NAME OF THE ORGANISM: Potato spindle tuber viroid (PSTVD0)

GENERAL INFORMATION ON THE PEST

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

Pest category:

Viruses and viroids **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: Vegetable seed sector

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

Not relevant
Conclusion:

* Candidate: Vegetable seed sector

**2 – Status in the EU:**

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

Yes
Presence in the EU:

Yes
List of countries (EPPO Global Database):

Austria (2011); Croatia (2014); Czech Republic (2014); Germany (2011); Italy (2011); Malta (2013); Poland (2016); Slovenia (2013); Spain (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 considered to be already a quarantine pest for the whole EU (annex IA1 of the directive 2000/29/EC). However, in view of its presence in the EU (see data of the presence of this pest on the EU territory available in EPPO Global Database: <https://gd.eppo.int/>), classification within the directive should be revised. This pest is not evaluated in the context of the EU RNQP Project but because it was submitted for evaluation by the Working Party on Phytosanitary Regulation (WPPR, 2016). As a consequence, evaluation continues.

HOST PLANT N°1: Solanum lycopersicum (LYPES) for the Vegetable seed sector.

Origin of the listing:

EFSA PRA (EFSA PLH, 2011)
Plants for planting:

Seeds **3 - Is the pest already listed in a PM4 standard on the concerned host plant?**

No
Conclusion:

Evaluation continues **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:

Potato spindle tuber viroid (PSTVd) is a plant pathogen that causes disease in tomatoes. From interception records in the Europhyt database, there is evidence for the presence of PSTVd in tomato seeds imported into Europe from production areas outside the EU. Transmission of PSTVd through seed has been reported in tomato (EFSA-PLH, 2011). The percentage of infected seedlings, grown from seeds from plants infected with PSTVd ranged from 2 to 31% in tomato (NZ PRA, 2012). Seed disinfection techniques are not effective in this host. There is experimental and circumstantial evidence that PSTVd can be spread between crops by mechanical transmission in tomato and thus any infection arising from seed will likely spread rapidly to neighbouring susceptible plant species in the nursery (EFSA-PLH, 2011). Therefore seeds as plants for planting are considered a main pathway for this pest/host/intended use combination. **5 - Economic impact:**
Are there documented reports of any economic impact on the host?

Yes
Justification:

All pospiviroids cause similar symptoms in tomato, independent of the viroid species. With PSTVd, severity may vary with the tomato cultivar. Symptoms are most conspicuous when plants become infected at early stages of development and when grown at high temperatures and light intensity. The first symptoms are growth reduction and chlorosis in the upper leaves, subsequently, this may develop into permanent stunting and bunchy growth. Occasionally, plants may either die or partially recover. Usually, symptoms are observed along rows in the fields and greenhouses, indicating that the viroid spreads mechanically during crop handling. Fruit production generally stops on infected plants, yield loss is strongly dependent on the age at which plants become infected. Early infection, before fruit setting, will result in close to 100% loss, while losses associated with later infections are more variable. Delay in fruit ripening, storage life and management costs are also likely (EFSA, 2011). Yield loss in tomatoes has been reported as significant, due to reduced fruit size and flowers can abort resulting in no fruit, and the plant can be totally malformed in severe cases (MAF, 2012).
What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures? (= official measures)

Major
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:

Overall there is ample evidence that significant yield losses may result from pospiviroid infections in tomato and the impact is therefore expected to be major, with low uncertainty (EFSA-PLH, 2011). The economic impact is evaluated as unacceptable on Tomato. According to New Zealand, Import risk analysis (MAF, 2012), yield loss in tomatoes has been reported as significant, due to reduced fruit size and flowers can abort resulting in no fruit, and the plant can be totally malformed in severe cases. **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:

candidate
Justification:

There is no management option that can prevent infestation other than exclusion and avoiding the use of infected plants (EFSA-PLH, 2011). Since tomato pospiviroid infections result in variable symptoms, requirements for using plant propagation material (including seeds) that is certified as free from pospiviroids, based on surveillance and targeted tests, should be an effective measures. This position is reinforced by the situation observed on PSTVd: the official measures significantly reduced the overall level of PSTVd circulating within the EU territory, and the incidence of this pathogen. However it is not possible to conclude whether the reduction in PSTVd prevalence in ornamentals has led to a reduction of outbreaks in potato, tomato and pepper productions. **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. This pest would qualify for RNQP status if it were to be deregulated as a quarantine pest, but the SEWG makes no recommendation on the removal of the quarantine pest status. Moreover an alternative to the listing under the RNQP Status could be to recommend, in the risk management measures for tomato, isolation from other potential sources of infection, including other infected host plants. **8 - Tolerance level:**
Is there a need to change the Tolerance level:

No
Proposed Tolerance levels:

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

No
Proposed Risk management measure:

 **REFERENCES:**

* EFSA Panel on Plant Health (PLH) (2011) Scientific Opinion on the assessment of the risk of solanaceous pospiviroids for the EU territory and the identification and evaluation of risk management options. EFSA Journal 2011;9(8):2330 [132 pp.]. doi:10.2903/j.efsa.2011. 2330; www.efsa.europa.eu/efsajournal;
* MAF (2012) Import Risk Analysis: Tomato and Capsicum seed for sowing from all countries. Ministry of Agriculture and Forestry of New-Zealand, Information Bureau. Available at: <http://www.mpi.govt.nz/document-vault/2887>;