ACTION PLAN
Xylella fastidiosa
2017-2018

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RÉPUBLIQUE FRANÇAISE

MINISTÈRE
DE L'AGRICULTURE
ET DE
L'ALIMENTATION

October 2018

FOREWORD

Xylella fastidiosa was identified for the first time in Europe in 2013; since then the bacterium has been ranked as a top plant health priority by the European Union and has been a concern in many countries, including France.

Using insects as vectors, the bacterium attacks many different plants (over 360 host species have been identified, including vines, olive trees, fruit trees, coffee bushes, oaks, etc.) and can lead to their decline and eventually to their death. The disease has variable impacts, depending on the ecosystems. Exclusively colonizing the xylem vessels, *Xylella fastidiosa* prevents the plant from feeding itself by hindering sap circulation. Related symptoms are not specific (withering, leaf scorching) thus making detection difficult.

Xylella fastidiosa has already been identified in several EU countries, including France, Germany, Spain or Italy where it attacked olive trees and lead to significant olive tree decline in the Puglia region (in the south of Italy).

STATUS IN FRANCE

In 2017, 41,918 inspections were conducted nationwide, including 7,675 inspections in *Xylella*-free areas and 34,243 inspections in demarcated areas around identified outbreaks. These inspections allowed detecting 82 additional outbreaks, mostly in Corsica and in the Provence-Alpes-Côte d'Azur regions.

All in all, the plant health situation has not evolved much in France.

Enhanced surveillance is maintained and government services are conducting actions aimed at eradicating the outbreaks identified in contaminated areas.

There is currently no treatment available against the bacterium. Modified Implementing Decision 2015/789/EU as regards to the introduction and the spread of Xylella fastidiosa within the EU, provides for the uprooting and destruction of infected plants. This Implementing Decision was modified under Implementing Decision 2017/2352 of 14 December 2017.

Modifications mainly address the rules for the surveillance and the control of the disease, and the movement of specified plants within the territory of the European Union. More specifically, the implementation of a containment strategy is validated for Corsica and for the Balearic Islands.

The joint commitment made by all EU Member States and by the European Commission to implement a harmonized strategy to eradicate this scourge is of paramount importance. In such a context, Mr. Stéphane Travert, French Minister for Agriculture and Mr. Vytenis Andriukaitis, the European Commissioner for Health, organized a meeting in Paris on 1st December 2017, with the aim of addressing the matter with the 10 member States affected by Xylella fastidiosa. A roadmap was drafted, providing for enhanced measures at European level in order to prevent and manage the disease and protect the abundance of our crops.

The actions listed in the roadmap provide for a large information campaign to be launched at the beginning of 2018, to inform the public at large, with a special focus on travelers.

The 2017 action plan provides a first overview of the measures put in place in 2017 and looks into the actions carried out in 2018..

REVIEW OF ACTIONS IMPLEMENTED IN 2017

REVIEW OF ACTIONS IMPLEMENTED IN 2018

REVIEW OF ACTIONS IMPLEMENTED IN 2017

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AXIS 1

PREVENTING NEW CONTAMINATIONS IN THE TERRITORY

ACTION 1

REINFORCING THE COMMITMENT OF ALL MEMBER STATES AGAINST *XYLELLA FASTIDIOSA* IN EUROPE

On 1 December 2017, the European Commission and France invited the Ministers of the European Member States most affected by *Xylella fastidiosa* – due to soil and climate conditions or because of *Xylella fastidiosa* outbreaks in their territories – to take part in a high level meeting in Paris. A technical meeting took place the day before, with the Chiefs of Plant Health Services in Europe (COPHS).

Croatia, Cyprus, France, Germany, Italy, Malta, Portugal, Slovenia, Spain, Greece and the European Commission all reaffirmed their collective commitment to take action so as to control *Xylella fastidiosa* and adopted an ambitious roadmap aimed at better controlling the disease. The key points of the agreement focus on three axes:
- improving knowledge via applied research programs,
- increasing surveillance to ensure early detection and rapid eradication of potential new outbreaks,
- reinforcing awareness and information initiatives.

The success of the roadmap is conditional upon the allocation of sufficient human and financial means, by each delegation and at all levels. The conclusions of the meeting were approved by all the delegations attending the meeting as well as by the European Commission.

Information pertaining to this meeting are available on the website of the Ministry of agriculture and food.

Participants to the High Level Meeting which took place in Paris on 30 November and 1 December 2017.
From left to right and from top to bottom: Italy, Malta, Spain, Portugal, Germany, France, Greece, the European Commission, Slovenia, Croatia, and Cyprus.

Information is available here :
- http://agriculture.gouv.fr/xylella-fastidiosa-mobilisation-de-haut-niveau-contre-une-menace-majeure-pour-la-sante-des-vegetaux
- http://agriculture.gouv.fr/sante-des-vegetaux-conference-ministerielle-europeenne-sur-la-bacterie-xylella-fastidiosa

ACTION 2

PREVENTING CONTAMINATION WITH *XYLELLA FASTIDIOSA* FROM THIRD COUNTRIES

■ Continued application of controls at the EU entry points

Pursuant to Implementing Decision 2015/789 on measures to prevent the introduction and the spread of *Xylella fastidiosa* within the EU, controls[1] are carried out at EU entry points : samples are taken from all consignments of specified plants of *Xylella fastidiosa* imported from third countries in which the bacterial disease is known to be present and such consignments are retained, pending test results. In certain cases, consignments can also be kept for the purpose of genetic tests: sequencing of the strain and augmentation of the genetic database. In 2017, no consignment was intercepted and found positive for *Xylella fastidiosa*.

■ Control of plant transportation by travelers and communication campaigns

A Ministerial Order of 21 January 2015 lays down the maximum quantities authorized for the introduction of plants, plant products and other objects in the luggage of travelers coming from third countries. These provisions are recalled in a poster which is widely displayed in ports and airports and in local departments and regions via the Departmental Directorates for (Social Inclusion and) the Protection of the Population (DD(CS)PPs) and via the Regional Directorates for Food, Agriculture and Forestry (DRAAFs).

ACTION 3

REINFORCING SURVEILLANCE IN THE TERRITORY

■ Surveillance plan for *Xylella fastidiosa*

National surveillance, put in place and reorganized for many years, was reinforced in 2017. Implementation modalities were specified in Technical Instruction ref: DGAl/SDQSPV/2017-653 « National Multi-Year Surveillance Plan against *Xylella fastidiosa* » of 1 August 2017. As compared to the Technical Instruction issued in 2016, this latest instruction clarifies the modalities for the reinforcement of the surveillance of grape vines, the surveillance in overseas departments and lays down the critical points with regards to exports as well as the modalities for the recording of samples.

Surveillance relies on three complementary approaches which are described below: event-based surveillance, scheduled official surveillance and scheduled but non-official surveillance.

■ Scheduled Official Surveillance

Scheduled official surveillance is implemented via targeted inspections of plant producers and retailers, and in fields for “at-risk” productions (arboriculture, vines, ornamental plants, aromatic, medicinal and spice plants). Scheduled official surveillance is organized according to 4 inspection schemes:

➔ **Targeted Plant Health Inspections for the *Xylella fastidiosa*-specific Official Surveillance of Regulated or Emerging Pests.** The number of annual inspections for each plot of land or site has been scheduled for each crop, based on a risk analysis. The surveillance plan specifies the plots of land or sites to be inspected. Objectives are set on a multi-year basis.

1 Pursuant to Instruction ref: DGAL/SDASEI/2017-477 of 29 May 2017 on surveillance and control plans for imported plants in EU entry points

Inspections conducted for the Non-*Xylella fastidiosa*-specific Official Surveillance of Regulated or Emerging Pests (i.e. conducted against other regulated harmful pests). Surveillance of *Xylella fastidiosa* is also combined to the surveillance of other harmful pests or diseases such as grapevine flavescence dorée, bacterial necrosis, plum pox virus, Asian long horned beetle, canker stain of plane tree, etc. .

Inspections conducted for the delivery of the EU Plant Passport (PP)

Pursuant to modified Implementation Decision 2015/789/EU, EU Plant Passports are implemented for all host species.

All establishments producing or selling plants which must be accompanied by a PP are submitted to plant health inspection aimed at detecting the presence of *Xylella fastidiosa*. Such controls are implemented via documentary and plant health inspections (visual inspections and sampling of symptomatic plants). Mother-plants nurseries of host plants, grape vine nurseries and nurseries importing plants from third countries in which the disease is present or suspected of being present, are placed under reinforced surveillance (samples are taken, even in the absence of symptoms.

Inspections in EU Entry Points. See above action 2 « Preventing contamination with *Xylella fastidiosa* from third countries », page 9.

Scheduled, non-official surveillance

The surveillance of *Xylella fastidiosa* is included to the observations conducted by existing epidemiological surveillance networks whose mission is to detect regulated and non-regulated harmful pests; such existing networks are the Forest Health network (réseau Santé des Forêt - DSF) and the Epidemiological Surveillance network which receives funding from the Ecophyto Program.

Event-based surveillance

Such surveillance relies on reports of suspected cases of *Xylella fastidiosa* contamination by any person (individuals, professionals) or even by Ecophyto observers (when such observations are made outside their scheduled activities).

In order to increase the efficacy of event-based surveillance activities, vigilance was increased in the field and an awareness campaign was deployed all-over the territory. Specific material dedicated to *Xylella fastidiosa* was generated and is regularly updated1. Communication and information campaigns for the general public are rolled-out on a regular basis.

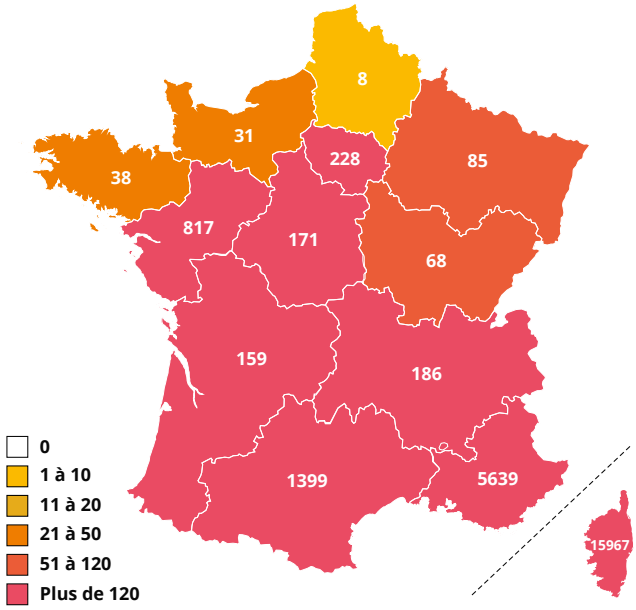
Territorial surveillance review

In 2017, surveillance programs enabled identifying 82 additional outbreaks in one year (+ 20 %), mostly in two regions, i.e.: Corsica and Provence-Alpes-Côte d'Azur.

In 2017, 7 675 inspections were conducted all over the free areas of the territory (excluding outbreaks)[1]. Regarding outbreaks in Corsica and in the Provence-Alpes-Côte d'Azur regions, 34 243 inspections were conducted in the buffer zones.

Between 1 July 2015 and 31 December 2017, 24 928 samples were taken in the national territory, including 8 119 in 2017.

Number of samples taken in France for the surveillance of *Xylella fastidiosa*, since July 2015.
Samples taken in overseas departments are not shown here.



1 Pursuant to Instruction ref: DGAL/SDASEI/2017-477 of 29 May 2017 on surveillance and control plans for imported plants in EU entry points

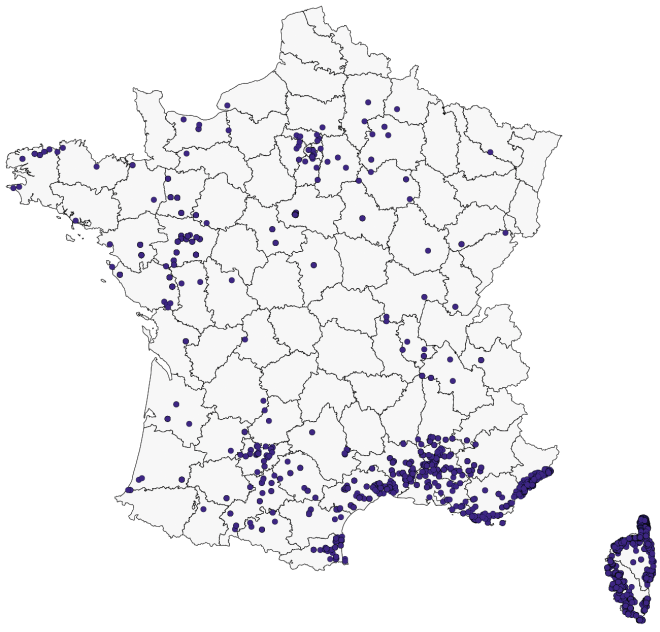
For more information, see the articles in the website of the Ministry of Agriculture :
http://agriculture.gouv.fr/xylella-fastidiosa-une-bacterie-nuisible-pour-les-vegetaux

Surveillance intensity is defined based on a risk analysis and based on the specific topography of each French region (surveillance intensity is decreased in elevated areas which are not favorable for the establishment of *Xylella fastidiosa*).

Map of mountain areas in France

In 2017, 8 119 samples were taken in France, including 3 290 in Corsica and 2 731 in the Provence-Alpes-Côte d'Azur region. Over the same period, 152 positive samples were detected in the country, in these two regions only. All identification tests conducted over this period evidenced the presence of the multiplex sub-species.

Location of samplings taken between 1 January and 31 December 2017



Locations of positive samples found in 2017

The multiplex sub-species

Since 2015, surveillance enabled identifying 40 host plants for the multiplex sub-species:

- *Acacia dealbata Link*
- *Acacia saligna (Labill.) H.L.Wendl.*
- *Acer pseudoplatanus L.*
- *Anthyllis hermanniae L.*
- *Artemisia arborescens (Vaill.) L.*
- *Asparagus acutifolius L.*
- *Calicotome villosa (Poiret) Link*
- *Cercis siliquastrum L.*
- *Cistus creticus L.*
- *Cistus monspeliensis L.*
- *Cistus salviifolius L.*
- *Coronilla glauca L.*
- *Coronilla valentina L.*
- *Cytisus scoparius (L.) Link*
- *Cytisus villosus Pourr.*
- *Euryops chrysanthemoides (DC.)B.Nord*
- *Genista corsica (Loisel.) DC.*
- *Genista ephedroides DC.*
- *Genista x spachiana (syn. Cytisus racemosus Broom)*
- *Hebe sp.*
- *Helichrysum italicum (Roth) G.Don*
- *Lavandula angustifolia Mill.*
- *Lavandula dentata L.*
- *Lavandula stoechas L.*
- *Lavandula x allardii*
- *Lavandula x intermedia*
- *Medicago sativa L.*
- *Metrosideros excelsa Sol. ex Gaertn.*
- *Myrtus communis L.*
- *Pelargonium graveolens L'Hér.*
- *Phagnalon saxatile (L.) Cass.*
- *Polygala myrtifolia L.*
- *Prunus cerasifera Ehrh.*
- *Prunus cerasus L.*
- *Prunus dulcis (Mill.) D.A Webb*
- *Quercus suber L.*
- *Rosa canina L.*
- *Rosmarinus officinalis L.*
- *Spartium junceum L.*
- *Westringia fruticosa (Willd.) Druce*

It should be noted that *Rosa x floribunda* was removed from the list of host plants following notification sent by the French authorities.
Indeed, for the purpose of specifying the botanic name of the rose tree via genetic tests, the DNA extract obtained from the sample was sequenced and the results demonstrated the presence of a species of cyst. The error in the result was probably due to a manipulation error in the laboratory. In the light of these new elements, it appears that no samples of the *Rosa x floribunda* hybrid has generated positive results in France and, as a consequence, this hybrid was removed from the list of host plants for the multiplex sub-species.

The pauca sub-species

To date, *Polygala myrtifolia* is the only plant species found positive for the pauca sub-species in France. Contaminated plants were sampled and destroyed in October 2015. Tests conducted since then on other host plants in the Menton outbreak area (on olive trees, oleander, bay leaf, rosemary, etc.) all came back negative.

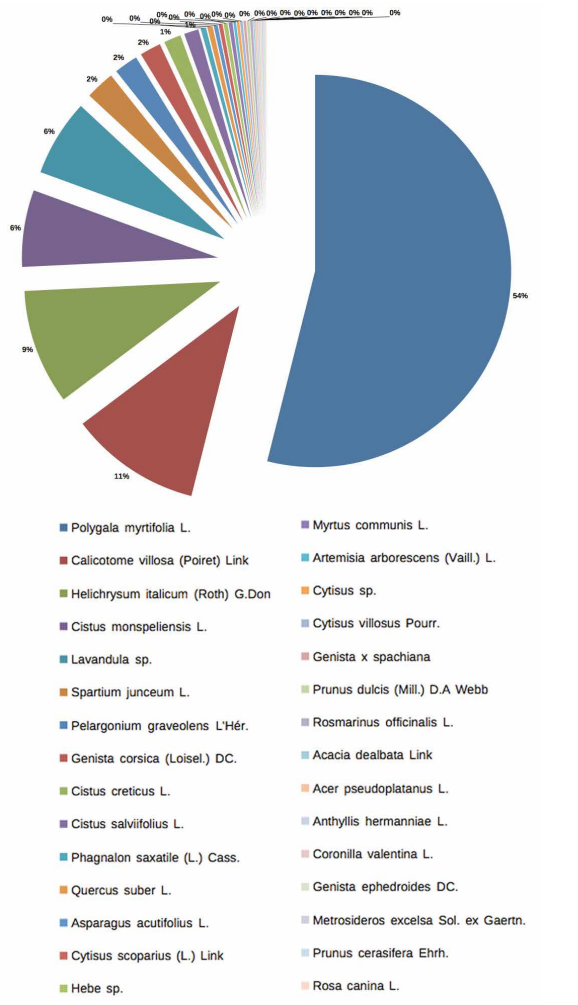
In December 2017, a new sample taken from a *Polygala myrtifolia* plant from Menton was found positive. The identified sub-species is the multiplex sub-species. This is the first case of contamination with the multiplex sub-species identified in the Menton outbreak area.

Contamination prevalence according to host species

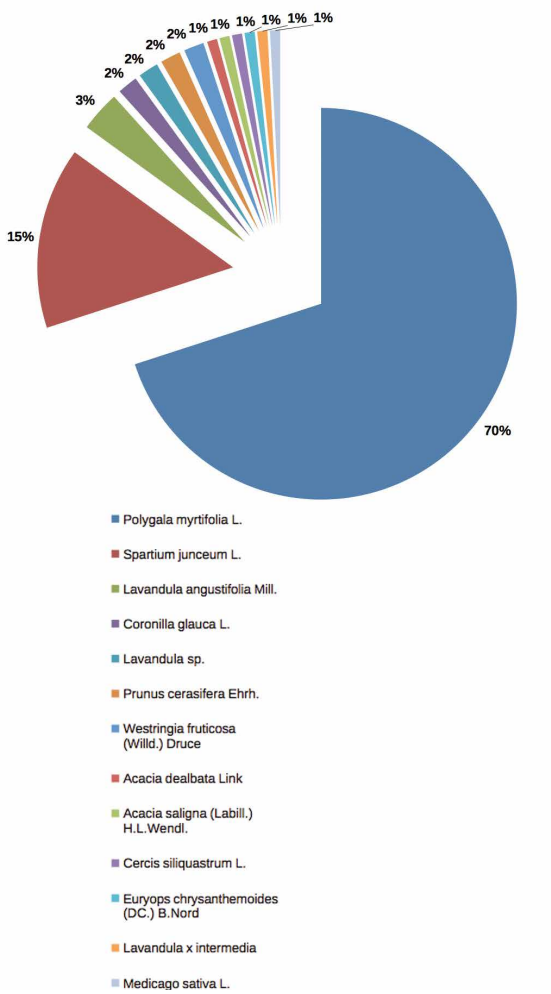
In Corsica, 80 % of positive samples were obtained from plants of the *Polygala myrtifolia* (54 %), *Calicotome villosa* (11 %), *Helichrysum italicum* (9 %) and *Cistus monspeliensis* (6 %) species.

In the Provence-Alpes-Côte d'Azur region, 85 % of positive samples were found in plants from the *Polygala myrtifolia* (70 %) and *Spartium junceum* (15 %) species.

Prevalence of positive samples according to plant species in Corsica
(data available as of 3 December 2017)



Prevalence of positive samples according to plant species in the Provence-Alpes-Côte d'Azur region
(data available as of 3 December 2017)

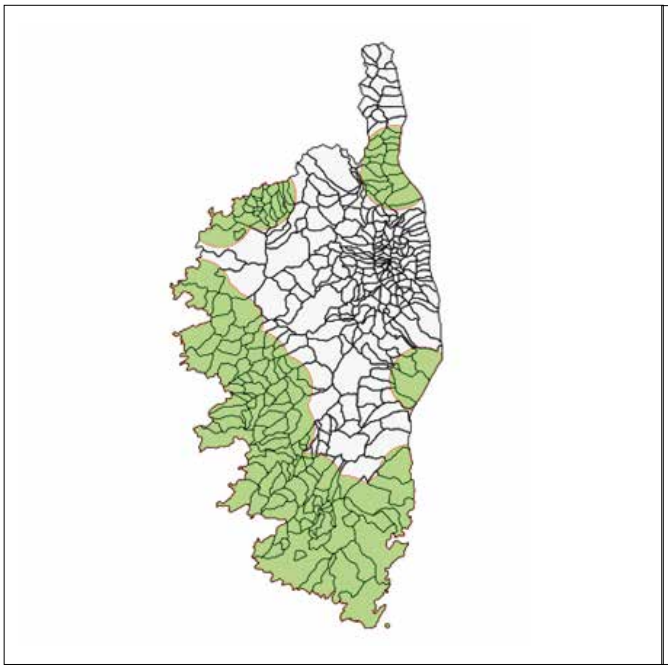


The analysis of surveillance data allowed establishing a hierarchy between the different host species, based on the prevalence of the bacterium for each species. The results show that certain species are more prone than others to the bacterium's growth or expression. These results allowed focusing the surveillance strategy and issuing recommendations for good agricultural practices.

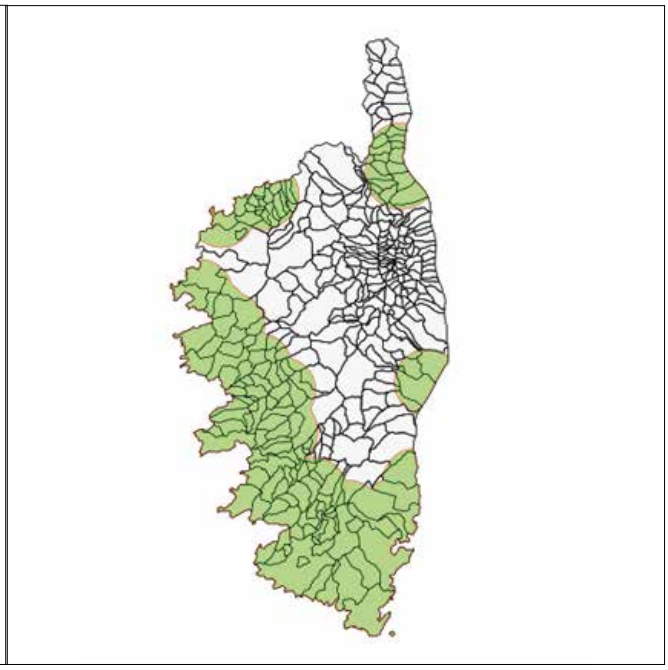
Extension of demarcated areas

Since 2016, the delimitation of demarcated areas is stable; stabilization was confirmed in 2017.

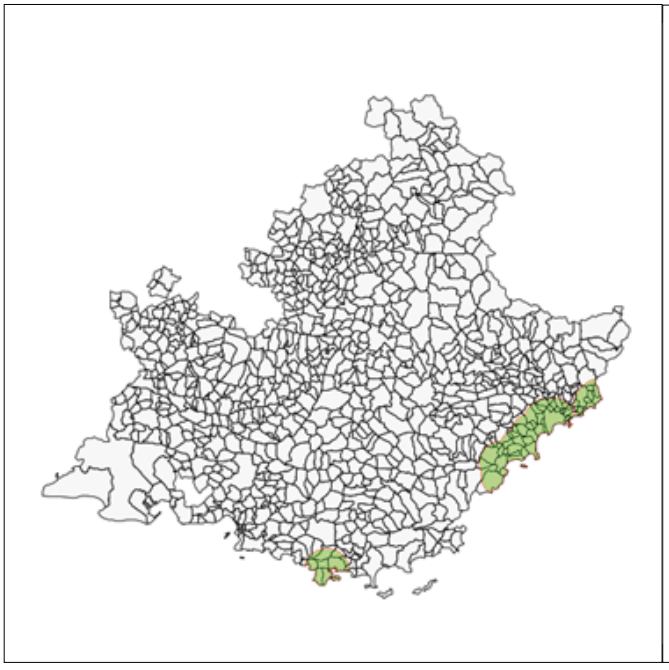
Map of demarcated areas in Corsica on 31 December 2016



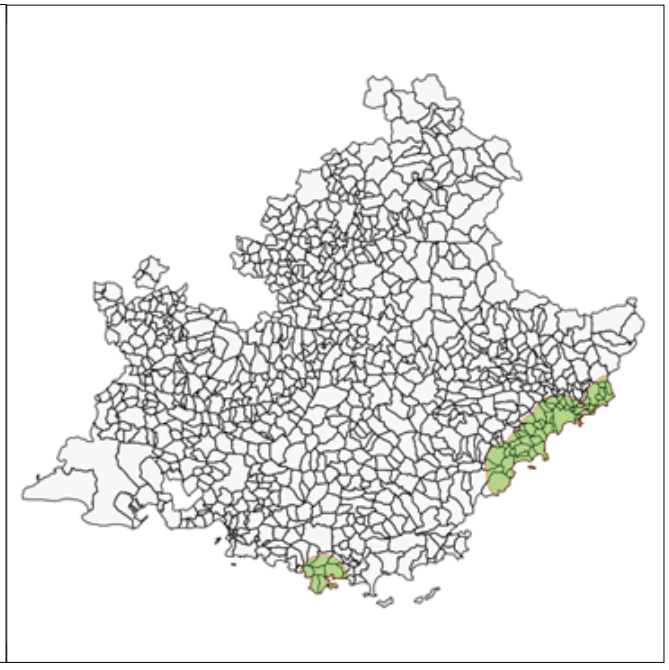
Map of demarcated areas in Corsica on 31 December 2017



Map of demarcated areas in the Provence-Alpes-Côte d'Azur region on 31 December 2016



Map of demarcated areas in the Provence-Alpes-Côte d'Azur region on 31 December 2017



Surveillance of the Menton outbreak (Alpes-Maritimes)

The Menton outbreak is located in the Alpes-Maritimes Department. This is the only outbreak in which the pauca sub-species was evidenced.

To date, all host plants for the pauca sub-species were removed, with only 16 multisecular olive trees remaining and placed under reinforced surveillance. These olive trees are kept under an insect-proof system and are physically protected against contamination by vector insects. Their health status is monitored on a regular basis, via official laboratory tests. An ad hoc surveillance of vectors is also organized in the vicinity of these olive trees (See Action 15 – Vector surveillance in the Menton outbreak area). Pursuant to Implementation Decision 2017/2352 of 17 December 2017 modifying Decision 2015/789, the specific treatment of these olive trees falls within the scope of article 6 , paragraph 2a on the derogation to the destruction of individual trees having heritage value as officially recognized by the competent authority.

Improved surveillance and data analysis within the framework of the epidemiological surveillance platform

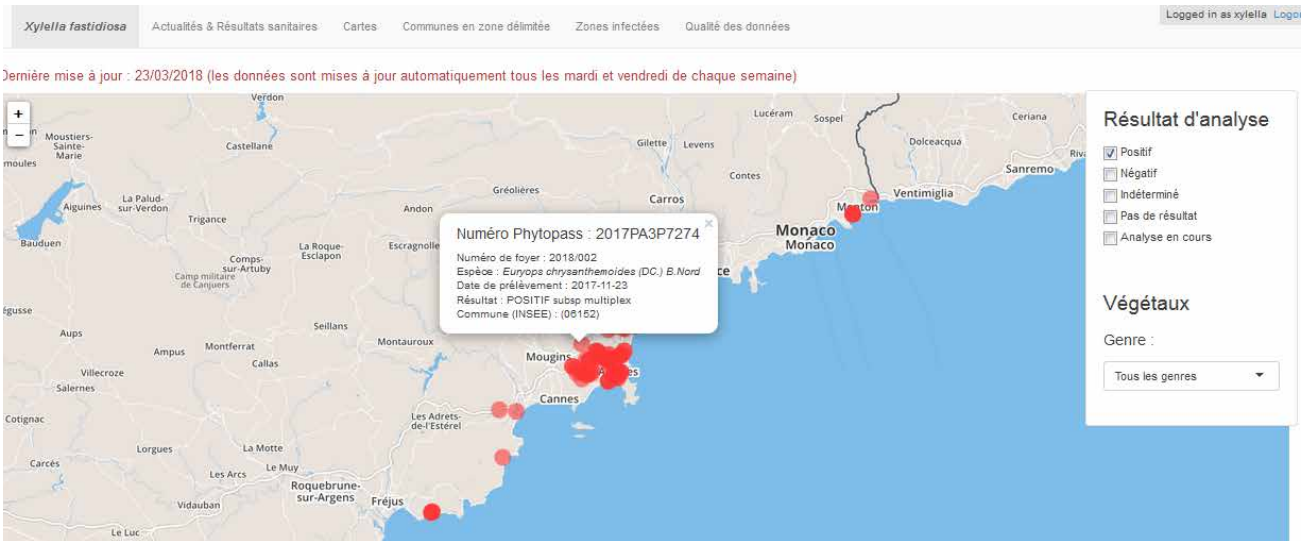
A plant health epidemiological surveillance platform is being set up with the aim of providing methodological support for the management of surveillance schemes. In this framework, the surveillance of *Xylella fastidiosa* is listed as a priority.

A technical working group was set up. It brings together all stakeholders involved in the surveillance of *Xylella fastidiosa* (professionals, scientist and government officials) and provides support to the Risk Manager (Ministry of Agriculture and Food / DGAL) in order to improve surveillance and ensure its objectives are achieved at a fair cost and in compliance with methodological standards. More specifically, this working group is responsible for assessing surveillance efficacy and the health situation with regards to *Xylella fastidiosa*, for providing feedback to local players and for identifying potential improvements for the surveillance of X. fastidiosa by emerging synergies between the surveillance schemes which are already in place.

Among other things, this working group helped set up a platform for the valorization of national surveillance data available for *Xylella fastidiosa*. These data include sampling and test results, the list of demarcated areas, maps of infected areas along with their main characteristics, sampling maps, as well as a data-quality assessment tool. The continuous analysis of these data feeds into the risk analysis and helps better targeting surveillance actions.

In 2017, this working group met again in order to discuss the modalities for the modification and the improvement of the surveillance plan before it was published in August 2017. The working group also debated about the way the national vector surveillance plan should be coordinated and implemented. This vector surveillance plan is not in place yet but its implementation is scheduled in 2018.

Screen-capture from the internet tool



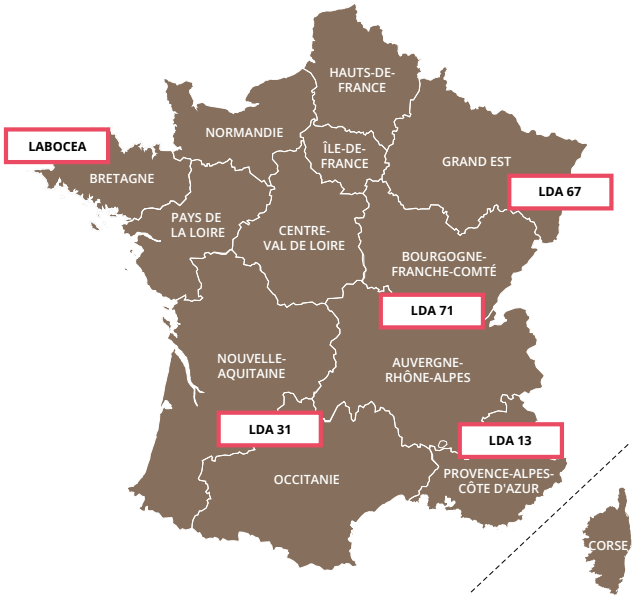
ACTION 4

AVAILABILITY OF ADAPTED TEST METHODS AND CAPABILITIES

Tests for the detection of the *Xylella fastidiosa* bacterium are conducted by a network of five approved laboratories as well as by the Plant Health Laboratory of ANSES (LSV-Angers) which is also the National Reference Laboratory (NRL).

The five approved laboratories conduct the « initial » tests aimed at detecting the presence of the bacterium in the plant. When initial tests are found positive, the results are confirmed by the National Reference Laboratory which also carries out tests to identify the sub-species of the bacterium.

Location of the five approved laboratories



Analytical methods used by the approved laboratories and by the NRL comply with international standard PM7/24 of EPPO.

Official method for the detection of the bacterium

Multiprimers PCR (Harper et al., 2010), or real-time PCR, was assessed between 2013 and 2015 and adopted as detection method for *Xylella fastidiosa* within the framework of the surveillance plan implemented in May 2015. This method allowed detecting the first outbreak of *Xylella fastidiosa* in Corsica (July 2015) and was selected as the official detection method. It was published by the Ministry of agriculture in October 2015 (MA039, version 1) for the purpose of its implementation in approved laboratories. The National Reference Laboratory drafted a test protocol for *Xylella fastidiosa*, using the MA039, version 1 official method as the screening test method, followed by a sub-species identification analysis for positive samples..

Validation and implementation of the ELISA analytical method in demarcated areas

In a letter dated December 20, 2016, the Minister in charge of Agriculture instructed the Plant Health Laboratory of ANSES to validate and implement a program aimed at detecting the bacterium using the ELISA method in demarcated areas, in compliance with EPPO standard PM7/24. The deployment of this method will contribute in optimizing surveillance strategies in Corsica.

Method validation work was initiated for plant species which seem to play a significant role in the contamination in Corsica and for which sampling pressure is high: Polygala myrtifolia (accounts for 54 % of positive samples), Calicotome villosa (11 %), Helichrysum italicum (9 %) and Cistus monspeliensis (6 %). The results of this validation program should be available at the beginning of 2018.

Sub-species identification method

The MLSA-MLST method is used for the identification of *Xylella fastidiosa*'s sub-species. This method involves the analysis of partial sequences of 7 housekeeping genes (*cysG, gltT, holC, leuA, malF, nuoL and petC*) from the bacterium's genome. This multi-loci analysis is a reference method in taxonomy research and allows determining the phylogenetic position of strains and naming them. These housekeeping genes are highly maintained within the *X. fastidiosa* species but different strains have allele variants. In this method, an allele number is allocated to each housekeeping gene and these 7 numbers define some kind of an identity document called the *Sequence Type* (ST).

Difficulties in identifying the sub-species in certain plant species (*Calicotome villosa, Helichrysum italicum*...) were noticed in 2016. In order to overcome these difficulties, the National Reference Laboratory initiated additional work in 2016 and 2017, using sets of dilution. In 2018, the PM7/24 standard will be updated and these advances will be included as recommendations.

Development of test methods for vector insects

The National Institute of Agronomic Research (INRA) is currently working on a high throughput barcoding method (Next Generation Sequencing) which will allow identifying the vector as weel as the presence of *Xylella fastidiosa* in the insect, the sub-species involved and the last ingested plant(s) (INRA-CBGP in Montpellier). A database of the DNA sequences of potential vectors for *Xylella fastidiosa* was compiled. Works continues, in partnership with the Botanical Conservatory of Corsica, in order to set up a genomic database of plant species on which vectors feed.

ANSES has been working on insects since 2016. A real-time PCR detection method was optimized and validated on Philaneus spumarius. Furthermore, insects collected in Corsica and in the Provence-Alpes-Côte d'Azur region in 2017, will be analyzed in 2018. More specifically, bacterium detection on species other than Philaneus spumarius will be tested (on other Aphrophoriadae species or on other families of insects) and a method for sub-species determination on the insects will be developed.

Database compiling the genomic sequences of arthropod species (bar codes) sequenced by INRA, CIRAD and SupAgro : **http://arthemisdb.supagro.inra.fr/DefaultInfo.aspx?Page=Home**

© Courtesy: Maria Bergsma-Vlami, NPPO, NL/EPPO

AXIS 2

PREPAREDNESS FOR THE MANAGEMENT OF POSSIBLE NEW POSITIVE CASES

ACTION 5
ADOPTION OF APPROPRIATE REGULATIONS

A National Decree against *Xylella fastidiosa* was published on 23 December 2015. This Decree stipulates that the provisions included in modified Implementation Decision 2015/789 shall apply immediately. The Decree also clarifies the role of Prefects in the regions included in the demarcated areas.

ACTION 6
CONTINGENCY PLANS

As soon as the first outbreaks were found, the Regional Food Agencies working with the Regional Directorates for Food, Agriculture and Forestry (DRAAFs/SRALs) in the two regions involved (Corsica and Provence-Alpes-Côte d'Azur) implemented a regional contingency plan.

LThe national contingency health plan (PNISU) was published on 11 January 2017 (DGAl/SDQSPV/2017-39). This plan aims at preparing state services for the implementation of control measures in case of outbreak suspicion or confirmation. This national plan is activated each time a *Xylella fastidiosa* outbreak is found.

ACTION 7
COMMUNICATION AND AWARENESS-RAISING INITIATIVES

■ Information communicated to the general public and to stakeholders

Communication initiatives were organized at regional and national level in order to provide information with regards to the plant health situation and to the action plan. Such initiatives include the meetings of the National Council for Plant and Animal Health Policies (CNOPSAV), of the Regional Councils for Plant and Animal Health Policies (CROPSAV) in disease-free and contaminated regions, the meetings of FranceAgriMer's dedicated committees, not forgetting specific meetings, etc. A whole dossier, specifically dedicated to *Xylella fastidiosa*, is available on the website of the Ministry of agriculture. This dossier includes all available information on plant health in France and in

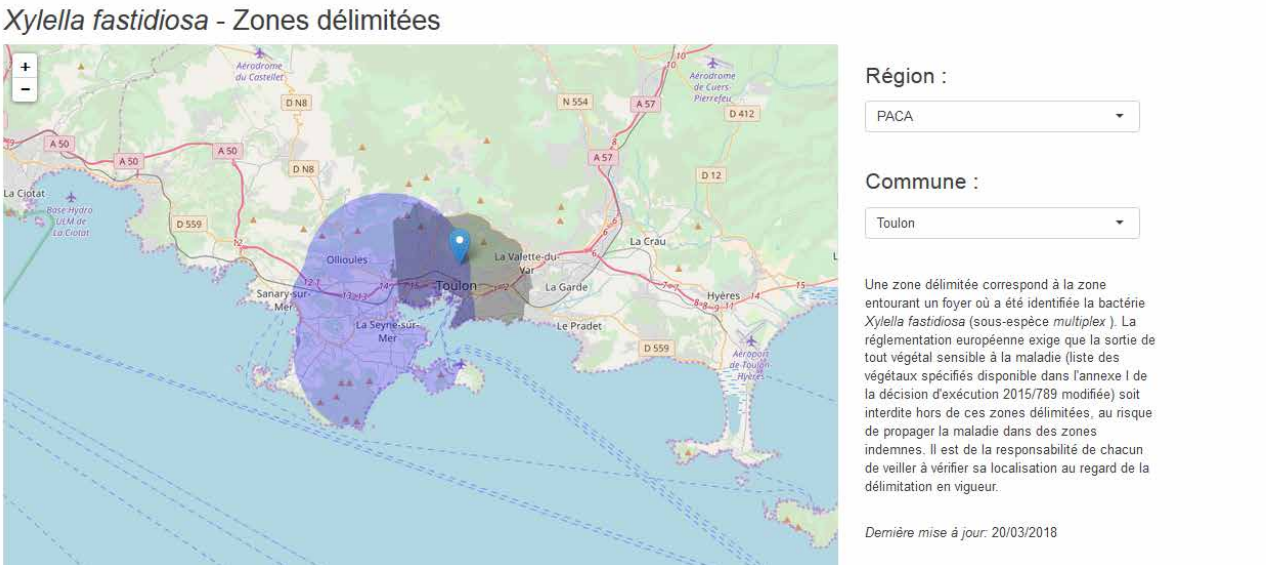
Le dossier dédié à *Xylella fastidiosa* du site du ministère chargé de l'Agriculture se situe à l'adresse suivante : http://agriculture.gouv.fr/xylella-fastidiosa-une-bacterie-nuisible-pour-les-vegetaux

Europe, information about the biology of the pathogenic bacterium, on the surveillance and eradication measures in place in the country, on the applicable regulations, on the identification of host plants for the bacterium and on the identification of the symptoms of the disease (identification aid-sheets are available), etc. Educational videos are also available.

The websites of the Regional Directorates of Food, Agriculture and Forestry in Corsica and in Provence-Alpes-Côte d'Azur also offer a specific page on *Xylella fastidiosa* on which maps and reviews of the plant health situation in each region are regularly posted, along with minutes of the meetings held by the Regional Councils for Plant and Animal Health Policies (CROPSAV), press releases, regulatory texts, updated lists of host plants, etc.

An interactive map of the health situation in France available to the general public. This map shows the geographical location of demarcated areas and provides a summary of regulatory provisions which apply to the movement of specified plants outside these areas.

Health situation in Toulon (Provence-Alpes-Côte d'Azur region)



Training available for the recognition of the symptoms of *Xylella fastidiosa*

In 2017, training sessions were organized, with the support of the French Institute for Vine and Wine, to provide training to all inspectors involved in the surveillance of vines.

Training sessions focused on the identification of the symptoms of Pierce disease.

Corsica (regional website) :
http://draaf.corse.agriculture.gouv.fr/Xylella-fastidiosa-en-Corse

PACA (regional website) :
http://draaf.paca.agriculture.gouv.fr/Actualites-PACA

The interactive map showing the health situation in France is available at the following address :
http://shiny-public.anses.fr/Xylella_fastidiosa/

AXIS 3

ERADICATION OF DETECTED OUTBREAKS

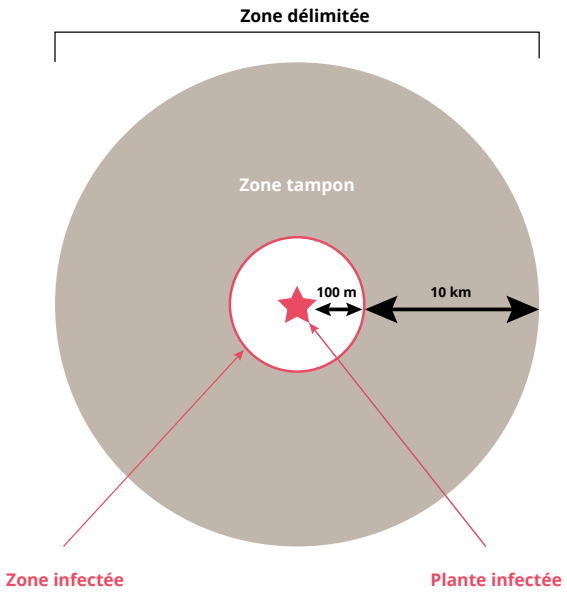
ACTION 8

CONTINUED IMPLEMENTATION OF ERADICATION MEASURES, PURSUANT TO EUROPEAN LAW

In 2017, measures aimed at eradicating the outbreak were maintained, pursuant to the provisions of Modified Implementation Decision 2015/789 and according to modalities described in the national contingency plan (PNISU). Bacterium eradication in outbreak areas is organized as follows:

- Implementation of an infected area, within which all contaminated and suspicious plants (suspicious plants are plants showing suspicious symptoms) and all host plants are uprooted, removed and destroyed after they have been treated with an insecticide in order to prevent the dissemination of vector insects,
- Surveillance is implemented in the infected area via samplings and tests, in order to confirm the bacterium's eradication,
- Surveillance is implemented in a buffer zone, with the organization of inspections and samplings in order to confirm the disease-free status of the area.

Demarcated area with buffer area and infected area



ACTION 9

CONTROLLING THE MOVEMENTS OF SPECIFIED PLANTS IN DEMARCATED AREAS

■ Ban on the movements of specified plants outside demarcated areas

Movements of specified plants outside demarcated areas must strictly comply with the provisions of Article 9 of Implementation Decision 2015/789. France issued no derogation in 2017.

■ Ban on the introduction of specified plants in Corsica

In Corsica, Prefectural Order of 30 April 2015 bans any introduction of specified plants in the island, except in case of special derogation granted by State Services. In 2017, derogations were issued for 2 million plants which were then introduced in Corsica.

i.e. so called « host plants ». The list of host plants is available from:
http://ec.europa.eu/food/plant/plant_health_biosecurity/legislation/emergency_measures/xylella-fastidiosa/

ACTION 10

IMPLEMENTATION OF SURVEILLANCE MEASURES IN BUFFER AREAS

In 2017, 34 243 inspections were conducted for the monitoring of buffer areas in Corsica and in the Provence-Alpes-Côte d'Azur region.

Region	Nbr of inspected quadras[2]	Nbr of inspections	Nbr of samples taken	Nbr of positive samples
Corsica	1 744	3 488	270	2
Provence-Alpes-Côte d'Azur	15 537	30 755	416	49

ACTION 11

UNDERSTANDING THE CONTAMINATION'S ORIGINS AND DYNAMICS

Systematic traceability investigations

Epidemiological investigations aim at identifying the geographical origin and the means of introduction of the harmful organism as well as potential dissemination areas.

When new outbreaks are found, traceability investigations are systematically conducted and inspections are organized in the facilities of the various retailers and producers involved. In 2017, all detected outbreaks were located in urban areas, at private plant owners'. The investigations were not conclusive insofar as plantation had taken place a long time before contamination was identified, which made it impossible to trace back to the origin of these contaminations.

Analysis of the disease's time and space dynamics

Modelling works initiated in 2016 were continued in 20171. They will help gain better understanding of the dissemination dynamics of the disease in France and elaborate forecasts or time and space dynamics scenarii for the national territory. These models also allow determining the date when the bacterium was introduced in France.

[2] A quadra corresponds to a 100 meter-long square, or a 1 kilometer-long square in which appropriate surveillance methods are implemented.

[3] Soubeyrand S., 2017. Modeling and estimating the dynamics of *Xylella fastidiosa* based on French surveillance data- European conference on *Xylella fastidiosa*. "Finding answers to a global problem". Palma de Mallorca, Spain.

ACTION 12

MOBILIZING THE SANITARY AND ENVIRONMENTAL MUTUAL FUND (FMSE)

A compensation scheme was put in place within the FMSE (the National Agricultural Fund for the Mutualization of Sanitary and Environmental Risks), the objective of which is to compensate for losses linked to the restriction of plants' movements and/or to their destruction due to the presence of *Xylella fastidiosa*. This scheme is available to all active professionals who are members of the FMSE (farmers and nursery owners). Non producers (retailers, retailers, etc.) cannot claim for compensation within the framework of this compensation scheme. In 2017, 5 nurseries were impacted in Corsica and they all received compensation.

ACTION 13

INCREASED HUMAN AND FINANCIAL RESOURCES

Additional financial resources were raised in 2017, in order to reinforce the surveillance and the control measures. These additional financial resources allowed increasing the number of agents involved in the surveillance of the buffer areas.

© Courtesy: Camille Picard, DGAL-SDQPV, FR/EPPO

AXIS 4

GAINING BETTER KNOWLEDGE ABOUT *XYLELLA FASTIDIOSA* AND ITS VECTORS SO AS TO ADAPT OUR STRATEGIES

ACTION 14
SURVEILLANCE OF VECTORS

■ Surveillance in Corsica

The Ministry of agriculture financed a scheme for the collection of potential vector insects for *Xylella fastidiosa* in Corsica, between the end of 2016 and mid-2017. Collections were carried out by FREDON Corsica and coordinated by the Regional Directorate for Food in Corsica.

Over a 6-months period, insects were collected in 6 outbreak areas (including Philaneus spumarius). Initial observations show that adult specimens of Philaneus spumarius remain present in the environment until the beginning of the winter period (January). The results also show high contrast in the populations according to the sampling sites and according to the collection period. At this stage, the ANSES-LSV laboratory in Montpellier has only completed the morphological identification of the collected insects. Molecular analyses will be carried out in 2018, in the ANSES-LSV laboratory in Angers. .

■ Vector surveillance in the Provence-Alpes-Côte d'Azur region

Since 2016, vector surveillance in the Provence-Alpes-Côte d'Azur region is financed by the Ministry of agriculture and carried out by FREDON under the coordination of the Regional Directorate for Food. This surveillance aims to identify the potential presence of infected vectors in the outbreaks.

➔ Specific vector surveillance in the Menton outbreak area (Alpes-Maritimes Department)

Specific vector surveillance was implemented for the Menton outbreak, in the vicinity of olive trees which were not uprooted and which are kept under physical protection systems (insect-proof). Samples are taken on a monthly basis and transmitted to the Plant Health Laboratory in Montpellier for morphological identification. Hundreds of samples have been taken since the end of 2016 and at this stage, no potential vector has been identified: molecular analysis is therefore not programmed for these samples.

➔ Vector surveillance in the vicinity of 8 outbreaks

In 2017, regular samples of insects were taken in the vicinity of 8 outbreaks (1 in the Var Department and 7 in the Alpes-Maritimes Department). All these samples were sent to the Plant Health Laboratory in Montpellier for morphological identification tests. Insects belonging to potential vector species were sent to the Plant Health Laboratory in Angers where molecular analyses will be conducted in 2018.

ACTION 15

SHARING OF RESEARCH RESULTS

The current status of research carried out in France on *Xylella fastidiosa* was presented during the scientific and technical seminar organized by INRA on 24 October 20171. This seminar was mostly addressed to the representatives of professional organizations, to officers working with regional state services (SRALs and FREDONs), representatives of Technical Institutes, officers working with the Chambers of Agriculture, the scientific community and any other stakeholder.

French research was also presented during the EFSA seminar on *Xylella fastidiosa* which took place in Palma de Majorca from 13 to 15 November 2017.

ACTION 16

INVESTIGATION INTO THE BACTERIUM'S INTRODUCTION AND DISSEMINATION ROUTE IN FRANCE

At the end of February 2017, the Investigation Brigade (BNEVP) of the General Directorate for Food was instructed to carry out a new investigation on the introduction and dissemination route of *Xylella fastidiosa* in France.

■ Updating of the analysis conducted by BNEVP in 2015 on the production of *Polygala myrtifolia*

Since the survey conducted in 2015, we notice a significant decrease in the production of Polygala in France. From 20 000/40 000 plants produced in 2015, production decreased to 10 000/15 000 plants in 2017. In Europe, the main multiplication and production areas remain unchanged as compared to 2015 and are mainly located in Spain and Italy. The main suppliers of Polygala myrtifolia plants for France are Spain, Italy, the Netherlands and Portugal. As for commercial circuits in France, the market was of 40 000 plants sold in 2017, i.e. a sharp decrease as compared to 2015 (- 75%).

■ Additional investigations carried out in 2 complementary sectors: grape vines and fruit trees' production and distribution.

The results of these investigations should be available at the beginning of 2018.

ACTION 17

EXPERT MISSION IN CORSICA, WITH OFFICERS WORKING WITH THE MINISTRY OF AGRICULTURE AND WITH THE MINISTRY OF ECOLOGY

At the request of the Prefect of Corsica, an Expert Mission was appointed at the end of 2017. This mission was carried out jointly by the General Council for Food, Agriculture and Rural Spaces (CGAAER) of the Ministry of agriculture and by the General Council for the Environment and Sustainable Development (CGEDD) of the Ministry of ecology. The mission's report should be available at the end of the first semester of 2018. It will be used to build a new strategy, adapted to the specific context of Corsica.

Information:
http://www.spe.inra.fr/Toutes-les-actualites/Seminaire-Xylella-fastidiosa

REVIEW OF ACTIONS IMPLEMENTED IN 2018

AXIS 1

PROTECTION OF DISEASE-FREE AREAS

ACTION 1

MAINTAINING AND CONSOLIDATING SURVEILLANCE IN THE TERRITORY

Surveillance of imports

As in 2017, and in compliance with Implementation Decision 2015/789 on measures to control *Xylella fastidiosa*, controls[4] will be carried out in EU entry points. Samples will be taken from all consignments of specified plants coming from third countries impacted with the disease.

Surveillance of *Xylella fastidiosa*

National surveillance will be conducted in 2018, on the same basis as in 2017. Modalities for such surveillance are specified in Technical Instruction DGAl/SDQSPV/2017-653 "*Xylella fastidiosa*: National Multi-Year Surveillance Plan" issued on 1 August 2017. Surveillance is articulated around 3 complementary approaches which are further described below: event-based surveillance, scheduled official surveillance and scheduled non-official surveillance.

Scheduled Official Surveillance

Scheduled official surveillance is implemented via targeted inspections of plant producers and retailers, and in fields for "at-risk" productions (arboriculture, vines, ornamental plants, aromatic, medicinal and spice plants). Scheduled official surveillance is organized according to 4 inspection schemes:

➔ **Targeted Plant Health Inspections for the *Xylella fastidiosa*-specific Official Surveillance of Regulated or Emerging Pests;**
The number of annual inspections for each plot of land or site has been scheduled for each crop, based on a risk analysis. The surveillance plan specifies the plots of land or sites to be inspected. Objectives are set on a multi-year basis.

➔ **Inspections conducted for the Non-*Xylella fastidiosa*-specific Official Surveillance of Regulated or Emerging Pests** (i.e. conducted against other regulated harmful pests).;
Surveillance of *Xylella fastidiosa* is also combined to the surveillance of other harmful pests or diseases such as grapevine flavescence dorée, bacterial necrosis, plum pox virus, Asian long horned beetle, canker stain of plane tree, etc.

➔ **Inspections conducted for the delivery of the EU Plant Passport (PP);**
Pursuant to modified Implementation Decision 2015/789/EU, EU Plant Passports are implemented for all host species.

All establishments producing or selling plants which must be accompanied by a PP are submitted to plant health inspection aimed at detecting the presence of *Xylella fastidiosa*. Such controls are implemented via documentary and plant health inspections (visual inspections and sampling of symptomatic plants). Mother-plants nurseries of host plants, grape vine nurseries and nurseries importing plants from third countries in which the disease is present or suspected of being present, are placed under reinforced surveillance (samples are taken, even in the absence of symptoms).

➔ **Inspections in EU Entry Points;** See above "Surveillance of imports".

[4] Pursuant to instruction DGAL/SDASEI/2017-477 of 29 May 2017 on Surveillance and Control Plans for imported plants at EU entry points

Scheduled, non-official surveillance

The surveillance of *Xylella fastidiosa* is included to the observations conducted by existing epidemiological surveillance networks whose mission is to detect regulated and non-regulated harmful pests; such existing networks are the Forest Health network (réseau Santé des Forêt - DSF) and the Epidemiological Surveillance network which receives funding from the Ecophyto Program.

Event-based surveillance

Such surveillance relies on reports of suspected cases of *Xylella fastidiosa* contamination by any person (individuals, professionals) or even by Ecophyto observers (when such observations are made outside their scheduled activities). In order to increase the efficacy of event-based surveillance activities, vigilance was increased in the field and an awareness campaign was deployed all-over the territory. Specific material dedicated to *Xylella fastidiosa* was generated and is regularly updated. Communication and information campaigns for the general public are regularly organised.

An ad hoc national communication plan will be launched in 2018.

Organization of vectors' surveillance

The plant health epidemiological surveillance platform which is being set up, aims at providing methodological support to the teams in charge of managing the various surveillance schemes. In this framework, *Xylella fastidiosa* is listed as a priority. The technical working group brings together all stakeholders involved in the surveillance of *Xylella fastidiosa* (professionals, scientists and representatives of government agencies) and provides support to the Risk Manager (Ministry of Agriculture and Food / DGAL). More specifically, this working group is responsible for assessing surveillance efficacy and the health situation with regards to *Xylella fastidiosa*, for providing feedback to local players and for identifying potential improvement of the surveillance of X. fastidiosa.

The working group will meet again in 2018 in order to specify the modalities for the implementation of vector surveillance. .

ACTION 2
IMPROVING TEST METHODS AND ADAPTING ANALYTICAL CAPABILITIES

Validation and implementation of the ELISA analytical method in demarcated areas

In a letter dated 20 December 2016, the Minister in charge of Agriculture instructed the Plant Health Laboratory of ANSES to validate and implement a program aimed at detecting the bacterium using the ELISA method in demarcated areas, in compliance with EPPO standard PM7/24. The deployment of this method will help in optimizing surveillance strategies in Corsica.

Method validation work was initiated for plant species which seem to play a significant role in the contamination of Corsica and for which sampling pressure is high: *Polygala myrtifolia* (accounts for 54% of positive samples), *Calicotome villosa* (11 %), *Helichrysum italicum* (9 %) and *Cistus monspeliensis* (6 %). The results of this validation program should be available at the beginning of 2018.

Validation and implementation of the ELISA analytical method within the context of inspections carried out prior to the putting in circulation of certain plant species (art. 9.8 of Decision 2015/789/UE)

Article 9.8 of Implementation Decision 2015/789, modified by Implementation Decision 2017/2352 of 14 December 2017, lays down the list of species for which additional provisions for the movement of *Xylella fastidiosa* host plants are required, regardless of the health status of the area

The dossier on *Xylella fastidiosa* made available by the Ministry of agriculture is available at:
http://agriculture.gouv.fr/xylella-fastidiosa-une-bacterie-nuisible-pour-les-vegetaux

involved (disease-free or demarcated area); these species are: *Lavandula dentata L., Nerium oleander L., Olea europaea L., Polygala myrtifolia L., Prunus dulcis (Mill.)* D.A Webb as well as the Coffea genus. Samples will be taken on a systematic basis and tests will be conducted within the context of annual inspections; sampling will be conducted according to a sampling plan which allows detecting a 5 % rate of infected plant, with a 99 % reliability level.

In January 2018, and in compliance with the Commission's database which provides the list of authorized methods for the implementation of the provisions of Article 9.8, the Plant Health Laboratory was instructed to undertake the validation of the ELISA method for the detection of *Xylella fastidiosa* in samples from these species.

Development of analytical methods to detect vector insects

Insects collected in Corsica and in the Provence-Alpes-Côte d'Azur region in 2017 will be analyzed in 2018. More specifically, the detection of the bacterium on species other than *Philaenus spumarius* will be tested (other Aphrophoridae species or other families) and a method for sub-species' determination on insects will be developed.

ACTION 3
PREPAREDNESS OVER THE ENTIRE TERRITORY

A National Decree against *Xylella fastidiosa* was published on 23 December 2015. This Decree stipulates that the provisions included in modified Implementation Decision 2015/789 shall apply immediately. The Decree also clarifies the role of Prefects in the regions included in the demarcated areas.
After Implementation Decision 2015/789 was modified by Implementation Decision 2017/2352 of 14 December 2017, the National Decree was modified and published in the Official Journal on 23 January 2018.

The National contingency plan will be amended in 2018 so as to include the modifications brought by Implementation Decision 2017/2352 which modifies Decision 2015/789.

ACTION 4
PREVENTION OF NEW CONTAMINATIONS: ENHANCING KNOWLEDGE THROUGH INVESTIGATIONS AND EXPERT MISSIONS

Investigation into the bacterium's introduction and dissemination route in France

At the end of February 2017, the Investigation Brigade (BNEVP) of the General Directorate for Food was instructed to carry out a new investigation on the introduction and dissemination route of *Xylella fastidiosa* in France.

Expert mission in Corsica, with officers working with the Ministry of agriculture and with the Ministry of ecology

At the request of the Prefect of Corsica, an Expert Mission was appointed at the end of 2017. This mission was carried out jointly by the General Council for Food, Agriculture and Rural Spaces (CGAAER) of the Ministry of Agriculture and by the General Council for the Environment and Sustainable Development (CGEDD) of the Ministry of ecology.

The work of this expert mission focuses on the situation in Corsica and targets various objectives:
- Optimization of surveillance activities in Corsica through a plan which will be adapted to the ecological, epidemiological and agronomic situation of the territory;
- Identification of means to decrease bacterial inoculums within a containment strategy;
- Identification of means to prevent the introduction of new bacterial strains on the island.

The conclusions of this expert mission, which are expected by the end of the first half of 2018, will contribute to the building of a control strategy which will be adapted to the Corsican context.

ACTION 5

RAISING AWARENESS VIA A COMMUNICATION PLAN

A major national communication plan will be launched in 2018, targeting the general public, local authorities and all stakeholders. The objectives of this communication campaign are to provide information, to raise awareness and to issue recommendations aimed at preventing any introduction and spreading of the disease.

Poster designed for the information campaign on *Xylella*

ACTION 6

CONTROLLING PLANTS' MOVEMENTS OUTSIDE DEMARCATED AREAS

Provisions for the control of specified plants' movement outside demarcated areas are enunciated in Modified Implementation Decision 2015/789 and described in the Contingency Plan.

In order to ensure that specified plants do not exit infected and buffer areas, a large number of controls are conducted each year. These controls focus on the display of posters and on the recording of clients' declarations.

AXIS 2

CONTROL OF *XYLELLA FASTIDIOSA* IN DEMARCATED AREAS

ACTION 7

CONTROL MEASURES

In 2018, control measures aimed at eradicating the outbreaks were maintained, pursuant to the provisions of Modified Implementation Decision 2015/789 and according to modalities as described in the Contingency Plan.

ACTION 8

A CHANGE IN THE CONTROL STRATEGY IMPLEMENTED IN CORSICA

A containment strategy for Corsica

In Corsica, the high surveillance pressure, along with accumulated knowledge, demonstrate that the bacteria is widely present on the island, making its eradication impossible. At the request of the French authorities, the shift to a containment strategy was made possible by Implementation Decision 2017/2352 of 14 December 2017 which modifies Implementation Decision 2015/789 on measures to control *Xylella fastidiosa*. A Ministerial Decree issued on 17 January 2018 stipulates that the entire island of Corsica is regarded as a containment area.

Surveillance plan in Corsica

The surveillance strategy has two major objectives :

➔ the early detection of a new sub-species of the bacterium in the territory;

➔ the monitoring of the evolution of *Xylella fastidiosa*, multiplex sub-species, in areas where symptomatic plants are observed and in high agricultural value areas.

In order to achieve these objectives, the surveillance plan for Corsica – which will be implemented in 2018 – was adapted to the local context and to the change of control strategy:

1. surveillance at potential exit points. Surveillance will be carried out jointly with the Customs' Offices in the main ports;

2. surveillance of potential entry points in order to prevent the entry of other strains of the bacterium;

3. surveillance of production areas of plants with economic of heritage value (olive trees, vines and fruit trees [*Citrus, Prunus*]);

4. surveillance of the entire territory, and more particularly (i) of outbreaks located in the vicinity of production areas for plants with high economic or heritage value, or plants growing over vast territories and (ii) non-agricultural land with special value;

5. Vector surveillance, in line with what was achieved in 2016 and 2017 (See Action 14, page 23).

ACTION 9
SURVEILLANCE IN BUFFER AREAS

In 2018, surveillance in buffer areas in the Provence-Alpes-Côte d'Azur region will continue, as provided by Modified Implementation Decision 2015/789 and by the PNISU. In Corsica, the change in the control strategy lead to the suppression of buffer areas since the entire island is placed under a containment strategy. As a consequence, an ad hoc surveillance plan was designed.

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AXIS 3

UNDERSTANDING THE CONTAMINATION'S ORIGINS AND DYNAMICS AND ENHANCING THE RESILIENCE OF ECOSYSTEMS

ACTION 10

MODELLING WORKS

Modelling works initiated by INRA in 2016 will be continued in 2018. These works help to understand the past dissemination dynamics of the bacteria in France and elaborate time and space dynamics scenarii for the disease. The conclusions of these modelling works allow optimizing surveillance.

ACTION 11

PHYTO-PATHOGENICITY TESTS

Since 2016, tests of the pathogenic power of the bacterium are conducted in order to test the sensitivity of several plant species to various strains and sub-species of *X. fastidiosa*.

ACTION 12

GAINING BETTER KNOWLEDGE ON VECTOR INSECTS

In addition to vector surveillance, works initiated at INRA and ANSES will continue in 2018 in order to improve insects' characterization and bacterium detection methods and increase knowledge on vector insects (their biology, geographical distribution, etc.).

ACTION 13

DEFINING GOOD AGRICULTURAL PRACTICES IN ORDER TO ENHANCE THE RESILIENCE OF THE ECOSYSTEMS AND IDENTIFY SYSTEMS TO CONTROL VECTOR POPULATIONS

Minimizing crops' exposure to the risk of bacterial contamination is of crucial importance. Good agricultural practices can contribute to achieve this objective. New research programs will therefore be defined, aimed at enhancing the resilience of agro-ecosystems and at identifying modalities to control vectors' populations.

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