



**EUROPEAN AND MEDITERRANEAN PLANT PROTECTION
ORGANIZATION
ORGANISATION EUROPEENNE ET MEDITERRANEENNE POUR LA
PROTECTION DES PLANTES**

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Report of a Pest Risk Management for *Pepino Mosaic Virus*

This summary presents the conclusions of the pest risk management which has been conducted on the pest, according to EPPO Decision support scheme for quarantine pests.

Pest: *Pepino Mosaic Virus (PepMV)*
PRA area: EPPO region
Assessors: PEPEIRA project (Werkman & Sansford, 2010)
Reviewed by the EPPO Panel on Phytosanitary Measures 2011-04, 2011-11 and 2012-03.
Date: 2010-2011

STAGE 3: PEST RISK MANAGEMENT

From the pest risk assessment it can be concluded that the pest presents the characteristics of a quarantine pest.

IDENTIFICATION OF THE PATHWAYS

Pathways studied in the pest risk management

- Tomato fruit
- Seed of tomato
- Plants for planting of tomato

Other pathways identified but not studied further

- Plants for planting of pepino (the same measures as for tomato plants may be recommended).
- Fruit of pepino: there is too much uncertainty on possible infestation of fruit and on possible transmission from fruit.
- Human spread (contaminated packaging material related to import, spread by contact): in international trade such spread will always be together with infected fruit. Therefore risk management applied on the fruit will cover the risk.
- Insect vectors (bumble bees): they are only involved in local spread within a production area. Although a large quantity of commercially produced bumble bees is moved within the PRA area, the probability of movement is estimated as very unlikely because the probability of association is very unlikely. This is because bumble bees are produced on a diet of bee-collected pollen and sugar water. In addition, this pathway is covered for EU countries by existing regulations related to health of bees.

IDENTIFICATION OF POSSIBLE MEASURES

Possible measures for pathways

- Tomato fruit

There is currently no legislation for the movement of tomato fruits within the EPPO region. It is likely to be difficult to implement.

Measures related to consignments:

- Specific testing. However in the case of symptomless infection the reliability of testing will rely on the sampling size. This will make this measure difficult to implement in practice.

- Imports of fruits for processing or direct consumption only. Fruit should not come in contact with tomato production, i.e. they should not be imported to packing houses that are also sites of production.

Measures related to the crop or to places of production:

- Growing the crop in specified conditions: healthy plants for planting should be used and strict hygiene measures should be applied to prevent infestation (e.g. disinfection of tools, changing clothes, not bringing tomato fruit from outside). It would be difficult to implement these measures in dense tomato production areas.
- Production of fruit in Pest free place of production (see measure recommended above).
- Production of fruit in a Pest free area (following ISPM no. 4)

- **Seed of tomato**

Within the EU some phytosanitary measures are already in place to prevent the introduction of the pest (EU, 2004). It should be noted that some interceptions of contaminated lots have still be made since the enforcement of the emergency legislation.

Seed of tomato is only allowed to enter and move within the EU provided it has been subjected to acid-extraction or an equivalent measure (point 48 of Annex IVAI and point 27 of Annex IVAIL of the EC Plant Health Directive, EU 2000). This measure is not specifically aimed at PepMV, but will reduce the risks.

The current European Commission emergency legislation for PepMV (Commission Decision 2004/200/EC) (EU, 2004) has specific measures for the seed pathway. In this legislation, seed of tomato is also only allowed to enter and move within the EU provided it has been subjected to an appropriate acid-extraction method, but in addition: the seed must originate in an area where PepMV is known not to occur (pest-free area), OR there must have been no symptoms of PepMV on the plants producing the seed at the place of production throughout their complete cycle of vegetation (pest-free place of production), OR the seed must be officially tested for PepMV and found free from it (pest-free crop).

Measures related to consignments:

- Specific testing is possible. In 2011, an EPPO Diagnostic Protocol is under development as an outcome of the PEPEIRA project.
- Post-entry quarantine (in practice, this is only valid for seed intended for further propagation, not for those intended for fruit production crops).
- Specified treatment: acid-extraction followed by another treatment such as sodium hypochlorite or trisodium phosphate.

Measures related to the crop or to places of production:

- Growing the crop in specified conditions: healthy planting material should be used and strict hygiene measures should be applied to prevent infestation. Inspections should be performed to check absence of symptoms. The mother plants should also be tested during the growing period to verify the absence of the pest. ***Although the PEPEIRA project recommends that finally seed produced should be tested, the EPPO Panel on Phytosanitary Measures considered that this final seed testing may not be necessary if the mother plant is tested late during the growing season.*** It should be noted that detection of low levels of virus contaminating seed requires testing high numbers of seed.
- Production in a certification scheme. (see measures recommended above).
- Production of seed in Pest free place of production (see measures recommended above). It would be difficult to implement these measures in dense tomato production areas.
- Production of seed in a Pest free area (following ISPM no. 4).

- **Plants for planting of tomato**

Within the EU some phytosanitary measures are already in place and will partially prevent the introduction of the pest. Import of plants of the Solanaceae is prohibited from third countries other than European and Mediterranean countries (point 13 of Annex IIIA of the EC Plant Health Directive; EU, 2000). This measure is not specifically aimed at PepMV, but it will reduce the risks of entry. However, this does not prevent entry from non-EU European and Mediterranean countries where PepMV has been reported. Plants for planting of

Solanaceae should be accompanied by a plant passport for internal movement within the EU (point 2.2 of Annex VAI of the EC Plant Health Directive; EU, 2000).

Measures related to the crop or to places of production:

- Growing the crop in specified conditions (strict hygiene measures should be applied to prevent infestation)
- Production in a certification scheme: a testing scheme for PepMV should be applied (seed should be tested for pest freedom as well as the plants before being traded) and strict hygiene measures should be applied to prevent infestation.

Testing is useful to ensure any failure in the system. It should be noted that symptoms of PepMV infection are usually not detectable by visual inspection in seedlings, and so laboratory testing is required. In addition, laboratory tests can be negative when the virus titre is very low (below detection limits) in young tomato plants. So a certification scheme may be difficult to implement in practice and will not guarantee that seedlings are free from virus. ***The EPPO Panel on Phytosanitary Measures questioned about the need to test young plants because of limitation of the testing, e.g. plants should be at least 4 weeks old to allow detection, see EPPO Diagnostic Protocol.***

Certification schemes for young tomato plants do not exist currently in EU countries.

- Production of plants for planting in a Pest free place of production (see measure recommended above).
- Production of plants for planting in a Pest free area (following ISPM no. 4)

Other possible measures

Surveillance and eradication campaign in the country of import

Intensive surveys including testing and eradication measures in the case of a positive finding.

EVALUATION OF THE MEASURES IDENTIFIED IN RELATION TO THE RISKS PRESENTED BY THE PATHWAYS

It is considered that measures on seed and plants for planting will be the most efficient to prevent entry and establishment of PepMV.

The trade of tomato fruits within the EPPO region is massive and implementation of measures on fruit will have a huge impact on trade. However it is considered that good practice such as separating production and trade flow for tomato fruit will greatly limit the possibility for transfer into tomato production (and will also help dealing with a large range of other pests).

Degree of uncertainty

Uncertainties in the management part are:

- Efficacy of seed treatment with sodium hypochlorite or trisodium phosphate. Controlled experiments are needed to check efficacy (and possible side effects on germination)
- Reliability of testing for pest freedom, in particular for young plants
- Possibility to establish a certification scheme in practice.

References

- Werkman AW & Sansford CE (2010). Pest Risk Analysis for *Pepino mosaic virus* for the EU. Deliverable Report 4.3. EU Sixth Framework Project. Project PEPEIRA. <http://www.pepeira.com>
- EU (2004) Commission Decision 2004/200/EC of 27 February 2004 on measures to prevent the introduction into and the spread within the Community of *Pepino mosaic virus*
- EU (2000 as amended). Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. Official Journal of the European Communities. 43 no. L169, pp. 1 - 112.