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EXPÉRIMENTATION  
INNOVATION

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Plantes aromatiques  
et médicinales  
Semences  
Cidriculture  
Viticulture  
Paysage

AGROCAMPUS  
QUEST  
ANGERS,  
FRANCE

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2018

10<sup>e</sup>  
édition



# Maladies et ravageurs émergents: veille phytosanitaire à l'échelle supranationale

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Organisation Européenne et Méditerranéenne  
pour la Protection des Plantes (OEPP/EPPO)



# Maladies émergentes: comment les définir?

Une **maladie émergente** est une maladie dont l'**incidence réelle augmente** de manière significative, dans une population donnée, d'une région donnée, par rapport à la situation habituelle de cette maladie.

Toma B, Thiry E (2003) Qu'est ce qu'une maladie émergente ? Epidémiologie et santé animale 44, 1-11.



**Maladie émergente:** désigne une nouvelle apparition, chez un animal, d'une maladie, d'une infection ou d'une infestation ayant des répercussions significatives sur la santé animale ou humaine et résultant :

- a) de la modification d'un agent pathogène connu ou de sa propagation à une nouvelle aire géographique ou à une nouvelle espèce, ou
- b) d'un agent pathogène non identifié antérieurement ou d'une maladie diagnostiquée pour la première fois.

OIE (2018-08-11) – Code sanitaire pour les animaux terrestres. Glossaire.

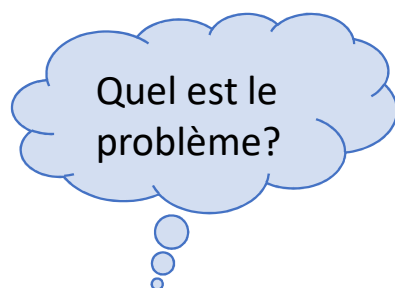
Pour le moment, pas de définition internationalement acceptée  
dans le domaine de la santé des végétaux



# Ravageurs et maladies des plantes émergents



- Organismes dont l'incidence augmente rapidement et notablement dans une zone
- Organismes dont la répartition géographique s'accroît rapidement (dispersion naturelle, introductions accidentelles)
- Espèces qui apparaissent pour la première fois (nouvelles pour la science)



L'impact peut être très sévère !



*Xylella fastidiosa* (XYLEFA) - <https://gd.eppo.int>



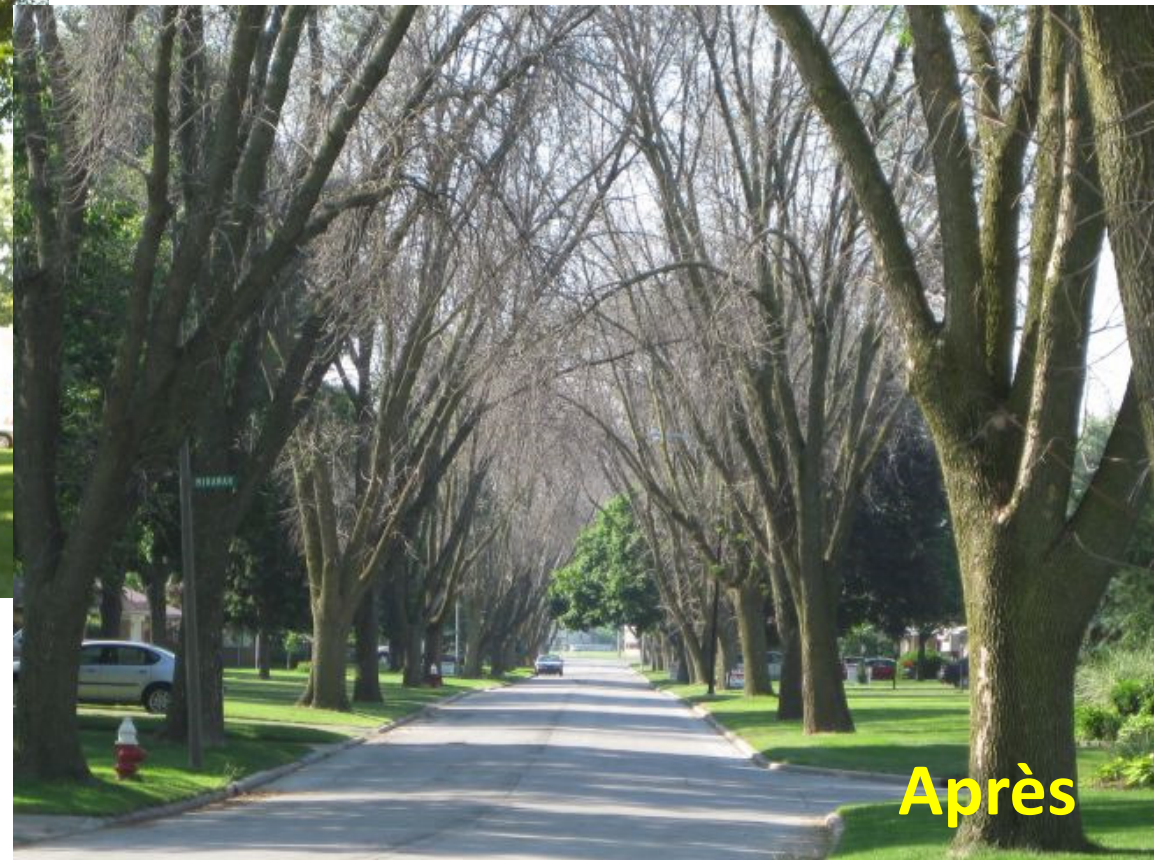
# *Agrilus planipennis* (Emerald ash borer – Agrile du frêne)



Avant (Ohio, US)




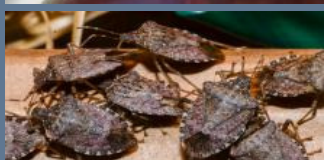




Espèce asiatique (Extrême-Orient), introduite au Canada et aux USA, ainsi que dans la région de Moscou en Russie. Absente en Europe de l'Ouest.





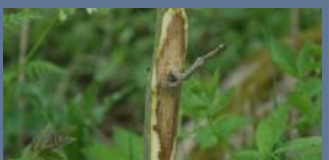

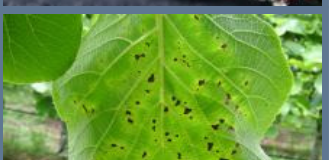

Après

# Quelques exemples de ravageurs émergents en Europe

<b><i>Anoplophora chinensis</i></b> (capricorne asiatique)	Ligneux	Italie en 2000, puis plusieurs foyers en CH, DE, FR, HR, TR (en cours d'éradication)	
<b><i>Cydalima perspectalis</i></b> (pyrale du buis)	Buis	Allemagne en 2007, aujourd'hui dans plus de 25 pays européens	
<b><i>Drosophila suzukii</i></b> (drosophile à ailes tachetées)	Petits fruits	2010 en Espagne, Italie, et France et aujourd'hui dans plus de 25 pays européens	
<b><i>Halyomorpha halys</i></b> (punaise diabolique)	Polyphage	2007 au Liechtenstein, puis en AT, CH, DE, ES, FR, GE, GR, HR, HU, IT, RO, RS, RU, SI, SK	
<b><i>Popillia japonica</i></b> (hanneton japonais)	Polyphage	2014 en Italie (Lombardie), puis en Suisse (Tessin)	
<b><i>Meloidogyne graminicola</i></b> (nématode à galles)	Riz et autres graminées	2016 en Italie (Piémont, puis Lombardie en 2017)	



# Quelques exemples de maladies émergentes en Europe

<b><i>Acidovorax citrulli</i></b>	Melon et pastèque	Foyers sporadiques (GR, HU, IT, RS, TR), certains ont été éradiqués	
<b><i>Grapevine Pinot gris virus</i></b>	Vigne	2014 en Italie, trouvé dans plus de 10 pays européens	
<b><i>Hymenoscyphus fraxineus</i></b>	Frêne	Présent dans plus de 25 pays européens	
<b><i>Neonectria neomacrospora</i></b>	Sapins ( <i>Abies</i> spp.)	2008 au Danemark et en Norvège, trouvé en BE, FR, FI	
<b><i>Pseudomonas syringae</i> pv. <i>actinidiae</i></b>	Kiwi	2007/2008 en Italie, puis ES, FR, GE, GR, PT, TR (incursions CH, DE)	
<b><i>Xylella fastidiosa</i></b>	Olivier, amandier & autres Prunus, laurier rose, plantes méditerranéennes	2013 Italie (Pouilles), puis FR, ES	

# Emergences: un problème qui ne date pas d'hier



## XIX Siècle

L'émergence du mildiou de la pomme de terre en Irlande a eu des conséquences catastrophiques.

Famine des années 1840, mort de plus d'un million d'irlandais et émigration d'un million et demi de personnes.

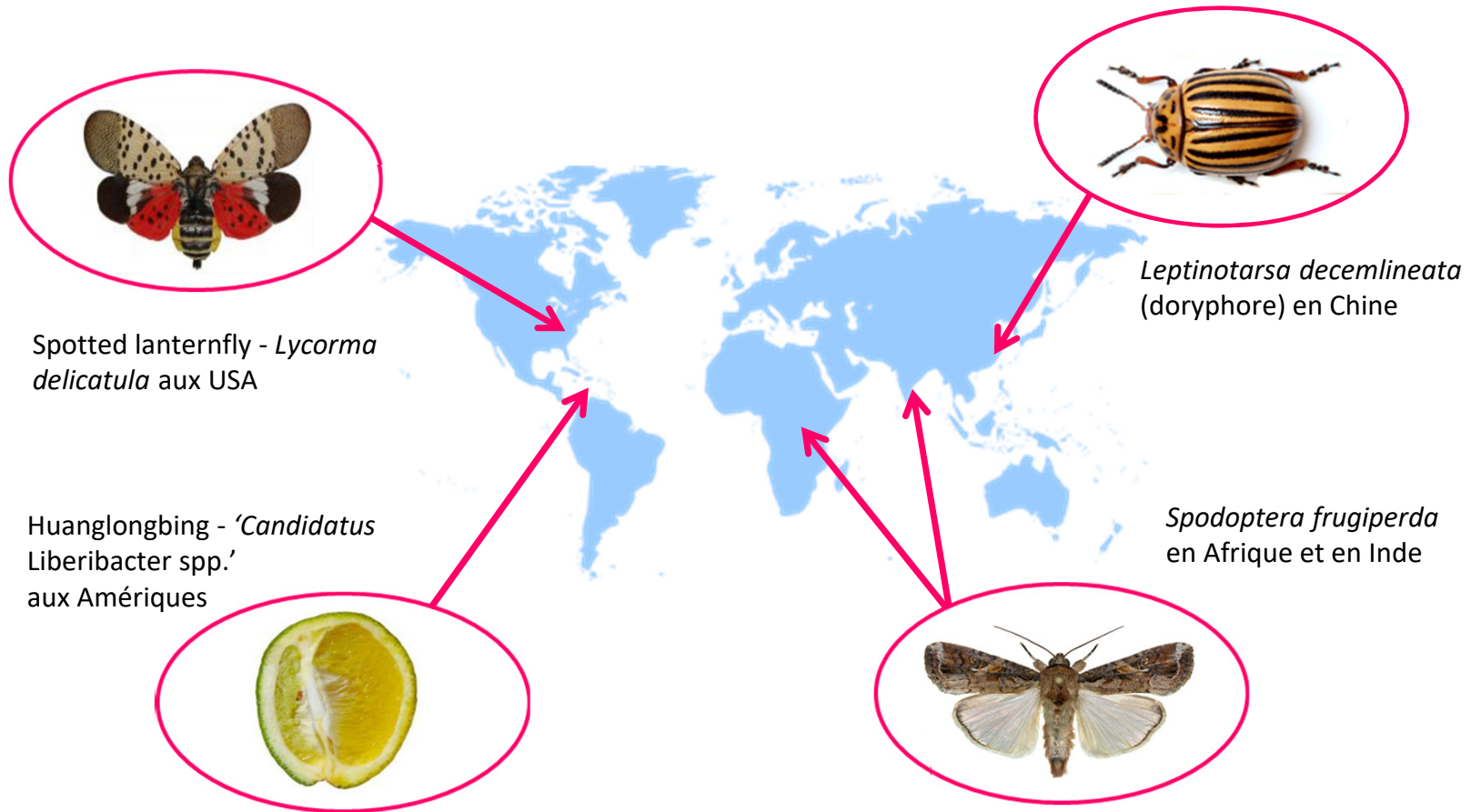


THE EMBARKATION, WATERLOO DOCKS LIVERPOOL



THE FAMINE IN IRELAND.—FUNERAL AT SKIBBEREEN.—FROM A SKETCH BY MR. H. SMITH, CORK.

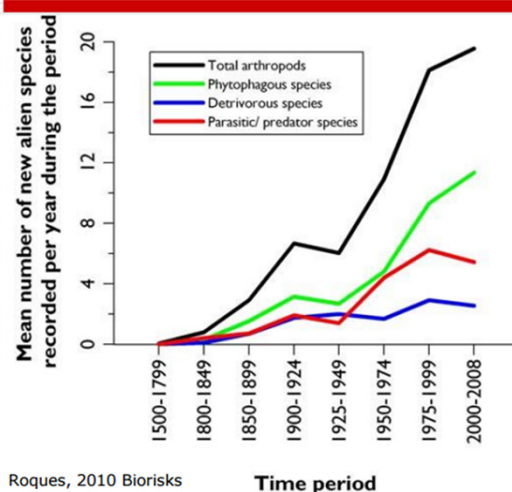
# Emergences: un problème mondial





# Un problème qui semble s'intensifier et s'accélérer

## Globalization accelerated arthropod invasions, especially of non-native phytophages



Basic data:  
DAISIE 2005- 2008

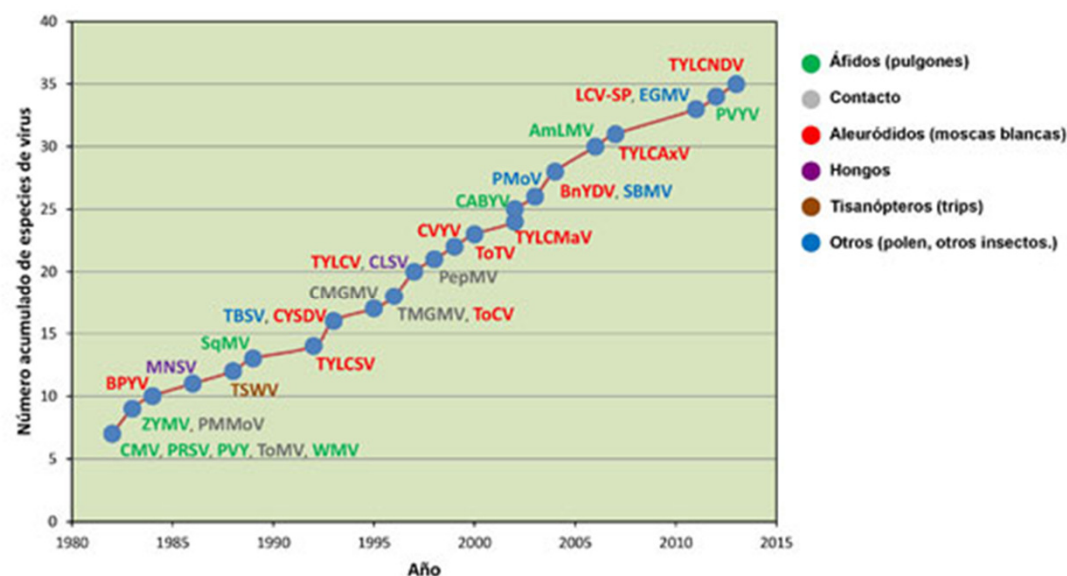
Update:  
EASIN 2014  
[www.easin.org](http://www.easin.org)

ca. 11.5 new phytophagous species per year since the 2000s

IPSN Conference, Kew, UK, 24 February 2016



Crédits: Alain Roques (INRA).



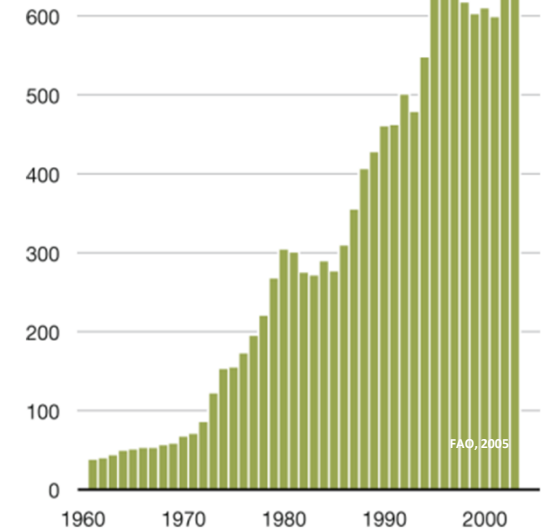
Los virus en los cultivos hortícolas protegidos del sureste español desde una perspectiva histórica by Leonardo Velasco Arjone (2015-02-21)

<https://www.interempresas.net/Horticola/Articulos/133293-virus-en-cultivos-hortícolas-protegidos-del-sureste-español-desde-perspectiva-histórica.html>

# Intensification et diversification des échanges commerciaux de végétaux et produits végétaux



Total agricultural exports (billion USD)



Accroissement des introductions accidentelles de maladies et de ravageurs

# Quelles sont les causes des émergences?

- Intensification et diversification des échanges commerciaux de produits agricoles (introductions involontaires)
- Modifications de l'environnement (changements climatiques, modifications des pratiques culturales)
- Modifications de la biologie de l'organisme nuisible (nouvelles souches, nouveaux vecteurs, nouvelles plantes-hôtes)

**Multiples, complexes et difficiles à prévoir**

**Les progrès de la science (détection/identification de nouvelles espèces) peuvent influencer notre perception du risque d'émergence**





## Mais que peut-on faire?

Dans un premier temps:

- Identifier et suivre les émergences: veille phytosanitaire
- Alerter le plus tôt possible la communauté 'phytosanitaire'
- Coopérer au niveau international

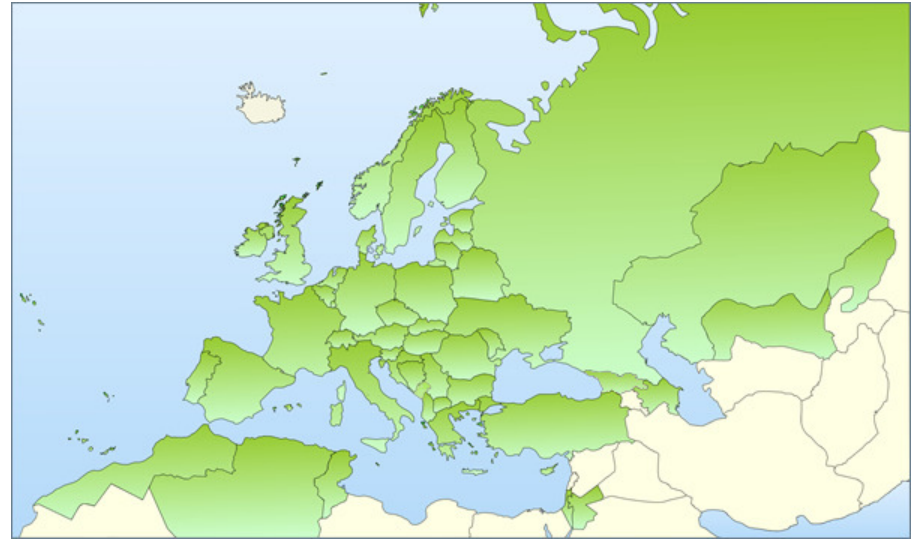


# Qu'est ce que l'OEPP?

Organisation Européenne et Méditerranéenne pour la Protection des Plantes

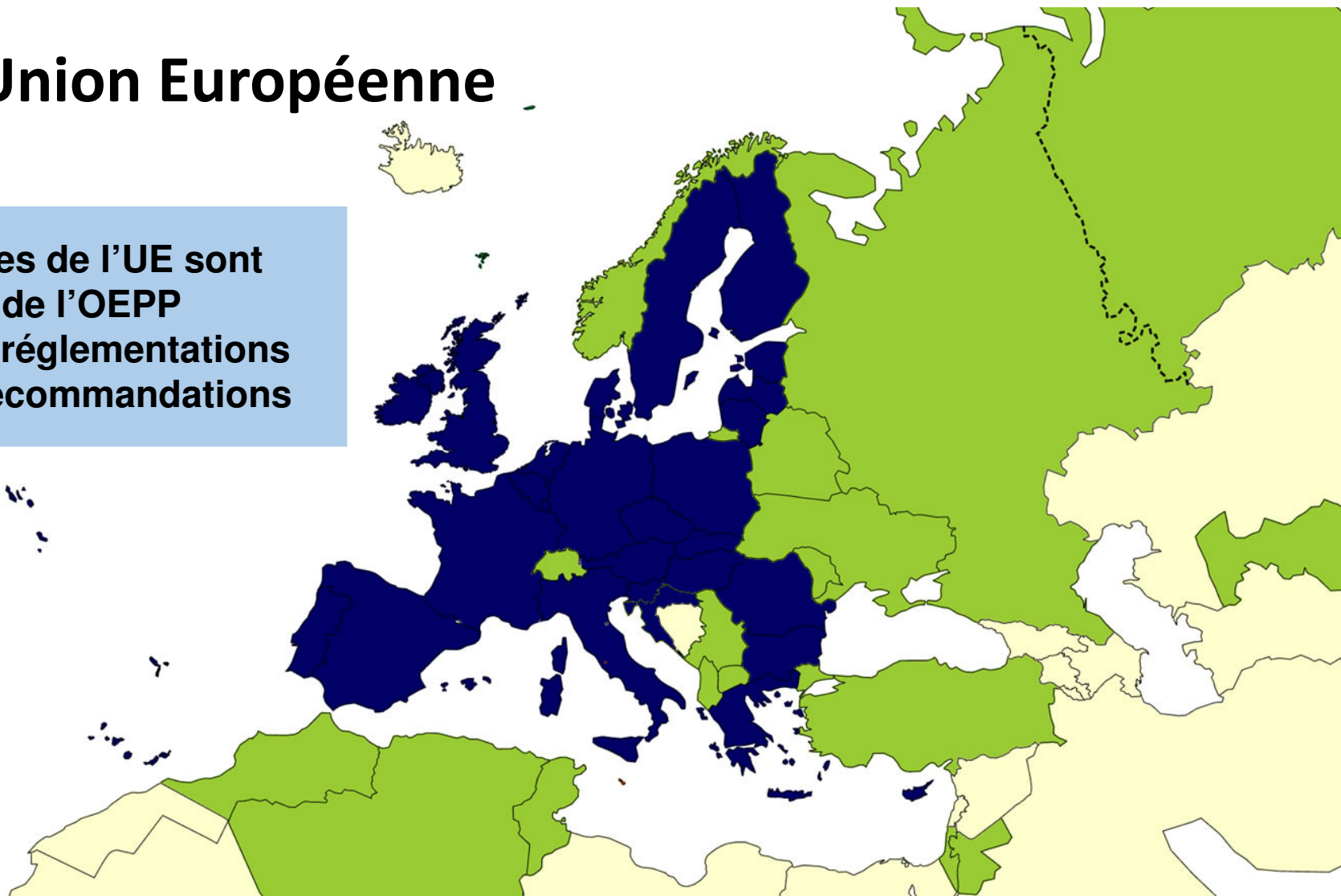


- L'OEPP est une organisation intergouvernementale
- Créée en 1951 par 15 pays
- 52 pays membres aujourd'hui
- Coopération internationale en protection des plantes:
  - quarantaine
  - produits phytosanitaires
- Travaille avec les services officiels (Services de Protection des Végétaux)



# L'OEPP et l'Union Européenne

**Les 28 membres de l'UE sont  
membres de l'OEPP  
UE prépare des réglementations  
OEPP fait des recommandations**

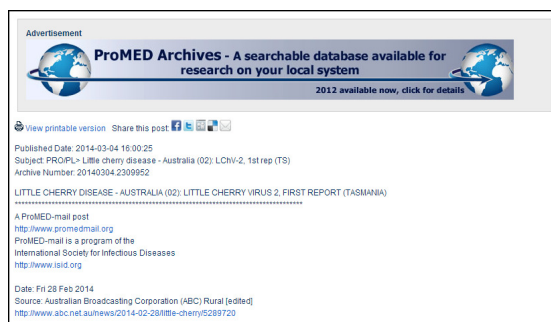




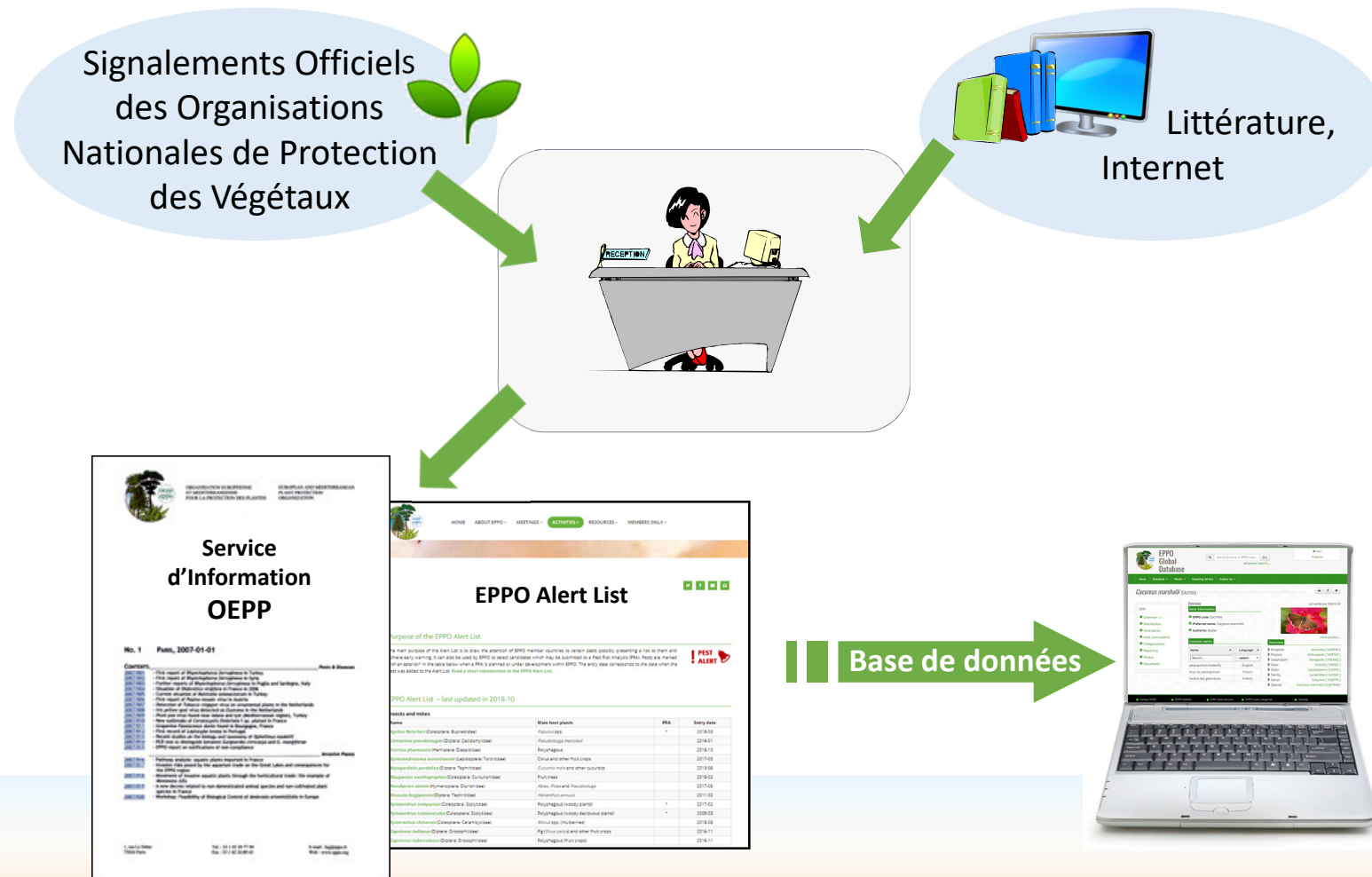
# Veille phytosanitaire: utiliser toutes les sources possibles



- Signalements officiels (foyers et interceptions)
- Littérature scientifique et technique
- Systèmes d'alerte: ProMED, PestLens, NAPPO Phytosanitary Alert System
- Bases de données
- Internet, Google (mots-clés)
- Réseaux sociaux



## Flux de l'information à l'OEPP

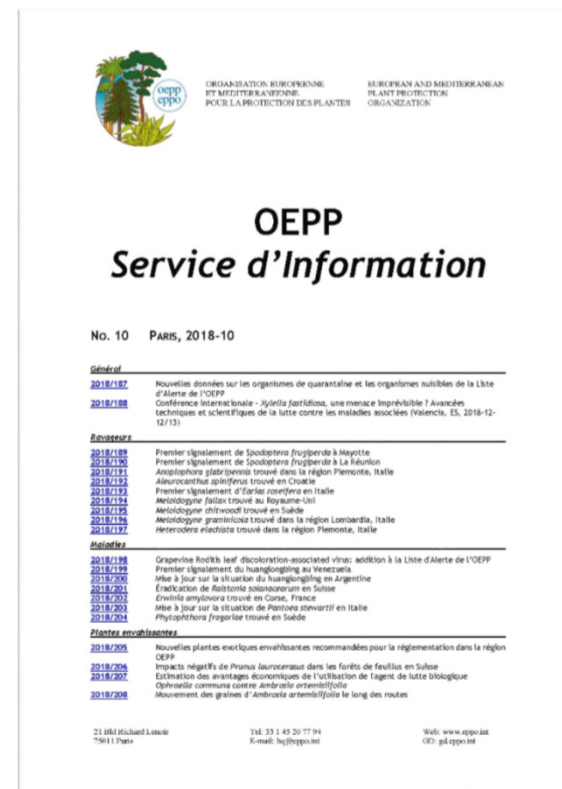


# Veille phytosanitaire: thèmes retenus

- Nouvelles introductions
- Expansion de la répartition géographique (région OEPP et ailleurs)
- Nouvelles plantes-hôtes
- Nouveaux vecteurs
- Augmentation des dégâts
- Progrès de la taxonomie ...



Tout ce qui est nouveau ou inhabituel...





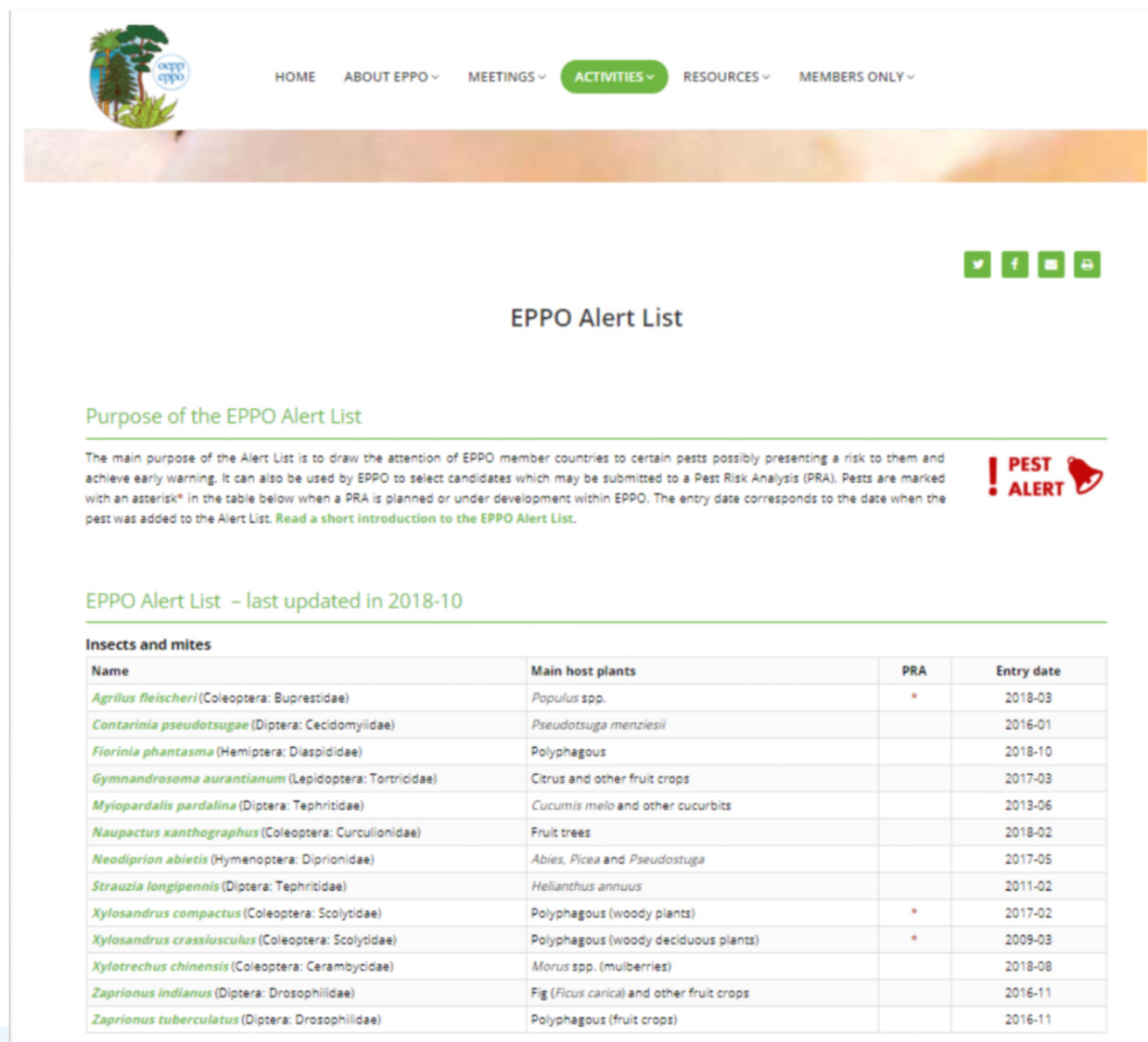
# Alerte précoce:

## Liste d'Alerte OEPP

- Initiée en 1999
- Fournit une alerte précoce
- Propose des candidats pour l'Analyse du Risque Phytosanitaire (ARP)
- Préparée par le Secrétariat de l'OEPP et revue par les groupes d'experts OEPP

En libre accès sur Internet:


[https://www.eppo.int/ACTIVITIES/plant\\_quarantine/alert\\_list](https://www.eppo.int/ACTIVITIES/plant_quarantine/alert_list)







The screenshot shows the EPPO Alert List website. At the top is the EPPO logo and a navigation menu with links: HOME, ABOUT EPPO, MEETINGS, ACTIVITIES (highlighted), RESOURCES, and MEMBERS ONLY. Below the navigation bar is a large orange banner. To the right of the banner are social media icons for Twitter, Facebook, YouTube, and LinkedIn. The main heading is "EPPO Alert List". Below this is a section titled "Purpose of the EPPO Alert List" which explains the list's purpose and includes a red "PEST ALERT" icon. Further down is a section titled "EPPO Alert List – last updated in 2018-10" which contains a table of insects and mites.

Name	Main host plants	PRA	Entry date
<i>Agrilus fleischeri</i> (Coleoptera: Buprestidae)	<i>Populus</i> spp.	*	2018-03
<i>Contarinia pseudotsugae</i> (Diptera: Cecidomyiidae)	<i>Pseudotsuga menziesii</i>		2016-01
<i>Florinia phantasma</i> (Hemiptera: Diaspididae)	Polyphagous		2018-10
<i>Gymnandrosoma aurantianum</i> (Lepidoptera: Tortricidae)	Citrus and other fruit crops		2017-03
<i>Myiopardalis pardalina</i> (Diptera: Tephritidae)	<i>Cucumis melo</i> and other cucurbits		2013-06
<i>Naupactus xanthographus</i> (Coleoptera: Curculionidae)	Fruit trees		2018-02
<i>Neodiprion abietis</i> (Hymenoptera: Diprionidae)	<i>Abies</i> , <i>Picea</i> and <i>Pseudotsuga</i>		2017-05
<i>Strauzia longipennis</i> (Diptera: Tephritidae)	<i>Helianthus annuus</i>		2011-02
<i>Xylosandrus compactus</i> (Coleoptera: Scolytidae)	Polyphagous (woody plants)	*	2017-02
<i>Xylosandrus crassiusculus</i> (Coleoptera: Scolytidae)	Polyphagous (woody deciduous plants)	*	2009-03
<i>Xylotrechus chinensis</i> (Coleoptera: Cerambycidae)	<i>Morus</i> spp. (mulberries)		2018-08
<i>Zaprionus indianus</i> (Diptera: Drosophilidae)	Fig ( <i>Ficus carica</i> ) and other fruit crops		2016-11
<i>Zaprionus tuberculatus</i> (Diptera: Drosophilidae)	Polyphagous (fruit crops)		2016-11

# Quelques exemples...



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## EPPO Alert List – *Meloidogyne ethiopica* and *Meloidogyne luci*

### Root-knot nematodes

**Why**

In 2003, a tropical root-knot nematode species, initially identified as '*Meloidogyne ethiopica*' was found for the first time in a tomato greenhouse in Slovenia. As *M. ethiopica* is a polyphagous species which can multiply on many different types of plants (dicotyledons and monocotyledons), it was added in 2011 to the EPPO Alert List. In 2014, a morphologically similar species, *M. luci*, was described. In 2015 and 2017, molecular studies on populations of *Meloidogyne* species collected from a wide range of geographical origins and host plants showed that the populations found in the EPPO region and originally identified as *M. ethiopica*, corresponded in fact to *M. luci*. As both *M. ethiopica* and *M. luci* can damage a large number of economically important crops, the EPPO Secretariat decided that both *M. ethiopica* and *M. luci* should be included in the EPPO Alert List.

**Where**

***M. ethiopica*** is a tropical root-knot species which was first described in 1968 in Southern Africa (Tanzania). Considering the recent confusion between *M. ethiopica* and *M. luci*, the geographical distribution is now rather uncertain.

**EPPO region:** absent (all populations of '*M. ethiopica*' reported from Italy, Greece, Slovenia, and Turkey correspond to *M. luci*).

**Africa:** Ethiopia, Kenya, Mozambique, South Africa, Tanzania, Zimbabwe.


**South America:** Brazil (Distrito Federal, Minas Gerais, Paraná, Rio Grande do Sul, Santa Catarina, São Paulo), Chile (detected in the Central Valley from Copiapo (north of Santiago) to Talca), Peru.

***M. luci*** was first described in 2014 from different plant species in Brazil, Chile and Iran. In the EPPO region, *M. luci* (initially identified as '*M. ethiopica*') was first found in 2003 on glasshouse tomatoes in 1 location (Dornberk) in Slovenia. All infested plants were destroyed and the nematode was no longer found. However in 2015, *M. luci* was found again on tomato roots in a glasshouse near Ljubljana (village of Šmartno) where eradication measures are ongoing. In 2009, *M. luci* (as '*M. ethiopica*') was detected in 2 soil samples which had been collected from maize (*Zea mays*) and kiwifruit (*Actinidia deliciosa*) near Kavalla, Northern Greece. The situation of this nematode in Greece needs to be further investigated. In 2009, *M. luci* (as '*M. ethiopica*') was also detected in Turkey in 2 tomato greenhouses of the University of Ondokuz Mayıs and in several commercial cucumber greenhouses in Çarşamba district (Samsun province). In 2013, *M. luci* was found in a single plot on potato (*Solanum tuberosum*) in Portugal. In the literature, there is a record of this nematode in Italy but data is lacking on its current situation.

**EPPO region:** Italy, Greece, Portugal (1 field), Slovenia (under eradication), Turkey.

**South America:** Brazil (Distrito Federal, Rio Grande do Sul, Paraná), Chile, Guatemala.

**Asia:** Iran.



Damage on tomato roots made by *M. luci* (1st generation)  
Courtesy: Dr S. Sirca (Agricultural Institute of Slovenia)



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## EPPO Alert List – *Xylotrechus chinensis* (Coleoptera: Cerambycidae)

**Why**

*Xylotrechus chinensis* (Coleoptera: Cerambycidae - Tiger longhorn beetle) is an Asian wood borer which has recently been found in two EPPO countries (Spain, Greece), causing mortality of *Morus* trees. In its area of origin, other reported hosts include *Malus* spp. (apple), *Pyrus* spp. (pear), and *Vitis vinifera* (grapevine). Considering the importance of the host plants in the EPPO region, and its recent introduction in several places almost simultaneously, the EPPO Secretariat considered that *X. chinensis* should be added to the EPPO Alert List.



Eggs (unfertilized)  
Courtesy: Victor Sarto i Monteys - Institute of Environmental Science and Technology (ICTA), Spain



Last instar larva (extracted from its cavity)  
Courtesy: Victor Sarto i Monteys - Institute of Environmental Science and Technology (ICTA), Spain



Adult detected in the region of Heraklion (Crete, Greece)  
Courtesy: Leivadara et al. (2018)

**Where**

*X. chinensis* originates from East Asia. In Spain, it was first found in 2013 in Cataluña where it is considered to be established, and in 2018 it was also observed in Comunidad Valenciana. In Greece, the pest was discovered in 2017 near the harbour of Heraklion in Crete.

**EPPO region:** Spain (Cataluña, Comunidad Valenciana), Greece (Crete only).

**Asia:** China (Anhui, Beijing, Fujian, Gansu, Guangdong, Guangxi, Hebei, Henan, Hong Kong, Hubei, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Xizhang, Yunnan, Zhejiang), Japan (Hokkaido, Honshu, Kyushu, Ryukyu, Shikoku), Korea (Dem. People's Republic of), Korea (Republic of), Taiwan.

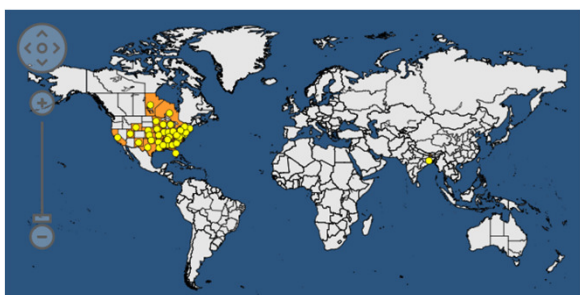
In Japan, some authors consider that two subspecies (*X. chinensis kobayashii* and *X. chinensis kurosawa*) are present on the archipelago. However, the status of these subspecies needs to be clarified.

**On which plants**

*Morus* spp. (mulberries), in particular *M. alba*, *M. bombycis*, *M. nigra* are considered as major hosts. *Malus* spp. (apple), *Pyrus* spp. (pear), and *Vitis vinifera* (grapevine) are considered as hosts in some publications but without direct evidence. In preliminary experiments conducted in Spain on *V. vinifera* plants with trunks of less than 5 cm diameter, *X. chinensis* did not use them as host plants.

# Stocker l'information dans une base de données

<https://gd.eppo.int>



Hosts

Organism	Type
Rosa (1ROSG)	Minor
Rosa bracteata (ROSCB)	Major
Rosa multiflora (ROSMU)	Major
Rosa rubiginosa (ROSRB)	Major
Rosa rugosa (ROSRG)	Major
Rosa woodsii (ROSWO)	Major

## MENU

- Overview →
- Distribution
- Host plants
- Host commodities
- Categorization
- Reporting
- Photos
- Documents

EPPO Global Database

Search by name or EPPO code... Go! advanced search...

Login Register

Home Standards Photos Reporting Service Explore by EPPO GD Desktop

### Rose rosette emaravirus (RRV000)

Last modification: 2015-03-18

**Overview**

**Basic information**

- EPPO code: RRV000
- Preferred name: Rose rosette emaravirus

**Notes**

Virus associated with the rose rosette disease which is transmitted by the eriophyid mite, Phylloctptes fructiphilus.

**Other scientific names**

Name	Authority
Rose rosette virus	
RRV	

**Common names**


Name	Language
Search...	- select -
rose rosette disease	English

**Taxonomy**

- Kingdom: Viruses and viroids (1VIRUK)
- Category: Viruses (1VIRUD)
- Order: Bunyavirales (1BUNYO)
- Family: Fimoviridae (1FIMOF)
- Genus: Emaravirus (1EMRAG)
- Species: Rose rosette emaravirus (RRV000)




# A l'OEPP, la veille fait partie d'une stratégie plus globale

- 
- **Maintenir un système d'alerte précoce (EPPO Alert List) et une base de connaissances (EPPO Global Database)**
  - **Evaluer les risques présentés par les maladies et les ravageurs émergents (Analyse du Risque Phytosanitaire)**
  - **Recommander pour 'réglementation de quarantaine' certains organismes émergents**



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# North American Plant Protection Organization's







## Phytosanitary Alert System


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### Emerging Pest Alerts

**Warning:** The following Alerts have not been confirmed with the appropriate National Plant Protection Organization(s). They are provided solely as an early warning to users, for emerging plant pests that are not present in the North American region. Users should use this information with caution.

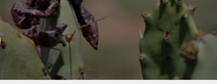
Select: All

Scientific Name	Common Name	Summary	Posted
 <i>Pseudomonas syringae</i> pv. <i>actinidiae</i> (Taitkara, Saitara, Ichikawa, Tsuyumu and Goto)		<i>Pseudomonas syringae</i> pv. <i>actinidiae</i> : new distribution	Nov 20, 2018
 <i>Meloidogyne luci</i> Carneiro et al.	Tropical root-knot nematode	First report of the root-knot nematode <i>Meloidogyne luci</i> associated with potato	Aug 06, 2018
 <i>Tuta absoluta</i> Meyrick	Tomato leaf miner	<i>Tuta absoluta</i> : new distribution and detection	Jul 11, 2018
 <i>Trogdema granarium</i> (Everts), 1999	Khapra beetle	Mexico intercepts <i>Trogdema granarium</i> on international consignments	Jun 08, 2018
 <i>Arthrinium xanocordella</i> Crous		First report of the fungus <i>Arthrinium xanocordella</i> as a plant pathogen	May 15, 2018
 <i>Cydaspia perspectalis</i> Walker		<i>Cydaspia perspectalis</i> : new distribution	May 15, 2018


**CABI**


# Invasive Species Compendium

Detailed coverage of invasive species threatening livelihoods and the environment worldwide




## Featured species


Click through to information portals for featured invasive species



*Spodoptera frugiperda*  
(fall armyworm)



*Pteridium hystricophora*  
(Toledo weed)



*Tuta absoluta*  
(Tomato leafminer)

## Latest invasive species datasheets

**Codium parvulum**  
Codium parvulum is a green seaweed found in infralittoral habitats, originally described from the Red Sea. It entered the Mediterranean via the Suez...

**Vespa velutina (Asian hornet)**  
Vespa velutina (Hymenoptera: Vespidae) is a hornet of Asian origin which is a predator of social hymenopterans, and in particular of honey bees (Apis)...

**Pteridium hystricophora (Toledo weed)**  
P. hystricophora is an annual herb that aggressively colonises disturbed sites. It is considered as one of the "100 most invasive species in the..."

**CABI Invasives**  
CABI Invasives  
After years of effort, the invasive African lag-headed ant has successfully b...  
12.09.2017 - 20 November, 2018

**Partnership awareness campaign** reaches urban population in Islamabad  
09.04.2018 - 20 November, 2018

**Senate passes bill to help keep invasive species out of Lake Erie**  
Publisher - Port Clinton News Herald

**Senate passes bill to help keep invasive species out of Lake Erie**  
Publisher - Port Clinton News Herald

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**Plant Health General News**

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[Kiwifruit vine disease detected in Australia](#)



Dark spotting on the leaf of a kiwi fruit plant. The first detection in Australia of an aggressive kiwifruit vine disease has been confirmed in Victoria. The bacterial disease, known as PSA, was found development zone of gold kiwifruit vines at an orchard north of Shepparton. Rural Newsletter Rural news in your inbox? Subscribe for the national headlines of the day. Agriculture Victoria today confirmed the contamination in a section of the Seeka Australia plot at Bunbartha. Chief plant health officer Rosa Crnov said while the detection of the disease is a serious matter, it was important for ...

Dates	Location
Discovered November 18, 2018 Published October 15, 2018	Victoria, English River, Seychelles

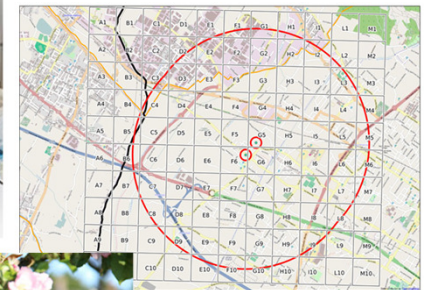


# Conclusions

Les émergences peuvent avoir des conséquences socio-économiques importantes.

La veille phytosanitaire internationale est nécessaire car les ONPVs doivent pouvoir définir ensemble et le plus tôt possible des stratégies pour gérer les émergences :

- Analyser les risques (ARPs)
- Elaborer un cadre réglementaire si nécessaire
- Préparer des plans d'urgence :
  - Surveillance
  - Méthodes de diagnostic
  - Méthodes de lutte
  - Campagnes de communication



# Conclusions

Une gestion efficace des émergences repose sur la participation active de très nombreux acteurs : autorités officielles, chercheurs, producteurs, techniciens, commerce, communicants et citoyens.



Une bonne communication est essentielle !





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Merci de votre attention



*Nymphaea* sp. (NYM)