Area / Protected zones

- **Pest Free Area (PFA)** : An **area** in which a specific **pest** is absent as demonstrated by scientific evidence and in which, where appropriate, this condition Is being **officially** maintained. (ISPM 5)

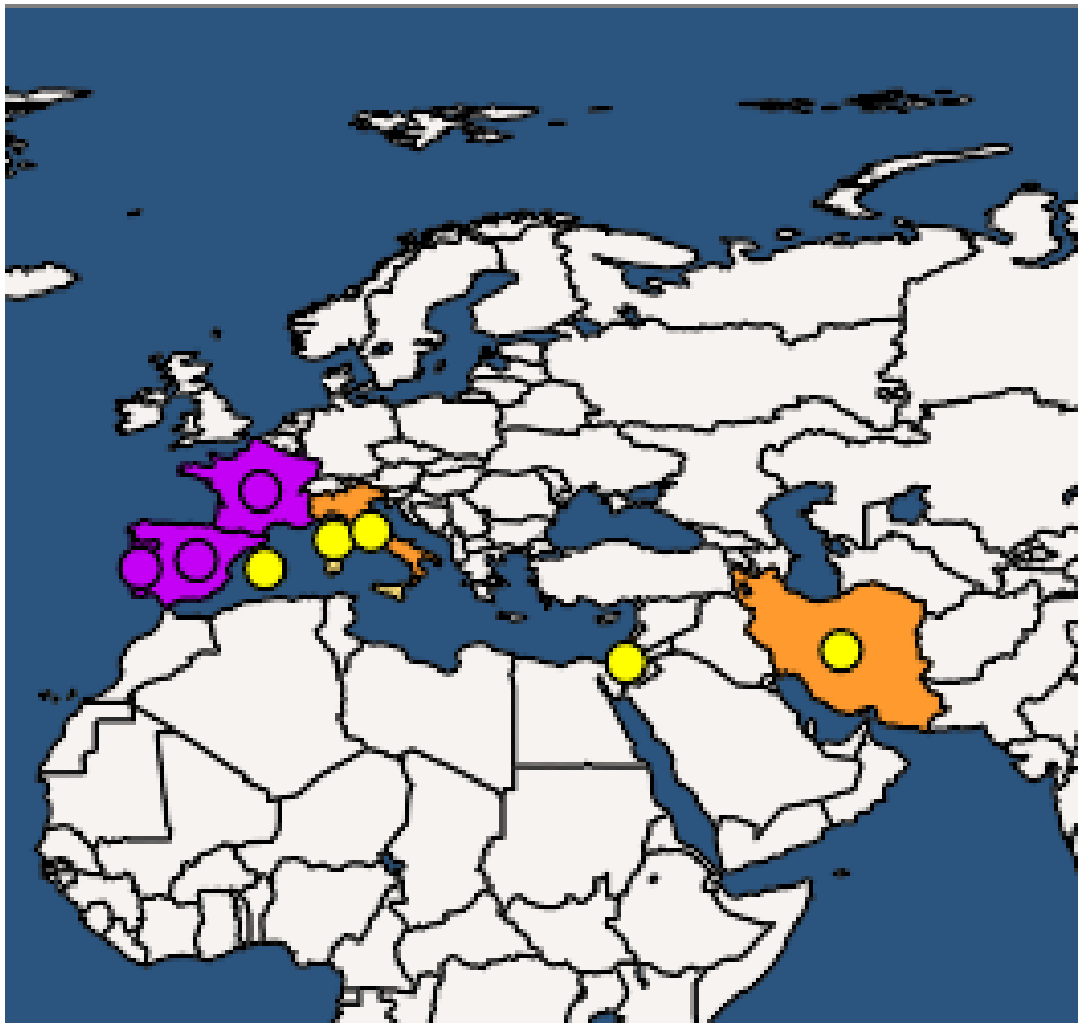


- **Plant for planting: Plants** intended to remain **planted**, to be **planted** or **replanted** [FAO, 1990]

- Geographic situation including mother plant production sites and nurseries be located in the officially declared PFA/PZ;
- Registration by the NPPO of all professional operators (breeders, nurseries,..)
- Protection of plant for planting at nurseries by insect proof
- Insecticide treatment against all stages of vectors population at appropriate time keeping the area free from vectors

Pest Free Area / Protected zones

- **Annual official survey**: with sampling of host plants (symptomatic and asymptomatic) and vectors, and testing (according to EPPO protocols or International recognized protocols).
- **Official inspection** during the appropriate season at least twice a year (sampling, molecular testing according to EPPO protocols or International recognized protocols)
- All consignment subject to be exported should be officially inspected and laboratory tested free from *Xf*
- Just before moving, protection of lots by insect proof and insecticide treatment before boarding
- At boarder or importing country, insect treatment against hidden vectors



Conclusion

- Xylella fastidiosa: real threat for North Africa and Near East region;
- Raise awareness with all concerned stakeholders and public
- Uncertainties regarding lack of knowledge on host plants, vectors and their prevalence in each country
- Prepare a robust contingency plan
- Develop survey programmes to:
  - establish the list of potential host plant around the main commercially important crops
  - establish a list of potential vectors within the country, their importance and distribution
  - detect early outbreak