NAME OF THE ORGANISM: Candidatus Phytoplasma pyri (Pear decline mycoplasm) (PHYPPY)

GENERAL INFORMATION ON THE PEST

Name as submitted in the project specification (if different to the preferred name):

Pear decline mycoplasm
Pest category:

Bacteria **1- Identity of the pest/Level of taxonomic listing:**
Is the organism clearly a single taxonomic entity and can it be adequately distinguished from other entities of the same rank?

Yes
Is the pest defined at the species level or lower?:

Yes
Can listing of the pest at a taxonomic level higher than species be supported by scientific reasons or can species be identified within the taxonomic rank which are the (main) pests of concern?

* Not relevant: Fruits (including hops) sector, Ornamental sector

Is it justified that the pest is listed at a taxonomic rank below species level?

Not relevant
Conclusion:

* Candidate: Fruits (including hops) sector, Ornamental sector

**2 – Status in the EU:**

Is this pest already a quarantine pest for the whole EU?

No
Presence in the EU:

Yes
List of countries (EPPO Global Database):

Austria (1993); Belgium (2012); Croatia (2010); Czech Republic (2007); France (2003); Germany (2011); Greece (2011); Hungary (2009); Italy (2012); Netherlands (2015); Poland (2002); Portugal (2013); Slovakia (1997); Slovenia (2014); Spain (2014); United Kingdom (2011); United Kingdom/England (2011)
Conclusion:

candidate
Justification (if necessary):

Data of the presence of this pest on the EU territory are available in EPPO Global Database (<https://gd.eppo.int/>). This pest is a candidate for the RNQP status according to the IIA2AWG

HOST PLANT N°1: Cydonia (1CYDG) for the Fruits (including hops) sector.

Origin of the listing:

IIA2AWG
Plants for planting:

Plants intended for planting, other than seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

Yes
Conclusion:

Evaluation continues

Justification (if necessary):

Decision by the HEWG to continue the evaluation of Candidatus phytoplasma in view of the problematic of vector transmission. As Candidatus phytoplasma pyri is very similar and listed in EPPO PM 4/27 Standard, the same decision is proposed for this pest. **4 - Are the listed plants for planting the main\* pathway for the "pest/host/intended use" combination? (\*: significant compared to others):**

Yes
Conclusion:

Candidate

Justification:

Cydonia oblonga (quince) is a minor host as it is only poorly colonized by the phytoplasma. Pear trees grafted on quince rootstocks are little affected by Pear decline, as the phytoplasma occurs in a very low titre in the rootstock (PrimaPhacie, 2012). Vector transmission is a pathway. Isolation distances and treatments are available to reduce the severity of the vector in the site of production, however this wouldn't prevent completely the entry of infected vectors in the production site. As the vector normally only flies/moves over shorter distances, keeping the surrounding areas free from PD is also an important measure of control. Experts concluded that plants for planting are a significant pathway compared to other pathways. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

Quince is described as having poor host properties. Pear trees on quince (Cydonia oblonga) rootstocks are only slightly affected by the disease (Prima Phacie, 2012).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Minor
Is the economic impact due to the presence of the pest on the named host plant for planting, acceptable to the propagation and end user sectors concerned?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

No
Conclusion:

Not candidate
Justification:

Economic impact/damage is very different depending of the varieties and the age of orchards (Older trees tend to have less damage). Infections can disappear after a year, depending on winter conditions. Impact for quince and for pear on quince rootstocks is minor and considered acceptable. **CONCLUSION ON THE STATUS:**

Disqualified: impact for quince and for pear on quince rootstocks is minor and considered acceptable. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

Yes
Proposed Tolerance levels:

Delisting. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

Delisting. **REFERENCES:**

* ANSES (2012) Rapport d'expertise collective. Groupe de travail "ARP phytoplasmes des arbres fruitiers". Available at <https://www.anses.fr/fr/system/files/SVEG2011sa0137Ra.pdf>;
* EU COM (2016) Recommendation of the Working Group on the Annexes of the Council Directive 2000/29/EC – Section II – Listing of Harmful Organisms as regards the future listing of Candidatus Phytoplasma pyri [Pear decline mycoplasma];
* Prima phacie (2012) Pest risk assessment for the European Community plant health: A comparative approach with case studies. External scientific report by group of authors: <http://www.efsa.europa.eu/fr/supporting/doc/319e.pdf>;

HOST PLANT N°2: Cydonia (1CYDG) for the Ornamental sector.

Origin of the listing:

IIA2AWG
Plants for planting:

Plants intended for planting, other than seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

Yes
Conclusion:

Evaluation continues

Justification (if necessary):

Decision by the HEWG to continue the evaluation of Candidatus phytoplasma in view of the problematic of vector transmission. As Candidatus phytoplasma pyri is very similar and listed in EPPO PM 4/27 Standard, the same decision is proposed for this pest. **4 - Are the listed plants for planting the main\* pathway for the "pest/host/intended use" combination? (\*: significant compared to others):**

Yes
Conclusion:

Candidate

Justification:

Cydonia oblonga (quince) is a minor host as it is only poorly colonized by the phytoplasma. However plants for planting can be a efficient pathway, when propagated from infested plants. Vector transmission is also a pathway but it is considered less efficient than plants for planting. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

No
Justification:

Seemüller et al (2011) reported that in Italy, trees on quince (Cydonia oblonga) rootstocks were severely affected when psyllid infestation was high. However quince is described as having poor host properties (Prima Phacie, 2012).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Minor
Is the economic impact due to the presence of the pest on the named host plant for planting, acceptable to the propagation and end user sectors concerned?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

No
Conclusion:

Not candidate
Justification:

There is usually no economic impact for the ornamental use. In coherence with the fruit sector, indirect impact for quince and for pear is considered acceptable. **CONCLUSION ON THE STATUS:**

Disqualified: direct impact on ornamentals is considered minor and indirect impact for quince and for pear on quince rootstocks is considered acceptable. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

Yes
Proposed Tolerance levels:

Delisting. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

Delisting. **REFERENCES:**

* ANSES (2012) Rapport d'expertise collective. Groupe de travail "ARP phytoplasmes des arbres fruitiers". Available at <https://www.anses.fr/fr/system/files/SVEG2011sa0137Ra.pdf>;
* EU COM (2016) Recommendation of the Working Group on the Annexes of the Council Directive 2000/29/EC – Section II – Listing of Harmful Organisms as regards the future listing of Candidatus Phytoplasma pyri [Pear decline mycoplasma];
* Prima phacie (2012) Pest risk assessment for the European Community plant health: A comparative approach with case studies. External scientific report by group of authors: <http://www.efsa.europa.eu/fr/supporting/doc/319e.pdf>;
* Seemüller E, Schneider B & Jarausch B (2011) Pear Decline Phytoplasma. In: Virus and virus-like diseases of pome and stone fruits. St. Paul, Minnesota, APS Press/American Phytopathological Society;

HOST PLANT N°3: Pyrus (1PYUG) for the Fruits (including hops) sector.

Origin of the listing:

IIA2AWG
Plants for planting:

Plants intended for planting, other than seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

Yes
Conclusion:

Evaluation continues

Justification (if necessary):

Decision by the HEWG to continue the evaluation of Candidatus phytoplasma in view of the problematic of vector transmission. As Candidatus phytoplasma pyri is very similar and listed in EPPO PM 4/27 Standard, the same decision is proposed for this pest. **4 - Are the listed plants for planting the main\* pathway for the "pest/host/intended use" combination? (\*: significant compared to others):**

Yes
Conclusion:

Candidate

Justification:

Plants for planting can be a very efficient pathway, when propagated from infested plants. Vector transmission is also a pathway. The vectors play a key role in the disease cycle of the pathogen by transmitting the PD phytoplasma into healthy trees in spring, and during Winter by retaining the phytoplasma throughout winter dormancy and reintroducing it into pear trees the following spring. Pear grafted on a pear rootstock or on their own roots would be more susceptible than the ones grafted on Cydia oblonga. Isolation distances and treatments are available to reduce the severity of the vector in the site of production, however this wouldn't prevent completely the entry of infected vectors in the production site. As the vector normally only flies/moves over shorter distances, keeping the surrounding areas free from PD is also an important measure of control. Experts concluded that plants for planting are a significant pathway compared to other pathways. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

Trees infected by the phytoplasma produce less fruits, or don't produce fruits. Fruits are usually smaller. Infection may kill trees (ANSES, 2012). The
available data show that PD has killed 50 000 trees in the late 1940’s in Italy. Between 1956 and 1959, the Bartlett pear crop yield in Washington dropped by
nearly 30% due to the disease. In California, it was estimated that over one million trees were affected by 1962, with production in some areas dropping by as much as 50 to 60%. In Oregon in 1957-1958, 10% of the trees were completely lost, with most severe losses in oriental rootstocks (Pyrus ussuriensis, Pyrus pyrifolia) where 50 to 60% mortality was observed. Pear trees on quince (Cydonia oblonga) rootstocks are only slightly affected by the disease, owing to the poor host properties of quince. PD is one of the most important diseases of pears. However, no detailed reports of economic impacts (e. g. yield decrease, reduced fruit weight and marketability and plant mortality) have been published (Prima Phacie, 2012).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Medium
Is the economic impact due to the presence of the pest on the named host plant for planting, acceptable to the propagation and end user sectors concerned?

No
Conclusion:

Candidate
Justification:

Economic impact/damage is very different depending of the varieties and the age of orchards (Older trees tend to have less damage). Economic impact is considered to be high and unacceptable for pear rootstocks. Impact for pear on quince rootstock is minor and acceptable. Globally, impact is considered to be medium. Infections can disappear after a year, depending on winter conditions. **6 - Are there feasible and effective measures available to prevent the presence of the pest on the plants for planting at an incidence above a certain threshold (including zero) to avoid an unacceptable economic impact as regards the relevant host plants?**

Yes

Conclusion:

Justification:

Combination of roguing infected plants, keeping area clean, controlling of psyllids and using less susceptible rootstocks can keep the problems with PD on an acceptable level **7- Is the quality of the data sufficient to recommend the pest to be listed as a RNQP?**

Yes

Conclusion:

Candidate
Justification:

 **CONCLUSION ON THE STATUS:**

Recommended for listing as an RNQP - based on data. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

No
Proposed Tolerance levels:

Zero tolerance based on visual examination. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

Non-certified material (‘CAC’):
(A) Derived from mother plants which have been inspected and found free from symptoms of 'Candidatus Phytoplasma pyri';
AND
(B) (a) Plants produced in areas known to be free from 'Candidatus Phytoplasma pyri';
or
(b) Site of production found free from 'Candidatus Phytoplasma pyri' over the last complete growing season by visual inspection and any symptomatic plants in the immediate vicinity rogued out and destroyed immediately;
or
(c) No more than 2% of plants in the site of production showing symptoms during inspections at appropriate times during the last growing season, and those plants and any symptomatic plants in the immediate vicinity rogued out and destroyed immediately.

Pre-basic, Basic and Certified:
Additional measures could include
• Cultivation under insect-proof conditions (pre-basic);
• Measures to control vectors;
• Isolation of mother plants from host plants of the pest and the vector, including uncultivated plants;
• Testing of candidate trees for mother plants;
• Mother plants in protected cultivation - retesting of all plants (pre-basic) or a representative sample (basic and certified) at least every 15 years;
• Other mother plants - testing of a representative sample (basic and certified) at least every 5 years;
• More testing in case of finding of an infection, including testing of all mother plants in the production site;
Justification (if necessary):

Symptoms are very clear on Pyrus rootstock. The pest is less damaging than other phytoplasmas, especially when using quince rootstock.
The coreHEWGplus discussed the ratio cost/benefit of a more systematic testing of CAC mother plants: This would allow detection of asymptomatic plants. However, this was counterbalanced by the difficulty of testing (testing of the roots would be more reliable, but not practical) and by the risk of reinfestation in case of high vector pressure. No consensus was reached within the core-HEWGplus on the added value of such a more systematic testing, in the context of the RNQP status. **REFERENCES:**

* ANSES (2012) Rapport d'expertise collective. Groupe de travail "ARP phytoplasmes des arbres fruitiers". Available at <https://www.anses.fr/fr/system/files/SVEG2011sa0137Ra.pdf>;
* EU COM (2016) Recommendation of the Working Group on the Annexes of the Council Directive 2000/29/EC – Section II – Listing of Harmful Organisms as regards the future listing of Candidatus Phytoplasma pyri [Pear decline mycoplasma];
* Prima phacie (2012) Pest risk assessment for the European Community plant health: A comparative approach with case studies. External scientific report by group of authors: <http://www.efsa.europa.eu/fr/supporting/doc/319e.pdf>;

HOST PLANT N°4: Pyrus (1PYUG) for the Ornamental sector.

Origin of the listing:

IIA2AWG
Plants for planting:

Plants intended for planting, other than seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

Yes
Conclusion:

Evaluation continues

Justification (if necessary):

Decision by the HEWG to continue the evaluation of Candidatus phytoplasma in view of the problematic of vector transmission. As Candidatus phytoplasma pyri is very similar and listed in EPPO PM 4/27 Standard, the same decision is proposed for this pest. **4 - Are the listed plants for planting the main\* pathway for the "pest/host/intended use" combination? (\*: significant compared to others):**

Yes
Conclusion:

Candidate

Justification:

Plants for planting can be a very efficient pathway, when propagated from infested plants. Vector transmission is also a pathway but it is considered less efficient than plants for planting. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

No
Justification:

No information on impacts on ornamental plants.
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Is the economic impact due to the presence of the pest on the named host plant for planting, acceptable to the propagation and end user sectors concerned?

Yes
Is there unacceptable economic impact caused to other hosts (or the same host with a different intended use) produced at the same place of production due to the transfer of the pest from the named host plant for planting?

Yes
Conclusion:

Candidate
Justification:

There is probably no economic impact for the ornamental use. However ornamental plants may be produced at the same place of production than plants for the fruit production. It may be necessary to take measures on ornamental plants, in view of the risk they pose to the fruit sector. **6 - Are there feasible and effective measures available to prevent the presence of the pest on the plants for planting at an incidence above a certain threshold (including zero) to avoid an unacceptable economic impact as regards the relevant host plants?**

Conclusion:

candidate
Justification:

 **7- Is the quality of the data sufficient to recommend the pest to be listed as a RNQP?**

Yes

Conclusion:

Candidate
Justification:

 **CONCLUSION ON THE STATUS:**

Recommended for listing as an RNQP - based on data of possible indirect economic impacts for the fruit sector. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

No
Proposed Tolerance levels:

Zero tolerance based on visual examination. **9 - Risk management measures:**
Is there a need to change the Risk management measure:

Yes
Proposed Risk management measure:

(A) Derived from mother plants which have been inspected and found free from symptoms of 'Candidatus Phytoplasma pyri';
AND
(B) (a) Plants produced in areas known to be free from 'Candidatus Phytoplasma pyri';
or
(b) Site of production found free from the pest over the last complete growing season by visual inspection and any symptomatic plants in the immediate vicinity rogued out and destroyed immediately;
or
(c) No more than 2% of plants in the site of production showing symptoms during inspections at appropriate times during the last growing season, and those plants and any symptomatic plants in the immediate vicinity rogued out and destroyed immediately.
Justification (if necessary):

Experts recommended extrapolating measures from the fruit sector. Remark: ornamental Pyrus are usually not grafted. **REFERENCES:**

* ANSES (2012) Rapport d'expertise collective. Groupe de travail "ARP phytoplasmes des arbres fruitiers". Available at <https://www.anses.fr/fr/system/files/SVEG2011sa0137Ra.pdf>;
* EU COM (2016) Recommendation of the Working Group on the Annexes of the Council Directive 2000/29/EC – Section II – Listing of Harmful Organisms as regards the future listing of Candidatus Phytoplasma pyri [Pear decline mycoplasma];
* Prima phacie (2012) Pest risk assessment for the European Community plant health: A comparative approach with case studies. External scientific report by group of authors: <http://www.efsa.europa.eu/fr/supporting/doc/319e.pdf>;