Department for Environment Food & Rural Affairs

Regulation proposal for tomato ringspot virus (*Nepovirus lycopersici*) on *Vitis* - vine propagating material

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 *Vitis* - vine propagating material

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is a long history of ToRSV causing symptomless findings of infection on Pelargonium (geranium) stocks in the UK, with unpublished records beginning in 1979 and the most recent survey being from 2003 (Defra, unpublished data).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 These vectors of ToRSV are not known to occur in the UK, though the rapid PRA for these nematodes (Fera, 2014 unpublished) acknowledged that some populations may have been inadvertently imported in large, containerised plants.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 and by sap inoculation. The virus is not thought to be seed transmitted with woody hosts.

Therefore, plants for planting would be the main means of spreading ToRSV on *Vitis*.

Economic Impact

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

Yes

Symptoms are difficult to diagnose early in the season unless vines are severely affected, in which case they have many winter-killed buds and weak, stunted shoot growth. By about nine weeks after the start of vine growth, shoot and foliage symptoms are conspicuous on one or more shoots. Leaves develop ringspots and mottling, are reduced in size and rosetted due to the shortening of internodes. Fruit clusters are reduced in size with many berries aborting. Removal of bark from trunks and stems of diseased vines may reveal thickened, spongy phloem tissue with numerous necrotic pits (EPPO, 2018).

ToRSV was consistently isolated from plants of the grape cultivar DeChaunac (Siebel 9549) (a hybrid of *Vitis vinifera* and an American *Vitis* sp. – species not named) with short internodes, stem rosetting, yellowing and rolling of leaves and sever stunting. Yield of these plants was reduced by 95%. Rootstocks and cultivars offer varying levels of resistance and susceptibility. Use of rootstocks conferred higher resistance compared to own rooted DeChaunac cultivar. (Stobbs *et al*., 1988)

ToRSV causes serious decline of *Vitis vinifera* L. cultivars and their hybrids. In all cases, symptoms consist largely of delayed spring growth, mottling, malformation and rolling of the leaves, severe stunting and poor fruit set. Ultimately, affected vines may die. However, the serologically distinct yellow vein strain of ToRSV, the causal agent of grapevine decline in Northern USA and Canada, seriously affects the yield of Californian grape cultivars without hampering the growth of diseased plants which, surprisingly, appear more vigorous than healthy ones (Uyemoto, 1975; Dias, 1977; Martelli, 1978 and references therein; Rowhani *et al*., 1992).

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

Minor impact in *Vitis* fruit (wine) sector predicted in the 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*."

Major damage has been reported on grapes in certain areas (Northeastern USA), though the vectors are present there.

The area under vine in GB now stands at 4209 hectares representing a growth of 123% in a decade. The *Vitis* industry in GB is still rapidly growing, so more imports and plantings are forecasted – plantings are predicted to rise by 84% by 2032 (WineGB, 2024). According to an article in vineyard magazine, these vines all come from Europe as disease pressure and low temperatures in the UK make the possibility of home-grown vines 'nigh impossible' (Vineyard Magazine, 2023)

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 to those described in the EPPO PM4 standards below (though ToRSV not specifically named in standards)

- PM 4/008 (2) Pathogen-tested material of grapevine varieties and rootstocks (EPPO, 2008)
- PM 4/035 (1) Soil test for virus–vector nematodes in the framework of EPPO Standard PM 4 Schemes for the production of healthy plants for planting of fruit crops, grapevine, *Populus* and *Salix* (EPPO, 2009)

ToRSV is named in EPPO PM 3/85 (1) Inspection of places of production – *Vitis* plants for planting (EPPO, 2018)

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 *Vitis* and could cause an unacceptable level of impacts to new vineyard plantings.

Proposal for regulation

We propose to regulate ToRSV as an RNQP on vine propagating material of *Vitis* species, by amending Annex 4, Part B, of the Phytosanitary Conditions Regulation[1]. As a result, these plants 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

References

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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.