Department
for Environment
Food & Rural Affairs

Regulation proposal for tomato ringspot virus (*Nepovirus lycopersici*) on *Rubus* - fruit propagating material and fruit plants intended for fruit production

November 2024

Objective

To review the status of tomato ringspot virus in GB legislation

Assessment

The following is a summary of an assessment undertaken by Defra following the method outlined by EPPO (European and Mediterranean Plant Protection Organisation) (Picard *et al*., 2017).

Regulated non-quarantine pest (RNQP) assessment for Great Britain: tomato ringspot virus (*Nepovirus lycopersici*) on *Rubus* - fruit propagating material and fruit plants intended for fruit production

Background

Tomato ringspot virus (also known as *Nepovirus lycopersici* or ToRSV) is currently an RNQP (Regulated Non-Quarantine Pest) for GB (Great Britain), but the listed hosts concerning this pest needed a review. The pest has a scattered worldwide distribution, with most impacts occurring in North America where the nematode vectors are widespread.

Current listing of pest in GB legislation

RNQP for GB

Current regulated plants for planting – host plants

Malus; Pelargonium; Prunus; Rubus

Taxonomy

Pest name

Nepovirus lycopersici; tomato ringspot virus; ToRSV; TomRSV

Will the pest be listed at species level?

Yes

Status in GB

Is this pest present in GB?

Yes: There is a long history of ToRSV causing symptomless findings of infection on *Pelargonium* (geranium) stocks in the UK, with unpublished records beginning in 1979 and the most recent survey being from 2003 (Defra, unpublished data). The results of the most recent survey did indicate that levels of viral contamination had dropped, but there is no evidence that ToRSV has ever been fully eradicated from *Pelargonium* (especially since the virus can be transmitted via seed and pollen in *Pelargonium*, Scarborough & Smith, 1977).

Pathways

Are the listed plants for planting the main pathway for the "pest/host/intended use" combination?

Yes: ToRSV is primarily spread by nematodes in the *Xiphinema americanum senso lato* complex. These vectors of ToRSV are not known to occur in the UK, though the rapid PRA for these nematodes (Fera, 2014 unpublished) acknowledged that some populations may have been inadvertently imported in large, containerised plants. If nematode vectors were to enter, they are very likely to be able to establish both outdoors and in protected conditions.

The virus is readily transmissible by grafting (Freeman *et al*., 1975). There is some evidence that the virus can be transmitted from maternal plant to seed (Braun & Keplinger, 1973). There is no evidence of pollen transmission (EPPO, 2024).

Therefore, plants for planting are considered the main pathway for spreading ToRSV in *Rubus*.

Economic Impact

Are there documented reports of any economic impact on the host?

Yes

ToRSV can be a serious problem in raspberry production in the Pacific Northwest of the United States but has not been reported in blackberry in the same region. ToRSV has been reported to infect blackberry in Chile and several other locations (Martin *et al*., 2013 and references therein).

Rubus idaeus: In the spring, ToRSV has reportedly often caused yellow rings, line patterns or fine yellow vein chlorosis on laves of primocanes of some cultivars. These were shock symptoms of recent infections. They disappeared completely in hot weather, and rarely reappeared in chronically infected plants the following season. Chronically infected plants were dwarfed in the spring, foliage was slower to develop than in normal plants, and primocanes (first season's growth) had a distinctly darker bronze cast than healthy plants. Symptoms differed depending on cultivar and longevity of infection. The yield of fruit from infected plants was much reduced in comparison with healthy; the weight of fruit was also reduced (Converse & Stace-Smith, 1971).

In cultivar studies, 'Lloyd George', 'Avon', 'Latham', 'Glen Clova' and 'Meeker' showed significant susceptibility. Impacts included a significant reduction in yield by the third year (Daubney *et al*., 1975; Freeman *et al*., 1975).

Rubus fruticosus: A report from Türkiye states that '*virus-like symptoms were observed on wild blackberry plants growing in the border of stone fruit orchards in Hatay. Suspicious blackberry plants mainly exhibited symptoms possibly related to disease in* Rubus *spp. caused by Tomato ringspot nepovirus (ToRSV) such as stunting, deformity of the leaves, severe yellow blotching or chlorosis, and at the end of autumn the chlorotic areas became an intense yellow*.' No symptoms had been observed, however, in the orchard trees (Sertkaya, 2010).

There are other reports of ToRSV incidence or symptoms in the field on *Rubus*, but the evidence of impacts or association of the virus with symptoms observed in these cases is not strong (Coneva *et al*. 2010; González Silva *et al*. 2017)

What is the likely economic impact of the pest irrespective of its infestation source in the absence of phytosanitary measures?

Minor economic impacts to *Rubus* sector in absence of measures.

The UK Pest Risk Analysis (Defra, 2018) rates economic impact in this pest's current range as Medium for all fruit crops (inc. *Prunus*, *Vaccinium*, *Capsicum*, *Rubus*). The potential economic impact to all sectors in the UK are rated as Small (with the suggestion that most impacts will be in the ornamental sector). When assessing which area of the UK is endangered from ToRSV, the PRA states "*Fruit crops could*

incur greater impacts, but unless the vectors are introduced any effects are likely to be limited by controlling planting material."

The severity of symptoms and impacts varies by location and cultivar, with significant yield losses and decreased cane sizes only in some circumstances (and in regions where the nematode vector exists).

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

Risk Management Measures

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

Similar methods as those described in EPPO PM 4/10 (2) Certification scheme for *Rubus* could be used (EPPO, 2009) (though ToRSV is not specifically listed in the standard). See also EPPO PM 7/49 *Tomato ringspot virus* (Diagnostics) (EPPO, 2005).

Data Quality

Is the quality of the data sufficient to recommend the pest to be listed as an RNQP?

Yes, there is sufficient evidence of host association and symptoms that show ToRSV is harmful to *Rubus* and could cause an unacceptable level of damage.

Proposal for regulation

We propose to regulate ToRSV as an RNQP on the fruit propagating material and fruit plants intended for fruit production of *Rubus* species, by adding it to Annex 4, Part I, of the Phytosanitary Conditions Regulation[1]. As a result, these plants for planting would need to be free from ToRSV to be imported into, or moved within, Great Britain.

[1] Commission Implementing Regulation (EU) 2019/2072 of 28 November 2019 establishing uniform conditions for the implementation of Regulation (EU) 2016/2031 of the European Parliament and the Council, as regards protective measures against pests of plants, and repealing Commission Regulation (EC) No 690/2008 and amending Commission Implementing Regulation (EU) 2018/2019

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This regulation proposal has been undertaken taking into account the environmental principles laid out in the Environment Act 2021. Of particular relevance are:

- The prevention principle, which means that any policy on action taken, or not taken should aim to prevent environmental harm.
- The precautionary principle, which assists the decision-making process where there is a lack of scientific certainty.